



LIFE AND ACCIDENT AND HEALTH COMPANIES - ASSOCIATION EDITION

ANNUAL STATEMENT

FOR THE YEAR ENDED DECEMBER 31, 2018
OF THE CONDITION AND AFFAIRS OF THE

Massachusetts Mutual Life Insurance Company

NAIC Group Code 0435 0435 NAIC Company Code 65935 Employer's ID Number 04-1590850
(Current) (Prior)

Organized under the Laws of Massachusetts, State of Domicile or Port of Entry MA

Country of Domicile United States of America

Incorporated/Organized 05/15/1851 Commenced Business 08/01/1851

Statutory Home Office 1295 State Street, Springfield, MA, US 01111
(Street and Number) (City or Town, State, Country and Zip Code)

Main Administrative Office 1295 State Street
(Street and Number)
Springfield, MA, US 01111, 413-788-8411
(City or Town, State, Country and Zip Code) (Area Code) (Telephone Number)

Mail Address 1295 State Street, Springfield, MA, US 01111
(Street and Number or P.O. Box) (City or Town, State, Country and Zip Code)

Primary Location of Books and Records 1295 State Street
(Street and Number)
Springfield, MA, US 01111, 413-788-8411
(City or Town, State, Country and Zip Code) (Area Code) (Telephone Number)

Internet Website Address www.massmutual.com

Statutory Statement Contact Yiji S. Starr, 617-695-4651
(Name) (Area Code) (Telephone Number)
ystarr02@massmutual.com, 413-226-4086
(E-mail Address) (FAX Number)

OFFICERS

President and Chief Executive Officer Roger William Crandall Treasurer Todd Garrett Picken
Secretary Pia Denise Flanagan Appointed Actuary Douglas Wright Taylor

OTHER

Elizabeth Ward Chicares, Chief Financial Officer and Chief Actuary Michael Robert Fanning, Head of MassMutual U.S. Melvin Timothy Corbett, Chief Investment Officer
Mark Douglas Roellig, Head of Technology & Administration Adnan Omar Ahmed, Head of MassMutual International Geoffrey James Craddock, Chief Risk Officer
Pia Denise Flanagan #, Chief of Staff Susan Marie Cicco #, Head of Human Resources & Strategic Communications Michael James O'Connor #, General Counsel
Gareth Fielding Ross #, Head of Digital & Customer Experience

DIRECTORS OR TRUSTEES

Roger William Crandall - Chairman Karen Hall Bechtel Mark Thomas Bertolini
Kathleen Ann Corbet James Henry DeGraffenreidt, Jr. Isabella Davidov Goren
Jeffrey Marc Leiden Marc Francis Racicot Laura Jeanne Sen
William Taylor Spitz Howard Todd Stitzer - Lead Director #

State of Massachusetts SS:
County of Hampden

The officers of this reporting entity being duly sworn, each depose and say that they are the described officers of said reporting entity, and that on the reporting period stated above, all of the herein described assets were the absolute property of the said reporting entity, free and clear from any liens or claims thereon, except as herein stated, and that this statement, together with related exhibits, schedules and explanations therein contained, annexed or referred to, is a full and true statement of all the assets and liabilities and of the condition and affairs of the said reporting entity as of the reporting period stated above, and of its income and deductions therefrom for the period ended, and have been completed in accordance with the NAIC Annual Statement Instructions and Accounting Practices and Procedures manual except to the extent that: (1) state law may differ; or, (2) that state rules or regulations require differences in reporting not related to accounting practices and procedures, according to the best of their information, knowledge and belief, respectively. Furthermore, the scope of this attestation by the described officers also includes the related corresponding electronic filing with the NAIC, when required, that is an exact copy (except for formatting differences due to electronic filing) of the enclosed statement. The electronic filing may be requested by various regulators in lieu of or in addition to the enclosed statement.

Roger William Crandall
President and Chief Executive Officer

Pia Denise Flanagan
Secretary

Todd Garrett Picken
Treasurer

Subscribed and sworn to before me this _____ day of _____

- a. Is this an original filing? Yes [X] No []
b. If no,
1. State the amendment number.....
2. Date filed.....
3. Number of pages attached.....

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSETS

	Current Year			Prior Year
	1 Assets	2 Nonadmitted Assets	3 Net Admitted Assets (Cols. 1 - 2)	4 Net Admitted Assets
1. Bonds (Schedule D)	97,079,123,131		97,079,123,131	90,434,764,618
2. Stocks (Schedule D):				
2.1 Preferred stocks	744,092,065		744,092,065	767,807,089
2.2 Common stocks	12,827,375,153		12,827,375,153	15,635,265,539
3. Mortgage loans on real estate (Schedule B):				
3.1 First liens	23,623,807,529		23,623,807,529	22,579,846,619
3.2 Other than first liens				
4. Real estate (Schedule A):				
4.1 Properties occupied by the company (less \$	195,523,677		195,523,677	143,857,098
encumbrances)				
4.2 Properties held for the production of income (less				
\$903,755,760 encumbrances)	272,704,758		272,704,758	608,115,213
4.3 Properties held for sale (less \$26,840,000				
encumbrances)	20,078,118		20,078,118	105,028,985
5. Cash (\$175,136,350, Schedule E - Part 1), cash equivalents				
(\$3,695,132,944, Schedule E - Part 2) and short-term				
investments (\$447,734,452, Schedule DA)	4,318,003,746		4,318,003,746	3,579,565,622
6. Contract loans (including \$ premium notes)	13,873,710,550	462,724	13,873,247,826	13,326,988,405
7. Derivatives (Schedule DB)	8,741,308,632		8,741,308,632	8,857,280,579
8. Other invested assets (Schedule BA)	8,643,322,029	43,866,156	8,599,455,873	7,677,785,202
9. Receivables for securities	941,182,855		941,182,855	204,853,007
10. Securities lending reinvested collateral assets (Schedule DL)				
11. Aggregate write-ins for invested assets				
12. Subtotals, cash and invested assets (Lines 1 to 11)	171,280,232,243	44,328,880	171,235,903,363	163,921,157,976
13. Title plants less \$ charged off (for Title insurers				
only)				
14. Investment income due and accrued	3,024,882,433	6,582,488	3,018,299,945	2,198,552,050
15. Premiums and considerations:				
15.1 Uncollected premiums and agents' balances in the course of collection	166,617,388	2,411,627	164,205,761	164,069,363
15.2 Deferred premiums and agents' balances and installments booked but				
deferred and not yet due (including \$				
earned but unbilled premiums)	732,697,836		732,697,836	696,945,925
15.3 Accrued retrospective premiums (\$) and				
contracts subject to redetermination (\$)				
16. Reinsurance:				
16.1 Amounts recoverable from reinsurers	78,307,613	6,211,923	72,095,690	30,663,446
16.2 Funds held by or deposited with reinsured companies				
16.3 Other amounts receivable under reinsurance contracts	31,016,552		31,016,552	28,337,150
17. Amounts receivable relating to uninsured plans				
18.1 Current federal and foreign income tax recoverable and interest thereon	611,902,202		611,902,202	544,063,897
18.2 Net deferred tax asset	982,725,684		982,725,684	761,056,248
19. Guaranty funds receivable or on deposit	17,736,925		17,736,925	27,196,340
20. Electronic data processing equipment and software	207,205,114	191,559,787	15,645,327	11,505,754
21. Furniture and equipment, including health care delivery assets				
(\$)	55,965,309	55,965,309		
22. Net adjustment in assets and liabilities due to foreign exchange rates				
23. Receivables from parent, subsidiaries and affiliates	81,873,078		81,873,078	59,367,747
24. Health care (\$) and other amounts receivable				
25. Aggregate write-ins for other than invested assets	4,120,381,025	1,915,737,153	2,204,643,872	2,458,024,667
26. Total assets excluding Separate Accounts, Segregated Accounts and				
Protected Cell Accounts (Lines 12 to 25)	181,391,543,402	2,222,797,167	179,168,746,235	170,900,940,563
27. From Separate Accounts, Segregated Accounts and Protected Cell				
Accounts	64,478,100,585		64,478,100,585	69,162,281,558
28. Total (Lines 26 and 27)	245,869,643,987	2,222,797,167	243,646,846,820	240,063,222,121
DETAILS OF WRITE-INS				
1101.				
1102.				
1103.				
1198. Summary of remaining write-ins for Line 11 from overflow page				
1199. Totals (Lines 1101 thru 1103 plus 1198)(Line 11 above)				
2501. Corporate owned life insurance	2,115,001,571		2,115,001,571	2,104,402,544
2502. Employee insurance plan advances	40,923,085	14,113	40,908,972	39,459,017
2503. Investment in trust	26,641,910		26,641,910	31,602,010
2598. Summary of remaining write-ins for Line 25 from overflow page	1,937,814,459	1,915,723,040	22,091,419	282,561,096
2599. Totals (Lines 2501 thru 2503 plus 2598)(Line 25 above)	4,120,381,025	1,915,737,153	2,204,643,872	2,458,024,667

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

LIABILITIES, SURPLUS AND OTHER FUNDS

	1 Current Year	2 Prior Year
1. Aggregate reserve for life contracts \$119,010,301,284 (Exh. 5, Line 999999) less \$ included in Line 6.3 (including \$135,939,405 Modco Reserve)	119,010,301,284	112,904,106,756
2. Aggregate reserve for accident and health contracts (including \$ Modco Reserve)	2,967,573,431	2,859,824,790
3. Liability for deposit-type contracts (Exhibit 7, Line 14, Col. 1) (including \$ Modco Reserve)	14,369,907,287	13,014,264,844
4. Contract claims:		
4.1 Life (Exhibit 8, Part 1, Line 4.4, Col. 1 less sum of Cols. 9, 10 and 11)	408,860,759	450,718,022
4.2 Accident and health (Exhibit 8, Part 1, Line 4.4, sum of Cols. 9, 10 and 11)	27,487,143	24,903,999
5. Policyholders' dividends \$7,952,382 and coupons \$ due and unpaid (Exhibit 4, Line 10)	7,952,382	10,007,757
6. Provision for policyholders' dividends and coupons payable in following calendar year - estimated amounts:		
6.1 Dividends apportioned for payment (including \$ Modco)	1,704,768,185	1,591,383,608
6.2 Dividends not yet apportioned (including \$ Modco)		
6.3 Coupons and similar benefits (including \$ Modco)		
7. Amount provisionally held for deferred dividend policies not included in Line 6		
8. Premiums and annuity considerations for life and accident and health contracts received in advance less \$ discount; including \$10,463,976 accident and health premiums (Exhibit 1, Part 1, Col. 1, sum of lines 4 and 14)	32,700,041	30,097,576
9. Contract liabilities not included elsewhere:		
9.1 Surrender values on canceled contracts		
9.2 Provision for experience rating refunds, including the liability of \$ accident and health experience rating refunds of which \$ is for medical loss ratio rebate per the Public Health Service Act	10,424,232	7,673,131
9.3 Other amounts payable on reinsurance, including \$10,447,976 assumed and \$6,764,453 ceded	17,212,429	19,151,509
9.4 Interest maintenance reserve (IMR, Line 6)		
10. Commissions to agents due or accrued-life and annuity contracts \$7,237,936 accident and health \$268,818 and deposit-type contract funds \$	7,506,755	25,768,037
11. Commissions and expense allowances payable on reinsurance assumed	4,994,328	4,937,613
12. General expenses due or accrued (Exhibit 2, Line 12, Col. 6)	1,095,534,762	1,074,342,178
13. Transfers to Separate Accounts due or accrued (net) (including \$(127,460,664) accrued for expense allowances recognized in reserves, net of reinsured allowances)	(146,648,819)	(228,875,358)
14. Taxes, licenses and fees due or accrued, excluding federal income taxes (Exhibit 3, Line 9, Col. 5)	50,761,771	67,425,911
15.1 Current federal and foreign income taxes, including \$ on realized capital gains (losses)	3,434	
15.2 Net deferred tax liability		
16. Unearned investment income	175,081,674	162,598,176
17. Amounts withheld or retained by company as agent or trustee	35,906,971	34,781,798
18. Amounts held for agents' account, including \$ agents' credit balances	333,630,886	335,418,514
19. Remittances and items not allocated	890,822,640	368,913,864
20. Net adjustment in assets and liabilities due to foreign exchange rates		
21. Liability for benefits for employees and agents if not included above	179,825,843	187,472,254
22. Borrowed money \$249,786,188 and interest thereon \$0	249,786,188	249,867,743
23. Dividends to stockholders declared and unpaid		
24. Miscellaneous liabilities:		
24.01 Asset valuation reserve (AVR, Line 16, Col. 7)	3,306,820,067	3,207,069,587
24.02 Reinsurance in unauthorized and certified (\$) companies	189,342	204,479
24.03 Funds held under reinsurance treaties with unauthorized and certified (\$) reinsurers		
24.04 Payable to parent, subsidiaries and affiliates	(17,130,060)	(7,053,829)
24.05 Drafts outstanding		
24.06 Liability for amounts held under uninsured plans		
24.07 Funds held under coinsurance	4,098,648,265	4,001,137,453
24.08 Derivatives	4,911,983,117	5,979,259,357
24.09 Payable for securities	81,963,034	78,913,791
24.10 Payable for securities lending		
24.11 Capital notes \$ and interest thereon \$		
25. Aggregate write-ins for liabilities	9,742,092,195	8,741,413,480
26. Total liabilities excluding Separate Accounts business (Lines 1 to 25)	163,558,959,566	155,195,727,040
27. From Separate Accounts Statement	64,478,100,585	69,162,278,428
28. Total liabilities (Lines 26 and 27)	228,037,060,151	224,358,005,468
29. Common capital stock		
30. Preferred capital stock		
31. Aggregate write-ins for other than special surplus funds		
32. Surplus notes	2,268,096,211	2,267,627,287
33. Gross paid in and contributed surplus (Page 3, Line 33, Col. 2 plus Page 4, Line 51.1, Col. 1)		
34. Aggregate write-ins for special surplus funds	3,250,000	3,250,000
35. Unassigned funds (surplus)	13,338,440,458	13,434,339,366
36. Less treasury stock, at cost:		
36.1 shares common (value included in Line 29 \$)		
36.2 shares preferred (value included in Line 30 \$)		
37. Surplus (Total Lines 31+32+33+34+35-36) (including \$0 in Separate Accounts Statement)	15,609,786,669	15,705,216,653
38. Totals of Lines 29, 30 and 37 (Page 4, Line 55)	15,609,786,669	15,705,216,653
39. Totals of Lines 28 and 38 (Page 2, Line 28, Col. 3)	243,646,846,820	240,063,222,121
DETAILS OF WRITE-INS		
2501. Repurchase agreements	4,803,587,340	4,212,561,002
2502. Derivative collateral	2,945,652,368	2,660,944,773
2503. Derivative accrued interest	1,898,874,859	1,781,371,416
2598. Summary of remaining write-ins for Line 25 from overflow page	93,977,628	86,536,289
2599. Totals (Lines 2501 thru 2503 plus 2598)(Line 25 above)	9,742,092,195	8,741,413,480
3101.		
3102.		
3103.		
3198. Summary of remaining write-ins for Line 31 from overflow page		
3199. Totals (Lines 3101 thru 3103 plus 3198)(Line 31 above)		
3401. Designated surplus for group annuities	2,500,000	2,500,000
3402. Designated surplus for separate account business	750,000	750,000
3403.		
3498. Summary of remaining write-ins for Line 34 from overflow page		
3499. Totals (Lines 3401 thru 3403 plus 3498)(Line 34 above)	3,250,000	3,250,000

SUMMARY OF OPERATIONS

	1 Current Year	2 Prior Year
1. Premiums and annuity considerations for life and accident and health contracts (Exhibit 1, Part 1, Line 20.4, Col. 1, less Col. 11)	22,905,684,993	17,461,646,567
2. Considerations for supplementary contracts with life contingencies	23,694,419	24,676,699
3. Net investment income (Exhibit of Net Investment Income, Line 17)	7,709,838,336	6,427,963,678
4. Amortization of Interest Maintenance Reserve (IMR, Line 5)	63,947,853	112,616,566
5. Separate Accounts net gain from operations excluding unrealized gains or losses	20	1,003,477
6. Commissions and expense allowances on reinsurance ceded (Exhibit 1, Part 2, Line 26.1, Col. 1)	183,575,292	129,971,697
7. Reserve adjustments on reinsurance ceded	(120,338,587)	3,722,987
8. Miscellaneous Income:		
8.1 Income from fees associated with investment management, administration and contract guarantees from Separate Accounts	393,312,833	374,855,328
8.2 Charges and fees for deposit-type contracts		
8.3 Aggregate write-ins for miscellaneous income	561,716,288	916,084,043
9. Total (Lines 1 to 8.3)	31,721,431,447	25,452,541,042
10. Death benefits	1,801,487,193	1,851,615,205
11. Matured endowments (excluding guaranteed annual pure endowments)	15,155,252	22,525,034
12. Annuity benefits (Exhibit 8, Part 2, Line 6.4, Cols. 4 + 8)	2,004,550,137	2,000,522,288
13. Disability benefits and benefits under accident and health contracts	369,893,030	369,700,752
14. Coupons, guaranteed annual pure endowments and similar benefits		
15. Surrender benefits and withdrawals for life contracts	18,213,757,819	15,411,684,915
16. Group conversions		
17. Interest and adjustments on contract or deposit-type contract funds	426,166,626	334,690,683
18. Payments on supplementary contracts with life contingencies	14,836,103	12,620,137
19. Increase in aggregate reserves for life and accident and health contracts	7,507,800,736	3,620,913,739
20. Totals (Lines 10 to 19)	30,353,646,896	23,624,272,753
21. Commissions on premiums, annuity considerations, and deposit-type contract funds (direct business only) (Exhibit 1, Part 2, Line 31, Col. 1)	978,144,683	918,614,536
22. Commissions and expense allowances on reinsurance assumed (Exhibit 1, Part 2, Line 26.2, Col. 1)	83,452,865	90,237,538
23. General insurance expenses (Exhibit 2, Line 10, Cols. 1, 2, 3 and 4)	2,366,077,039	2,598,943,259
24. Insurance taxes, licenses and fees, excluding federal income taxes (Exhibit 3, Line 7, Cols. 1 + 2 + 3)	257,788,721	244,513,863
25. Increase in loading on deferred and uncollected premiums	(27,564,856)	(2,756,358)
26. Net transfers to or (from) Separate Accounts net of reinsurance	(3,008,428,954)	(2,880,987,974)
27. Aggregate write-ins for deductions	(1,031,463,367)	(863,948,960)
28. Totals (Lines 20 to 27)	29,971,653,027	23,728,888,657
29. Net gain from operations before dividends to policyholders and federal income taxes (Line 9 minus Line 28)	1,749,778,420	1,723,652,385
30. Dividends to policyholders	1,695,253,440	1,569,130,529
31. Net gain from operations after dividends to policyholders and before federal income taxes (Line 29 minus Line 30)	54,524,980	154,521,856
32. Federal and foreign income taxes incurred (excluding tax on capital gains)	(168,384,146)	(319,605,799)
33. Net gain from operations after dividends to policyholders and federal income taxes and before realized capital gains or (losses) (Line 31 minus Line 32)	222,909,126	474,127,655
34. Net realized capital gains (losses) (excluding gains (losses) transferred to the IMR) less capital gains tax of \$(29,515,768) (excluding taxes of \$(18,652,600) transferred to the IMR)	(1,044,256,266)	(422,051,259)
35. Net income (Line 33 plus Line 34)	(821,347,140)	52,076,396
CAPITAL AND SURPLUS ACCOUNT		
36. Capital and surplus, December 31, prior year (Page 3, Line 38, Col. 2)	15,705,216,653	15,423,489,956
37. Net income (Line 35)	(821,347,140)	52,076,396
38. Change in net unrealized capital gains (losses) less capital gains tax of \$226,075,215	1,778,861,989	367,766,370
39. Change in net unrealized foreign exchange capital gain (loss)	(594,081,445)	720,964,144
40. Change in net deferred income tax	289,824,267	(1,084,216,547)
41. Change in nonadmitted assets	(716,309,297)	124,348,002
42. Change in liability for reinsurance in unauthorized and certified companies	15,137	(204,479)
43. Change in reserve on account of change in valuation basis, (increase) or decrease		
44. Change in asset valuation reserve	(99,750,481)	(29,061,218)
45. Change in treasury stock (Page 3, Lines 36.1 and 36.2, Col. 2 minus Col. 1)		
46. Surplus (contributed to) withdrawn from Separate Accounts during period	3,153	10,139,720
47. Other changes in surplus in Separate Accounts Statement	(3,153)	(10,139,720)
48. Change in surplus notes	468,924	35,696,688
49. Cumulative effect of changes in accounting principles		
50. Capital changes:		
50.1 Paid in		
50.2 Transferred from surplus (Stock Dividend)		
50.3 Transferred to surplus		
51. Surplus adjustment:		
51.1 Paid in		
51.2 Transferred to capital (Stock Dividend)		
51.3 Transferred from capital		
51.4 Change in surplus as a result of reinsurance		
52. Dividends to stockholders		
53. Aggregate write-ins for gains and losses in surplus	66,888,062	94,357,341
54. Net change in capital and surplus for the year (Lines 37 through 53)	(95,429,984)	281,726,697
55. Capital and surplus, December 31, current year (Lines 36 + 54) (Page 3, Line 38)	15,609,786,669	15,705,216,653
DETAILS OF WRITE-INS		
08.301. Management and administrative fees	284,985,025	620,758,034
08.302. Revenue sharing	118,220,703	140,801,634
08.303. Experience refunds on reinsurance contracts	132,207,033	
08.398. Summary of remaining write-ins for Line 8.3 from overflow page	26,303,527	154,524,375
08.399. Totals (Lines 08.301 thru 08.303 plus 08.398)(Line 8.3 above)	561,716,288	916,084,043
2701. Change in reserves due to reinsurance agreement	(1,221,343,804)	(886,570,313)
2702. Reinsurance ceded adjustment	(14,545,497)	(17,890,200)
2703. Change in liability for employee/agent benefit plans	(8,510,950)	46,800,148
2798. Summary of remaining write-ins for Line 27 from overflow page	212,936,884	(6,288,595)
2799. Totals (Lines 2701 thru 2703 plus 2798)(Line 27 above)	(1,031,463,367)	(863,948,960)
5301. Change in minimum pension liability	127,967,631	60,544,574
5302. Other changes in surplus	(46,534,072)	51,702,967
5303. Reinsurance ceded adjustment	(14,545,497)	(17,890,200)
5398. Summary of remaining write-ins for Line 53 from overflow page		
5399. Totals (Lines 5301 thru 5303 plus 5398)(Line 53 above)	66,888,062	94,357,341

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

CASH FLOW

	1	2
	Current Year	Prior Year
Cash from Operations		
1. Premiums collected net of reinsurance	22,608,709,332	20,924,687,105
2. Net investment income	6,761,697,857	6,542,348,803
3. Miscellaneous income	1,015,740,250	1,269,034,050
4. Total (Lines 1 through 3)	30,386,147,439	28,736,069,958
5. Benefit and loss related payments	22,915,622,389	19,718,437,173
6. Net transfers to Separate Accounts, Segregated Accounts and Protected Cell Accounts	(3,090,655,493)	(3,510,470,791)
7. Commissions, expenses paid and aggregate write-ins for deductions	2,702,636,293	2,636,613,112
8. Dividends paid to policyholders	1,588,224,238	1,576,933,507
9. Federal and foreign income taxes paid (recovered) net of \$82,540,607 tax on capital gains (losses)	(162,241,559)	2,936,449
10. Total (Lines 5 through 9)	23,953,585,868	20,424,449,450
11. Net cash from operations (Line 4 minus Line 10)	6,432,561,571	8,311,620,508
Cash from Investments		
12. Proceeds from investments sold, matured or repaid:		
12.1 Bonds	19,213,999,109	19,836,499,683
12.2 Stocks	2,708,586,089	861,618,650
12.3 Mortgage loans	2,330,683,301	3,063,570,079
12.4 Real estate	275,807,610	225,545,341
12.5 Other invested assets	2,155,259,323	1,971,529,593
12.6 Net gains or (losses) on cash, cash equivalents and short-term investments	13,072,429	34,823,446
12.7 Miscellaneous proceeds	71,696,828	(253,407,031)
12.8 Total investment proceeds (Lines 12.1 to 12.7)	26,769,104,689	25,740,179,761
13. Cost of investments acquired (long-term only):		
13.1 Bonds	26,525,627,843	24,909,025,693
13.2 Stocks	895,103,810	1,114,586,074
13.3 Mortgage loans	3,698,401,345	4,543,378,623
13.4 Real estate	(233,372,268)	267,252,878
13.5 Other invested assets	1,652,995,507	1,850,706,935
13.6 Miscellaneous applications	724,893,581	687,627,366
13.7 Total investments acquired (Lines 13.1 to 13.6)	33,263,649,818	33,372,577,569
14. Net increase (decrease) in contract loans and premium notes	545,869,329	867,421,224
15. Net cash from investments (Line 12.8 minus Line 13.7 minus Line 14)	(7,040,414,458)	(8,499,819,032)
Cash from Financing and Miscellaneous Sources		
16. Cash provided (applied):		
16.1 Surplus notes, capital notes		35,696,688
16.2 Capital and paid in surplus, less treasury stock		
16.3 Borrowed funds	(234,576)	(188,056)
16.4 Net deposits on deposit-type contracts and other insurance liabilities	86,596,125	1,359,595,314
16.5 Dividends to stockholders		
16.6 Other cash provided (applied)	1,259,929,462	(1,353,276,080)
17. Net cash from financing and miscellaneous sources (Lines 16.1 to 16.4 minus Line 16.5 plus Line 16.6)	1,346,291,011	41,827,866
RECONCILIATION OF CASH, CASH EQUIVALENTS AND SHORT-TERM INVESTMENTS		
18. Net change in cash, cash equivalents and short-term investments (Line 11, plus Lines 15 and 17)	738,438,124	(146,370,658)
19. Cash, cash equivalents and short-term investments:		
19.1 Beginning of year	3,579,565,622	3,725,936,280
19.2 End of year (Line 18 plus Line 19.1)	4,318,003,746	3,579,565,622

Note: Supplemental disclosures of cash flow information for non-cash transactions:

20.0001. Transfer of common stocks – subsidiaries and affiliated to other invested assets	1,333,718,935	
20.0002. Bond conversions and refinancing	1,058,254,566	795,770,615
20.0003. Other invested assets contributed to Insurance Road LLC	476,114,707	743,411,455
20.0004. Premium income recognized for a group annuity contracts	292,360,873	489,864,212
20.0005. Transfer of mortgage loan to other invested assets	244,153,148	19,836,861
20.0006. Transfer from bonds to other than invested assets	199,694,466	
20.0007. Stock conversion	128,169,724	330,787,631
20.0008. Transfer of bonds to partnerships	81,111,847	
20.0009. Bonds and common stock contributed to EM Opportunities LLC	74,063,408	
20.0010. Transfer of other invested assets to real estate	56,615,096	
20.0011. Bank loan rollovers	55,096,955	
20.0012. Dividend reinvestment	11,434,061	8,689,847

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

Note: Supplemental disclosures of cash flow information for non-cash transactions:

20.0013. Change in market value of COLI	11,073,742	139,443,155
20.0014. Net investment income payment in-kind bonds	9,227,709	3,011,624
20.0015. Net investment income payment in-kind stocks	460,873	
20.0016. Return of capital	105,953	
20.0017. Premium ceded under new reinsurance agreement		4,001,682,588
20.0018. Funds held under coinsurance		4,001,571,695
20.0019. Other invested assets contributed to MassMutual Asset Finance LLC		350,249,750
20.0020. Transfer of real estate to other invested assets		138,468,488
20.0021. Transfer of common stocks - affiliated		102,800,714
20.0022. Bond distributions from other invested assets		94,448,349
20.0023. Stock to bond		73,953,110
20.0024. Stock distributions from other invested assets		2,405,798

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ANALYSIS OF OPERATIONS BY LINES OF BUSINESS

	1 Total	2 Industrial Life	Ordinary			6 Credit Life (Group and Individual)	Group		Accident and Health			12 Aggregate of All Other Lines of Business
			3 Life Insurance	4 Individual Annuities	5 Supplementary Contracts		7 Life Insurance (a)	8 Annuities	9 Group	10 Credit (Group and Individual)	11 Other	
1. Premiums and annuity considerations for life and accident and health contracts	22,905,684,993		6,510,171,725	2,598,978,399			646,047,476	12,393,575,967	169,605		756,741,821	
2. Considerations for supplementary contracts with life contingencies	23,694,419				23,694,419							
3. Net investment income	7,709,838,336		3,420,658,889	672,287,574	104,550,867		1,344,024,941	1,947,348,874	1,603,953		219,363,238	
4. Amortization of Interest Maintenance Reserve (IMR)	63,947,853		38,421,730	3,328,545	339,603		11,338,773	5,791,860	(8,957)		4,736,299	
5. Separate Accounts net gain from operations excluding unrealized gains or losses	20							20				
6. Commissions and expense allowances on reinsurance ceded	183,575,292		147,639,974	16,690,095			6,190,699		88,012		12,966,512	
7. Reserve adjustments on reinsurance ceded	(120,338,587)		(30,101,070)				11,932,442				(102,169,959)	
8. Miscellaneous Income:												
8.1 Fees associated with income from investment management, administration and contract guarantees from Separate Accounts	393,312,833		43,435,990	204,576,294			23,338,748	121,961,801				
8.2 Charges and fees for deposit-type contracts												
8.3 Aggregate write-ins for miscellaneous income	561,716,288		73,291,515	24,468,942	411,459		84,556,028	381,628,402	(1,414)		(2,638,644)	
9. Totals (Lines 1 to 8.3)	31,721,431,447		10,203,518,753	3,520,329,849	128,996,348		2,127,429,107	14,850,306,924	1,851,199		888,999,267	
10. Death benefits	1,801,487,193		1,549,160,127				252,327,066					
11. Matured endowments (excluding guaranteed annual pure endowments)	15,155,252		15,155,252									
12. Annuity benefits	2,004,550,137			619,527,405				1,385,022,732				
13. Disability benefits and benefits under accident and health contracts	369,893,030		27,579,239				162,791		31,233		342,119,767	
14. Coupons, guaranteed annual pure endowments and similar benefits												
15. Surrender benefits and withdrawals for life contracts	18,213,757,819		1,337,302,260	2,782,152,054			527,029,369	13,567,271,817			2,319	
16. Group conversions												
17. Interest and adjustments on contract or deposit-type contract funds	426,166,626		26,301,757	71,038,683	18,418,675		2,062,273	308,339,686			5,552	
18. Payments on supplementary contracts with life contingencies	14,836,103				14,836,103							
19. Increase in aggregate reserves for life and accident and health contracts	7,507,800,736		4,170,004,180	853,184,398	11,742,635		732,266,820	1,632,854,062			107,748,641	
20. Totals (Lines 10 to 19)	30,353,646,896		7,125,502,815	4,325,902,540	44,997,413		1,513,848,319	16,893,488,297	31,233		449,876,279	
21. Commissions on premiums, annuity considerations and deposit-type contract funds (direct business only)	978,144,683		615,418,996	134,324,783			58,279,158	84,617,902	143,700		85,360,144	
22. Commissions and expense allowances on reinsurance assumed	83,452,865		14,020,903				5,992,189	63,439,773				
23. General insurance expenses	2,366,077,039		1,271,079,994	186,954,454	5,174,745		91,467,792	605,755,896	68,234		205,575,924	
24. Insurance taxes, licenses and fees, excluding federal income taxes	257,788,721		175,662,807	14,546,621	302,071		20,962,914	22,593,457	(13,473)		23,734,324	
25. Increase in loading on deferred and uncollected premiums	(27,564,856)		(27,160,710)				(10,799)				(393,347)	
26. Net transfers to or (from) Separate Accounts net of reinsurance	(3,008,428,954)		(9,135,352)	(930,374,455)			(5,614,019)	(2,063,305,128)				
27. Aggregate write-ins for deductions	(1,031,463,367)		(8,382,235)	1,133,906	27,286		200,403,859	(1,225,033,087)	211		386,693	
28. Totals (Lines 20 to 27)	29,971,653,027		9,157,007,218	3,732,487,849	50,501,515		1,885,329,413	14,381,557,110	229,905		764,540,017	
29. Net gain from operations before dividends to policyholders and federal income taxes (Line 9 minus Line 28)	1,749,778,420		1,046,511,535	(212,158,000)	78,494,833		242,099,694	468,749,814	1,621,294		124,459,250	
30. Dividends to policyholders	1,695,253,440		1,669,182,602	1,360,474	62,267		367,100	(1,938,851)			26,219,848	
31. Net gain from operations after dividends to policyholders and before federal income taxes (Line 29 minus Line 30)	54,524,980		(622,671,067)	(213,518,474)	78,432,566		241,732,594	470,688,665	1,621,294		98,239,402	
32. Federal income taxes incurred (excluding tax on capital gains)	(168,384,146)		(207,990,802)	(57,877,028)	4,851,925		6,256,417	60,929,644	93,292		25,352,406	
33. Net gain from operations after dividends to policyholders and federal income taxes and before realized capital gains or (losses) (Line 31 minus Line 32)	222,909,126		(414,680,265)	(155,641,446)	73,580,641		235,476,177	409,759,021	1,528,002		72,886,996	
DETAILS OF WRITE-INS												
08.301. Management and administrative fees	284,985,025		12,319,362	41,842			(2,623,532)	275,028,528			218,825	
08.302. Revenue sharing	118,220,703		1,793,715	21,821,312			285,708	94,319,968				
08.303. Experience refunds on reinsurance contracts	132,207,033		48,196,430				84,010,603					
08.398. Summary of remaining write-ins for Line 8.3 from overflow page	26,303,527		10,982,008	2,605,788	411,459		2,883,249	12,279,906	(1,414)		(2,857,469)	
08.399. Totals (Lines 08.301 thru 08.303 plus 08.398) (Line 8.3 above)	561,716,288		73,291,515	24,468,942	411,459		84,556,028	381,628,402	(1,414)		(2,638,644)	
2701. Change in reserves due to reinsurance agreement	(1,221,343,804)							(1,221,343,804)				
2702. Reinsurance ceded adjustment	(14,545,497)		(14,545,497)									
2703. Change in liability for employee/agent benefit plans	(8,510,950)		(8,510,950)									
2798. Summary of remaining write-ins for Line 27 from overflow page	212,936,884		14,674,212	1,133,906	27,286		200,403,859	(3,689,283)	211		386,693	
2799. Totals (Lines 2701 thru 2703 plus 2798) (Line 27 above)	(1,031,463,367)		(8,382,235)	1,133,906	27,286		200,403,859	(1,225,033,087)	211		386,693	

(a) Includes the following amounts for FEGLI/SGLI: Line 1, Line 10, Line 16, Line 23, Line 24

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ANALYSIS OF INCREASE IN RESERVES DURING THE YEAR

	1 Total	2 Industrial Life	Ordinary			6 Credit Life (Group and Individual)	Group	
			3 Life Insurance	4 Individual Annuities	5 Supplementary Contracts		7 Life Insurance	8 Annuities
Involving Life or Disability Contingencies (Reserves)								
(Net of Reinsurance Ceded)								
1. Reserve December 31, prior year	112,904,106,756		57,583,596,964	13,995,825,506	127,226,379		16,487,575,347	24,709,882,559
2. Tabular net premiums or considerations	22,644,910,275		7,002,380,916	2,598,978,399	23,694,419		626,280,575	12,393,575,966
3. Present value of disability claims incurred	357,844		357,844		XXX			
4. Tabular interest	5,025,964,929		2,616,307,172	482,117,467	6,065,367		1,011,709,439	909,765,484
5. Tabular less actual reserve released	(113,052,195)		16,880	(109,888,029)	(3,181,046)			
6. Increase in reserve on account of change in valuation basis								
6.1 Change in excess of VM-20 deterministic/stochastic reserve over net premium reserve		XXX		XXX	XXX	XXX	XXX	XXX
7. Other increases (net)	(933,843,780)		39,136,345	(1,004,465,422)			299,172	31,186,125
8. Totals (Lines 1 to 7)	139,528,443,829		67,241,796,121	15,962,567,921	153,805,119		18,125,864,533	38,044,410,134
9. Tabular cost	2,987,336,496		2,793,192,188		XXX		194,144,308	
10. Reserves released by death	1,287,710,153		1,079,705,601	XXX	XXX		208,004,552	XXX
11. Reserves released by other terminations (net)	18,524,463,022		1,628,883,839	2,792,944,113			535,363,254	13,567,271,816
12. Annuity, supplementary contract and disability payments involving life contingencies	2,046,318,442		27,579,239	618,717,578	14,836,103		162,791	1,385,022,731
13. Net transfers to or (from) Separate Accounts	(4,327,685,568)		(45,215,553)	(968,914,758)			(28,906,326)	(3,284,648,931)
14. Total Deductions (Lines 9 to 13)	20,518,142,545		5,484,145,314	2,442,746,933	14,836,103		908,768,579	11,667,645,616
15. Reserve December 31, current year	119,010,301,284		61,757,650,807	13,519,820,988	138,969,016		17,217,095,954	26,376,764,518

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT OF NET INVESTMENT INCOME

	1 Collected During Year	2 Earned During Year
1. U.S. Government bonds	(a) 162,278,464	304,791,408
1.1 Bonds exempt from U.S. tax	(a)	
1.2 Other bonds (unaffiliated)	(a) 3,332,193,813	3,507,609,386
1.3 Bonds of affiliates	(a) 230,499,399	249,229,478
2.1 Preferred stocks (unaffiliated)	(b) 29,076,108	34,969,055
2.11 Preferred stocks of affiliates	(b)	
2.2 Common stocks (unaffiliated)	45,351,837	43,436,546
2.21 Common stocks of affiliates	252,500,000	910,361,520
3. Mortgage loans	(c) 982,531,118	996,857,545
4. Real estate	(d) 112,319,804	110,395,794
5. Contract loans	870,361,419	856,680,554
6. Cash, cash equivalents and short-term investments	(e) 70,628,260	70,628,260
7. Derivative instruments	(f) 460,015,204	313,147,805
8. Other invested assets	835,183,297	1,030,411,843
9. Aggregate write-ins for investment income	5,860,724	5,860,724
10. Total gross investment income	7,388,799,447	8,434,379,918
11. Investment expenses		(g) 351,885,181
12. Investment taxes, licenses and fees, excluding federal income taxes		(g) 22,494,897
13. Interest expense		(h) 266,097,802
14. Depreciation on real estate and other invested assets		(i) 84,063,702
15. Aggregate write-ins for deductions from investment income		
16. Total deductions (Lines 11 through 15)		724,541,582
17. Net investment income (Line 10 minus Line 16)		7,709,838,336
DETAILS OF WRITE-INS		
0901. Miscellaneous	5,860,724	5,860,724
0902.		
0903.		
0998. Summary of remaining write-ins for Line 9 from overflow page		
0999. Totals (Lines 0901 thru 0903 plus 0998) (Line 9, above)	5,860,724	5,860,724
1501.		
1502.		
1503.		
1598. Summary of remaining write-ins for Line 15 from overflow page		
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15, above)		

- (a) Includes \$ 277,958,552 accrual of discount less \$ 134,973,241 amortization of premium and less \$ 69,645,038 paid for accrued interest on purchases.
- (b) Includes \$ accrual of discount less \$ amortization of premium and less \$ paid for accrued dividends on purchases.
- (c) Includes \$ 4,764,879 accrual of discount less \$ (2,704,349) amortization of premium and less \$ paid for accrued interest on purchases.
- (d) Includes \$ 78,000 for company's occupancy of its own buildings; and excludes \$ 26,302,677 interest on encumbrances.
- (e) Includes \$ 65,747,722 accrual of discount less \$ amortization of premium and less \$ 5,097 paid for accrued interest on purchases.
- (f) Includes \$ accrual of discount less \$ amortization of premium.
- (g) Includes \$ investment expenses and \$ investment taxes, licenses and fees, excluding federal income taxes, attributable to segregated and Separate Accounts.
- (h) Includes \$ 135,412,500 interest on surplus notes and \$ interest on capital notes.
- (i) Includes \$ 84,063,702 depreciation on real estate and \$ depreciation on other invested assets.

EXHIBIT OF CAPITAL GAINS (LOSSES)

	1	2	3	4	5
	Realized Gain (Loss) On Sales or Maturity	Other Realized Adjustments	Total Realized Capital Gain (Loss) (Columns 1 + 2)	Change in Unrealized Capital Gain (Loss)	Change in Unrealized Foreign Exchange Capital Gain (Loss)
1. U.S. Government bonds	(22,250,298)		(22,250,298)	(11,990,370)	
1.1 Bonds exempt from U.S. tax					
1.2 Other bonds (unaffiliated)	6,421,849	(151,012,106)	(144,590,257)	5,937,513	(551,344,913)
1.3 Bonds of affiliates	801,056	(3,059,523)	(2,258,467)	(12,000,648)	(7,666,543)
2.1 Preferred stocks (unaffiliated)	(2)		(2)	291,804	(6,846,400)
2.11 Preferred stocks of affiliates					
2.2 Common stocks (unaffiliated)	104,670,395	(13,838,755)	90,831,640	(126,575,508)	(7,799,615)
2.21 Common stocks of affiliates	16,240,482	(1,257,307,241)	(1,241,066,759)	1,584,465,092	
3. Mortgage loans		(1,214,062)	(1,214,062)		(124,897,312)
4. Real estate	166,889,500	1,044,241	167,933,741		
5. Contract loans	851		851		
6. Cash, cash equivalents and short-term investments	186,481	12,885,948	13,072,429		
7. Derivative instruments	(238,354,193)		(238,354,193)	894,900,632	1,648,475
8. Other invested assets	7,544,553	(65,013,991)	(57,469,438)	(330,091,312)	(60,633,528)
9. Aggregate write-ins for capital gains (losses)		(42,004,373)	(42,004,373)		5,538,008
10. Total capital gains (losses)	42,150,674	(1,519,519,862)	(1,477,369,188)	2,004,937,203	(752,001,828)
DETAILS OF WRITE-INS					
0901. Miscellaneous gains (losses)		(42,004,373)	(42,004,373)		5,538,008
0902. Aggregate write-ins					
0903.					
0998. Summary of remaining write-ins for Line 9 from overflow page					
0999. Totals (Lines 0901 thru 0903 plus 0998) (Line 9, above)		(42,004,373)	(42,004,373)		5,538,008

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT - 1 PART 1 - PREMIUMS AND ANNUITY CONSIDERATIONS FOR LIFE AND ACCIDENT AND HEALTH CONTRACTS

	1 Total	2 Industrial Life	Ordinary		5 Credit Life (Group and Individual)	Group		Accident and Health			11 Aggregate of All Other Lines of Business
			3 Life Insurance	4 Individual Annuities		6 Life Insurance	7 Annuities	8 Group	9 Credit (Group and Individual)	10 Other	
FIRST YEAR (other than single)											
1. Uncollected	2,421,705		2,065,236								356,469
2. Deferred and accrued	149,569,067		149,649,381					(6,244)			(74,070)
3. Deferred, accrued and uncollected:											
3.1 Direct	154,000,399		151,714,617								2,285,782
3.2 Reinsurance assumed											
3.3 Reinsurance ceded	2,009,627							6,244			2,003,383
3.4 Net (Line 1 + Line 2)	151,990,772		151,714,617					(6,244)			282,399
4. Advance											
5. Line 3.4 - Line 4	151,990,772		151,714,617					(6,244)			282,399
6. Collected during year:											
6.1 Direct	4,032,869,710		686,686,034	959,365,869		16,176,831	2,312,446,620	240,842			57,953,514
6.2 Reinsurance assumed	1,216,561,055						1,216,561,055				
6.3 Reinsurance ceded	59,837,158		57,872,420			877,468		83,823			1,003,447
6.4 Net	5,189,593,607		628,813,614	959,365,869		15,299,363	3,529,007,675	157,019			56,950,067
7. Line 5 + Line 6.4	5,341,584,379		780,528,231	959,365,869		15,299,363	3,529,007,675	150,775			57,232,466
8. Prior year (uncollected + deferred and accrued - advance)	150,862,870		150,663,536					(3,562)			202,896
9. First year premiums and considerations:											
9.1 Direct	4,033,756,143		687,737,115	959,365,869		16,176,831	2,312,446,620	240,842			57,788,866
9.2 Reinsurance assumed	1,216,561,055						1,216,561,055				
9.3 Reinsurance ceded	59,595,690		57,872,420			877,468		86,505			759,297
9.4 Net (Line 7 - Line 8)	5,190,721,508		629,864,695	959,365,869		15,299,363	3,529,007,675	154,337			57,029,569
SINGLE											
10. Single premiums and considerations:											
10.1 Direct	6,608,799,879		1,890,213,242	2,071,376,179		579,893,392	2,037,950,385				29,366,681
10.2 Reinsurance assumed	124,631						124,631				
10.3 Reinsurance ceded	614,956,138			614,956,138							
10.4 Net	5,993,968,372		1,890,213,242	1,456,420,041		579,893,392	2,038,075,016				29,366,681
RENEWAL											
11. Uncollected	160,713,767		152,509,315			334,397					7,870,055
12. Deferred and accrued	600,057,228		658,504,808	(53,462,270)		560,189	1,499,696	(2,951)			(7,042,244)
13. Deferred, accrued and uncollected:											
13.1 Direct	974,821,459		973,678,491			(6,727,478)					7,870,446
13.2 Reinsurance assumed	9,990,098		11,552,888			(3,062,486)	1,499,696				
13.3 Reinsurance ceded	224,040,564		174,217,256	53,462,270		(10,684,549)		2,951			7,042,636
13.4 Net (Line 11 + Line 12)	760,770,993		811,014,123	(53,462,270)		894,585	1,499,696	(2,951)			827,810
14. Advance	32,700,041		22,236,065								10,463,976
15. Line 13.4 - Line 14	728,070,952		788,778,058	(53,462,270)		894,585	1,499,696	(2,951)			(9,636,166)
16. Collected during year:											
16.1 Direct	12,541,491,023		4,739,702,696	272,590,859		106,796,306	6,760,845,606	130,761			661,424,795
16.2 Reinsurance assumed	114,756,953		50,167,623			132,626	64,456,704				
16.3 Reinsurance ceded	938,739,750		855,015,764	35,936,100		54,539,190		112,542			(6,863,846)
16.4 Net	11,717,508,226		3,934,854,555	236,654,759		52,389,742	6,825,302,310	18,219			668,288,641
17. Line 15 + Line 16.4	12,445,579,178		4,723,632,613	183,192,489		53,284,327	6,826,802,006	15,268			658,652,475
18. Prior year (uncollected + deferred and accrued - advance)	725,882,502		733,538,825			2,429,605	1,607,167				(11,693,095)
19. Renewal premiums and considerations:											
19.1 Direct	12,626,589,540		4,827,195,073	272,590,859		105,050,081	6,760,845,606	130,761			660,777,160
19.2 Reinsurance assumed	110,781,035		49,131,901			(2,700,099)	64,349,233				
19.3 Reinsurance ceded	1,017,673,899		886,233,186	89,398,370		51,495,261		115,493			(9,568,411)
19.4 Net (Line 17 - Line 18)	11,719,696,676		3,990,093,788	183,192,489		50,854,721	6,825,194,839	15,268			670,345,571
TOTAL											
20. Total premiums and annuity considerations:											
20.1 Direct	23,269,145,562		7,405,145,430	3,303,332,907		701,120,304	11,111,242,611	371,603			747,932,707
20.2 Reinsurance assumed	1,327,466,721		49,131,901			(2,700,099)	1,281,034,919				
20.3 Reinsurance ceded	1,692,225,727		944,105,606	704,354,508		52,372,729		201,998			(8,809,114)
20.4 Net (Lines 9.4 + 10.4 + 19.4)	22,904,386,556		6,510,171,725	2,598,978,399		646,047,476	12,392,277,530	169,605			756,741,821

EXHIBIT - 1 PART 2 - DIVIDENDS AND COUPONS APPLIED, REINSURANCE COMMISSIONS AND EXPENSE ALLOWANCES AND COMMISSIONS INCURRED (Direct Business Only)

	1 Total	2 Industrial Life	Ordinary		5 Credit Life (Group and Individual)	Group		Accident and Health			11 Aggregate of All Other Lines of Business
			3 Life Insurance	4 Individual Annuities		6 Life Insurance	7 Annuities	8 Group	9 Credit (Group and Individual)	10 Other	
DIVIDENDS AND COUPONS APPLIED (included in Part 1)											
21. To pay renewal premiums	124,564,383		124,285,686	1,488		25					277,184
22. All other	1,337,791,998		1,317,697,684	20,037,882		56,432					
REINSURANCE COMMISSIONS AND EXPENSE ALLOWANCES INCURRED											
23. First year (other than single):											
23.1 Reinsurance ceded	56,795,149		53,500,324	3,014,793				84,310			195,722
23.2 Reinsurance assumed											
23.3 Net ceded less assumed	56,795,149		53,500,324	3,014,793				84,310			195,722
24. Single:											
24.1 Reinsurance ceded	13,193,123			13,193,123							
24.2 Reinsurance assumed											
24.3 Net ceded less assumed	13,193,123			13,193,123							
25. Renewal:											
25.1 Reinsurance ceded	113,587,019		94,139,649	482,179		6,190,699		3,702			12,770,790
25.2 Reinsurance assumed	83,452,865		14,020,903			5,992,189	63,439,773				
25.3 Net ceded less assumed	30,134,154		80,118,746	482,179		198,510	(63,439,773)	3,702			12,770,790
26. Totals:											
26.1 Reinsurance ceded (Page 6, Line 6)	183,575,291		147,639,973	16,690,095		6,190,699		88,012			12,966,512
26.2 Reinsurance assumed (Page 6, Line 22)	83,452,865		14,020,903			5,992,189	63,439,773				
26.3 Net ceded less assumed	100,122,426		133,619,070	16,690,095		198,510	(63,439,773)	88,012			12,966,512
COMMISSIONS INCURRED (direct business only)											
27. First year (other than single)	389,993,066		291,446,283	45,540,374		12,758,952	12,478,061	142,287			27,627,109
28. Single	87,711,875		10,366,573	60,401,646		13,864,242	1,750,000				1,329,414
29. Renewal	500,439,742		313,606,140	28,382,763		31,655,964	70,389,841	1,413			56,403,621
30. Deposit-type contract funds											
31. Totals (to agree with Page 6, Line 21)	978,144,683		615,418,996	134,324,783		58,279,158	84,617,902	143,700			85,360,144

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 2 - GENERAL EXPENSES

	Insurance				5 Investment	6 Total
	1 Life	2 Accident and Health		4 All Other Lines of Business		
		2 Cost Containment	3 All Other			
1. Rent	114,982,000		9,182,001		1,450,621	125,614,622
2. Salaries and wages	1,094,120,993	2,633,218	84,738,889		13,803,509	1,195,296,609
3.11 Contributions for benefit plans for employees	147,493,282	2,690	11,775,531		1,860,786	161,132,289
3.12 Contributions for benefit plans for agents	126,235,451		10,080,656		1,592,596	137,908,703
3.21 Payments to employees under non-funded benefit plans						
3.22 Payments to agents under non-funded benefit plans						
3.31 Other employee welfare	10,098,908		806,458		127,409	11,032,775
3.32 Other agent welfare						
4.1 Legal fees and expenses	17,916,111	924,168	506,541		226,031	19,572,851
4.2 Medical examination fees	20,486,097		1,635,937		258,454	22,380,488
4.3 Inspection report fees						
4.4 Fees of public accountants and consulting actuaries	6,470,352		516,696		81,630	7,068,678
4.5 Expense of investigation and settlement of policy claims	4,535,217	3,677,020			57,217	8,269,454
5.1 Traveling expenses	22,868,009		1,826,147		288,504	24,982,660
5.2 Advertising	79,002,169		6,308,796		996,697	86,307,662
5.3 Postage, express, telegraph and telephone	33,797,012		2,698,894		426,386	36,922,292
5.4 Printing and stationery	23,787,587		1,899,581		300,106	25,987,274
5.5 Cost or depreciation of furniture and equipment	31,518,775		2,516,963		397,643	34,433,381
5.6 Rental of equipment	62,442,083		4,986,374		787,774	68,216,231
5.7 Cost or depreciation of EDP equipment and software	134,060,806		10,705,557		1,691,321	146,457,684
6.1 Books and periodicals	5,485,647		438,062		69,207	5,992,916
6.2 Bureau and association fees	4,841,677		386,637		61,083	5,289,397
6.3 Insurance, except on real estate	8,968,315		716,174		113,145	9,797,634
6.4 Miscellaneous losses	7,849,610		626,838		99,031	8,575,479
6.5 Collection and bank service charges	5,513,295		440,270		69,556	6,023,121
6.6 Sundry general expenses	6,836,389		545,927		86,248	7,468,564
6.7 Group service and administration fees	294,307,348		20,187,347		3,713,003	318,207,698
6.8 Reimbursements by uninsured plans						
7.1 Agency expense allowance	277,900,801		22,192,042		3,506,016	303,598,859
7.2 Agents' balances charged off (less \$ recovered)						
7.3 Agency conferences other than local meetings	28,016,598		2,237,293		353,459	30,607,350
9.1 Real estate expenses					27,722,999	27,722,999
9.2 Investment expenses not included elsewhere					305,351,559	305,351,559
9.3 Aggregate write-ins for expenses	(409,101,652)		451,453		(13,606,810)	(422,257,009)
10. General expenses incurred	2,160,432,881	7,237,096	198,407,062		351,885,181	2,717,962,220
11. General expenses unpaid December 31, prior year	993,866,518	2,313,710	64,850,750		13,311,199	1,074,342,178
12. General expenses unpaid December 31, current year	1,002,803,465	2,818,196	77,261,660		12,651,441	1,095,534,762
13. Amounts receivable relating to uninsured plans, prior year						
14. Amounts receivable relating to uninsured plans, current year						
15. General expenses paid during year (Lines 10+11-12-13+14)	2,151,495,934	6,732,610	185,996,152		352,544,939	2,696,769,635
DETAILS OF WRITE-INS						
09.301. Management Services Income	(414,754,992)				(13,678,133)	(428,433,125)
09.302. Miscellaneous	5,653,340		451,453		71,323	6,176,116
09.303.						
09.398. Summary of remaining write-ins for Line 9.3 from overflow page 09.399.	(409,101,652)		451,453		(13,606,810)	(422,257,009)

(a) Includes management fees of \$ 236,846,223 to affiliates and \$ to non-affiliates.

EXHIBIT 3 - TAXES, LICENSES AND FEES (EXCLUDING FEDERAL INCOME TAXES)

	Insurance			4 Investment	5 Total
	1 Life	2 Accident and Health	3 All Other Lines of Business		
1. Real estate taxes				21,156,847	21,156,847
2. State insurance department licenses and fees	2,748,517	282,689			3,031,206
3. State taxes on premiums	116,335,922	12,707,170			129,043,092
4. Other state taxes, including \$ for employee benefits	31,791,069	4,428,801			36,219,870
5. U.S. Social Security taxes	80,404,400	6,015,446		1,338,050	87,757,896
6. All other taxes	2,787,963	286,746			3,074,709
7. Taxes, licenses and fees incurred	234,067,871	23,720,851		22,494,897	280,283,620
8. Taxes, licenses and fees unpaid December 31, prior year	56,356,734	4,419,889		6,649,288	67,425,911
9. Taxes, licenses and fees unpaid December 31, current year	42,391,702	4,296,050		4,074,019	50,761,771
10. Taxes, licenses and fees paid during year (Lines 7 + 8 - 9)	248,032,903	23,844,690		25,070,166	296,947,760

EXHIBIT 4 - DIVIDENDS OR REFUNDS

	1 Life	2 Accident and Health
	1. Applied to pay renewal premiums	124,287,199
2. Applied to shorten the endowment or premium-paying period		
3. Applied to provide paid-up additions	1,317,754,116	
4. Applied to provide paid-up annuities	2,037,882	
5. Total Lines 1 through 4	1,444,079,197	277,184
6. Paid in cash	61,506,381	26,918,676
7. Left on deposit	28,882,545	835
8. Aggregate write-ins for dividend or refund options	26,559,421	
9. Total Lines 5 through 8	1,561,027,544	27,196,695
10. Amount due and unpaid	7,891,522	60,860
11. Provision for dividends or refunds payable in the following calendar year	1,662,228,772	25,096,735
12. Terminal dividends	17,442,678	
13. Provision for deferred dividend contracts		
14. Amount provisionally held for deferred dividend contracts not included in Line 13		
15. Total Lines 10 through 14	1,687,562,972	25,157,595
16. Total from prior year	1,579,556,923	21,834,442
17. Total dividends or refunds (Lines 9 + 15 - 16)	1,669,033,593	30,519,848
DETAILS OF WRITE-INS		
0801. Applied to reduce policy indebtedness	26,559,421	
0802.		
0803.		
0898. Summary of remaining write-ins for Line 8 from overflow page 0899.	26,559,421	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 5 - AGGREGATE RESERVE FOR LIFE CONTRACTS

1	2	3	4	5	6
Valuation Standard	Total	Industrial	Ordinary	Credit (Group and Individual)	Group
0100001. AE 3.00% NLP CRF	36,931,663		36,931,663		
0100002. AE 4.00% NLP CRF	990,677		990,677		
0100003. AM 2.50%	23,104				23,104
0100004. 41 CSO 2.50%	1,151,109				1,151,109
0100005. 41 CSO 2.50% NLP	121,222,554		121,222,554		
0100006. 41 CSO 4.00% NLP	804,422		804,422		
0100007. 41 CSO 2.50% NLP CRF	559,614,421		559,614,421		
0100008. 41 CSO 2.75% NLP CRF	209,156		209,156		
0100009. 41 CSO 4.00% NLP CRF	514,103		514,103		
0100010. 58 CET 2.50% NLP	232,723		232,723		
0100011. 58 CET 3.00% NLP	75,149		75,149		
0100012. 58 CET 3.50% NLP	119,841		119,841		
0100013. 58 CET 4.00% NLP	10,721,883		10,721,883		
0100014. 58 CET 4.50% NLP	562,856		562,856		
0100015. 58 CET 3.50%/20/2.50% NLP	142,279		142,279		
0100016. 58 CSO 2.75%	28,103				28,103
0100017. 58 CSO 3.00%	52,628				52,628
0100018. 58 CSO 3.50%	326,180				326,180
0100019. 58 CSO 4.00%	984,324				984,324
0100020. 58 CSO 3.50% CRVM	237,721,871		237,721,871		
0100021. 58 CSO 4.00% CRVM	1,598,195,359		1,598,195,359		
0100022. 58 CSO 4.50% CRVM	3,921,156,210		3,921,156,210		
0100023. 58 CSO 4.00% MOD CRVM	6,808,386		6,808,386		
0100024. 58 CSO 2.50% NLP	1,577,089,733		1,577,089,733		
0100025. 58 CSO 3.00% NLP	682,768,380		682,768,380		
0100026. 58 CSO 3.50% NLP	386,876,685		386,876,685		
0100027. 58 CSO 4.00% NLP	289,763,534		289,763,534		
0100028. 58 CSO 4.50% NLP	16,244,275		16,244,275		
0100029. 58 CSO 3.50%/20/2.50% NLP	1,110,461,514		1,110,461,514		
0100030. 58 CSO 2.75% NLP CRF	25,080,218		25,080,218		
0100031. 58 CSO 4.50% MOD CRVM	1,296,842,586		1,296,842,586		
0100032. 58 CSO 6.00% CRVM	8,717,780		8,717,780		
0100033. 70 INTCO GRP DIS 3.50%	7,035,910				7,035,910
0100034. 80 CET 4.00% NLP	1,274,740		1,274,740		
0100035. 80 CET 4.50% NLP	2,524,248		2,524,248		
0100036. 80 CET 5.00% NLP	826,634		826,634		
0100037. 80 CET 5.50% NLP	2,006,861		2,006,861		
0100038. 80 CET 6.00% NLP	37,548		37,548		
0100039. 80 CSO 3.00%	4,837,840,192		10,205,153		4,827,635,039
0100040. 80 CSO 4.00%	6,880,107,891				6,880,107,891
0100041. 80 CSO 4.50%	2,717,422				2,717,422
0100042. 80 CSO 5.50%	36,348				36,348
0100043. 80 CSO 6.00%	94,880				94,880
0100044. 80 CSO 4.00% CALIFORNIA	626,603,579				626,603,579
0100045. 80 CSO 4.50% CALIFORNIA	143,868,053				143,868,053
0100046. 80 CSO 3.50% CRVM	5,220		5,220		
0100047. 80 CSO 4.00% CRVM	3,936,844,885		3,936,844,885		
0100048. 80 CSO 4.50% CRVM	12,016,657,696		12,016,657,696		
0100049. 80 CSO 5.00% CRVM	5,836,226,965		5,836,226,965		
0100050. 80 CSO 5.50% CRVM	7,967,674,003		7,967,674,003		
0100051. 80 CSO 6.00% CRVM	681,111,050		681,111,050		
0100052. 80 CSO 4.25% CRVM CRF	72,020		72,020		
0100053. 80 CSO 4.50% CRVM CRF	21,616,544		21,616,544		
0100054. 80 CSO 5.00% CRVM CRF	504,943,966		504,943,966		
0100055. 80 CSO 5.50% CRVM CRF	24,280		24,280		
0100056. 80 CSO 5.50% MOD CRF	142,272,274		142,272,274		
0100057. 80 CSO 4.00% NLP	315,695		315,695		
0100058. 80 CSO 4.50% NLP	164,831,311		164,831,311		
0100059. 80 CSO 5.00% NLP	6,297,321		6,297,321		
0100060. 80 CSO 5.50% NLP	810,901		810,901		
0100061. 80 CSO 4.50% NLP CRF	79,869,587		79,869,587		
0100062. 80 CSO 5.00% NLP CRF	1,259,723		1,259,723		
0100063. 80 CSO 5.50% NLP CRF	2,891,272		2,891,272		
0100064. T CSO 58 4.50%	27,917				27,917
0100065. T CSO 58 6.00%	1,379,518				1,379,518
0100066. 2001 CSO 3.50%	6,290,253,914				6,290,253,914
0100067. 2001 CSO 4.00%	2,554,121,324		570,752		2,553,550,572
0100068. 2001 CSO 3.50% CRVM	8,784,618,406		8,784,618,406		
0100069. 2001 CSO 4.00% CRVM	10,451,950,770		10,451,950,770		
0100070. 2001 CSO 4.50% CRVM	135,449,864		135,449,864		
0100071. 2001 CSO 3.50% NLP	605,838,821		605,838,821		
0100072. 2001 CSO 4.00% NLP	225,696,077		225,696,077		
0199997. Totals (Gross)	84,810,469,336		63,474,592,845		21,335,876,491
0199998. Reinsurance ceded	7,422,497,514		3,301,470,822		4,121,026,692
0199999. Life Insurance: Totals (Net)	77,387,971,822		60,173,122,023		17,214,849,799
0200001. 37 SA 2.50%	192,676	XXX	192,676	XXX	
0200002. 37 SA 3.00%	530	XXX	530	XXX	
0200003. 37 SA 3.50%	33,018	XXX	33,018	XXX	
0200004. a-1949 2.75%	14,565	XXX	14,565	XXX	
0200005. a-1949 3.00%	90,307	XXX	90,307	XXX	
0200006. a-1949 3.50%	419,429	XXX	419,429	XXX	
0200007. 51 GA 50-01 3.00%	8,238	XXX		XXX	8,238
0200008. 51 GA 51-00 3.25%	2,696	XXX		XXX	2,696
0200009. 51 GAM 3.50%	4,375,942	XXX	4,375,942	XXX	
0200010. 51 IAM 4.00%	1,379	XXX		XXX	1,379
0200011. 71 GAM 3.50%	12,653,819	XXX	12,414,160	XXX	239,659
0200012. 71 GAM 4.00%	1,873,659	XXX	1,873,659	XXX	
0200013. 71 IAM 3.50%	32,753	XXX	27,582	XXX	5,171
0200014. 71 IAM 6.00%	161,520	XXX	120,660	XXX	40,860
0200015. 71 IAM 6.50%	147,015	XXX		XXX	147,015
0200016. 71 IAM 6.75%	98,489	XXX		XXX	98,489
0200017. 71 IAM 7.50%	2,429,090	XXX	1,359,512	XXX	1,069,578

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 5 - AGGREGATE RESERVE FOR LIFE CONTRACTS

1	2	3	4	5	6
Valuation Standard	Total	Industrial	Ordinary	Credit (Group and Individual)	Group
0200018. 71 IAM 9.50%	556,792	XXX		XXX	556,792
0200019. 71 IAM 11.25%	1,620,040	XXX	1,620,040	XXX	
0200020. 83a 6.25%	3,405,968	XXX	3,405,968	XXX	
0200021. 83a 6.50%	2,232,213	XXX	2,232,213	XXX	
0200022. 83a 6.75%	4,789,625	XXX	4,789,625	XXX	
0200023. 83a 7.00%	1,313,338	XXX	1,313,338	XXX	
0200024. 83a 7.25%	2,736,550	XXX	2,736,550	XXX	
0200025. 83a 7.75%	1,746,107	XXX	1,746,107	XXX	
0200026. 83a 8.00%	2,321,570	XXX	2,321,570	XXX	
0200027. 83a 8.25%	6,025,097	XXX	6,025,097	XXX	
0200028. 83a 8.75%	2,797,144	XXX	2,797,144	XXX	
0200029. 83a 9.25%	614,543	XXX	614,543	XXX	
0200030. 83a 11.00%	492,738	XXX	492,738	XXX	
0200031. 83a CIF/No-FIG	292,335	XXX	292,335	XXX	
0200032. 83a IY/FIG	38,871,292	XXX	38,871,292	XXX	
0200033. 83 GAM 2.50%	63,687	XXX		XXX	63,687
0200034. 83 GAM 2.63%	19,712	XXX		XXX	19,712
0200035. 83 GAM 3.25%	538,830	XXX		XXX	538,830
0200036. 83 GAM 3.50%	1,212,425	XXX		XXX	1,212,425
0200037. 83 GAM 4.75%	122,183	XXX		XXX	122,183
0200038. 83 GAM 5.00%	600,544	XXX		XXX	600,544
0200039. 83 GAM 5.25%	1,079,678	XXX		XXX	1,079,678
0200040. 83 GAM 5.50%	661,217	XXX		XXX	661,217
0200041. 83 GAM 5.75%	217,979	XXX		XXX	217,979
0200042. 83 GAM 6.00%	33,122,915	XXX		XXX	33,122,915
0200043. 83 GAM 6.25%	36,771,687	XXX		XXX	36,771,687
0200044. 83 GAM 6.50%	32,541,629	XXX		XXX	32,541,629
0200045. 83 GAM 6.75%	17,833,653	XXX		XXX	17,833,653
0200046. 83 GAM 7.00%	21,903,329	XXX		XXX	21,903,329
0200047. 83 GAM 7.25%	24,426,159	XXX		XXX	24,426,159
0200048. 83 GAM 7.50%	184,233,910	XXX		XXX	184,233,910
0200049. 83 GAM 7.75%	20,845,126	XXX		XXX	20,845,126
0200050. 83 GAM 8.00%	37,777,037	XXX		XXX	37,777,037
0200051. 83 GAM 8.25%	21,414,298	XXX		XXX	21,414,298
0200052. 83 GAM 8.50%	5,984,456	XXX		XXX	5,984,456
0200053. 83 GAM 8.75%	39,715,144	XXX		XXX	39,715,144
0200054. 83 GAM 9.00%	3,307	XXX		XXX	3,307
0200055. 83 GAM 9.25%	16,684,690	XXX		XXX	16,684,690
0200056. 83 GAM 9.50%	50,913,343	XXX		XXX	50,913,343
0200057. 83 GAM 9.75%	31,691,520	XXX		XXX	31,691,520
0200058. 83 GAM 10.50%	14,520,602	XXX		XXX	14,520,602
0200059. 83 GAM 10.75%	8,558,501	XXX		XXX	8,558,501
0200060. 83 GAM 11.00%	17,280,000	XXX		XXX	17,280,000
0200061. 83 GAM 11.25%	13,899,747	XXX		XXX	13,899,747
0200062. 83 IAM 4.25%	1,089,876	XXX	1,089,876	XXX	
0200063. 83 IAM 4.50%	284,941	XXX	284,941	XXX	
0200064. 83 IAM 4.75%	2,171,371	XXX	2,171,371	XXX	
0200065. 83 IAM 5.00%	18,214,890	XXX	7,096,641	XXX	11,118,249
0200066. 83 IAM 5.25%	429,053,830	XXX	429,053,830	XXX	
0200067. 83 IAM 5.50%	216,470,721	XXX	216,470,721	XXX	
0200068. 83 IAM 6.00%	103,421,806	XXX	103,421,806	XXX	
0200069. 83 IAM 6.25%	9,558,178	XXX		XXX	9,558,178
0200070. 83 IAM 6.50%	127,076,425	XXX	117,314,964	XXX	9,761,461
0200071. 83 IAM 6.75%	87,093,566	XXX	82,592,529	XXX	4,501,037
0200072. 83 IAM 7.00%	19,848,836	XXX	6,918,467	XXX	12,930,369
0200073. 83 IAM 7.25%	8,321,999	XXX		XXX	8,321,999
0200074. 83 IAM 7.75%	7,387,423	XXX		XXX	7,387,423
0200075. 83 IAM 8.00%	1,514,892	XXX		XXX	1,514,892
0200076. 83 IAM 8.25%	11,327,880	XXX		XXX	11,327,880
0200077. 83 IAM 8.75%	5,601,750	XXX		XXX	5,601,750
0200078. 83 IAM 9.25%	882,310	XXX		XXX	882,310
0200079. 83 IAM 9.50%	906,042	XXX		XXX	906,042
0200080. 1994 GAR 2.25%	7,449,898	XXX		XXX	7,449,898
0200081. 1994 GAR 2.75%	60,403,712	XXX		XXX	60,403,712
0200082. 1994 GAR 3.00%	220,227,322	XXX		XXX	220,227,322
0200083. 1994 GAR 3.25%	446,334,368	XXX		XXX	446,334,368
0200084. 1994 GAR 3.50%	1,162,432,599	XXX		XXX	1,162,432,599
0200085. 1994 GAR 3.75%	2,101,183,504	XXX		XXX	2,101,183,504
0200086. 1994 GAR 4.00%	4,649,070,384	XXX		XXX	4,649,070,384
0200087. 1994 GAR 4.25%	359,401,762	XXX		XXX	359,401,762
0200088. 1994 GAR 4.50%	368,263,639	XXX		XXX	368,263,639
0200089. 1994 GAR 4.75%	46,376,883	XXX		XXX	46,376,883
0200090. 1994 GAR 5.00%	312,767,724	XXX		XXX	312,767,724
0200091. 1994 GAR 5.25%	85,543,144	XXX		XXX	85,543,144
0200092. 1994 GAR 5.50%	324,392,731	XXX		XXX	324,392,731
0200093. 1994 GAR 5.75%	29,882,594	XXX		XXX	29,882,594
0200094. 1994 GAR 6.00%	170,123,752	XXX		XXX	170,123,752
0200095. 1994 GAR 6.25%	4,115,065	XXX		XXX	4,115,065
0200096. 1994 GAR 6.50%	6,682,603	XXX		XXX	6,682,603
0200097. 1994 GAR 6.75%	9,216,364	XXX		XXX	9,216,364
0200098. 1994 GAR 7.00%	30,389,922	XXX		XXX	30,389,922
0200099. 1994 MGDB Table IY / FIG	1,117,421,942	XXX	1,117,421,942	XXX	
0200100. 1994 MGDB Table IY / NO FIG	80,070,123	XXX	80,070,123	XXX	
0200101. a-2000 3.00%	91,613	XXX		XXX	91,613
0200102. a-2000 3.25%	807,378	XXX		XXX	807,378
0200103. a-2000 3.50%	11,795,076	XXX	11,545,831	XXX	249,245
0200104. a-2000 3.75%	299,083,144	XXX	296,653,982	XXX	2,429,162
0200105. a-2000 4.00%	692,867,044	XXX	687,153,693	XXX	5,713,351
0200106. a-2000 4.25%	396,998,783	XXX	393,257,246	XXX	3,741,537
0200107. a-2000 4.50%	517,308,823	XXX	513,968,975	XXX	3,339,848
0200108. a-2000 4.75%	464,257	XXX		XXX	464,257
0200109. a-2000 5.00%	248,136,064	XXX	239,043,344	XXX	9,092,719

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 5 - AGGREGATE RESERVE FOR LIFE CONTRACTS

1	2	3	4	5	6
Valuation Standard	Total	Industrial	Ordinary	Credit (Group and Individual)	Group
0200110. a-2000 5.25%	294,708,474	XXX	274,277,797	XXX	20,430,678
0200111. a-2000 5.50%	123,749,432	XXX	102,848,897	XXX	20,900,535
0200112. a-2000 5.75%	907,636	XXX		XXX	907,636
0200113. a-2000 6.00%	210,861,640	XXX	183,564,170	XXX	27,297,469
0200114. a-2000 6.25%	6,249,252	XXX	4,111,988	XXX	2,137,263
0200115. a-2000 6.50%	46,831,540	XXX	27,341,100	XXX	19,490,439
0200116. a-2000 6.75%	16,936,079	XXX	7,823,969	XXX	9,112,110
0200117. a-2000 7.00%	6,232,239	XXX	5,892,704	XXX	339,535
0200118. a-2012 3.25%	3,472,901	XXX	3,472,901	XXX	
0200119. a-2012 3.50%	295,893,685	XXX	295,893,685	XXX	
0200120. a-2012 3.75%	1,253,823,320	XXX	1,118,426,917	XXX	135,396,403
0200121. a-2012 4.00%	1,777,905,448	XXX	1,777,905,448	XXX	
0200122. a-2000 CIF / NO FIG	328,792	XXX	328,792	XXX	
0200123. a-2012 CIF / NO FIG	198,891	XXX	198,891	XXX	
0200124. a-2000 IY / FIG	2,371,257,690	XXX	2,371,257,690	XXX	
0200125. a-2012 IY / FIG	458,953,294	XXX	458,953,294	XXX	
0200126. a-2000 IY / No FIG	290,218,790	XXX	290,218,790	XXX	
0200127. a-2012 IY / No FIG	2,040,651,692	XXX	2,040,651,692	XXX	
0200128. RA 2.50%	247,923	XXX	247,923	XXX	
0200129. RA 2.75%	7,164,478	XXX	7,164,478	XXX	
0200130. RA 3.00%	46,365	XXX	46,365	XXX	
0200131. RA 3.50%	24,098,467	XXX	24,098,467	XXX	
0200132. RA 4.00%	69,244,761	XXX	69,244,761	XXX	
0200133. Rx FUNDS AT VARIOUS INT RATES '47-72 Var	1,888,568	XXX		XXX	1,888,568
0200134. Other - Fund Balance Reserves	14,996,918,361	XXX		XXX	14,996,918,361
0299997. Totals (Gross)	39,835,306,461	XXX	13,459,681,604	XXX	26,375,624,857
0299998. Reinsurance ceded	696,408,817	XXX	696,408,817	XXX	
0299999. Annuities: Totals (Net)	39,138,897,644	XXX	12,763,272,787	XXX	26,375,624,857
0300001. 37 SA 3.50%	150,409		150,409		
0300002. 71 IAM 3.50%	55,012		55,012		
0300003. 71 IAM 6.00%	368,988		368,988		
0300004. 71 IAM 7.50%	1,521,262		1,521,262		
0300005. 71 IAM 11.25%	225,112		225,112		
0300006. 83a 6.25%	651,898		651,898		
0300007. 83a 6.50%	708,297		708,297		
0300008. 83a 6.75%	863,788		863,788		
0300009. 83a 7.00%	486,147		486,147		
0300010. 83a 7.25%	408,042		408,042		
0300011. 83a 7.75%	550,145		550,145		
0300012. 83a 8.00%	226,748		226,748		
0300013. 83a 8.25%	1,196,719		1,196,719		
0300014. 83a 8.75%	785,794		785,794		
0300015. 83a 9.25%	209,171		209,171		
0300016. 83a 11.00%	283,614		283,614		
0300017. 83 GAM 9.50%	352				352
0300018. a-1949 3.50%	176,327		176,327		
0300019. a-2000 4.00%	12,775,338		12,775,338		
0300020. a-2000 4.25%	10,742,325		10,742,325		
0300021. a-2000 4.50%	11,362,904		11,362,904		
0300022. a-2000 5.00%	8,691,443		8,691,443		
0300023. a-2000 5.25%	3,253,040		3,253,040		
0300024. a-2000 5.50%	4,487,257		4,487,257		
0300025. a-2000 6.00%	4,261,020		4,261,020		
0300026. a-2000 6.25%	659,329		659,329		
0300027. a-2000 6.50%	1,142,653		1,142,653		
0300028. a-2000 6.75%	666,260		666,260		
0300029. a-2000 7.00%	746,772		746,772		
0300030. a-2012 3.75%	38,569,114		38,569,114		
0300031. a-2012 4.00%	32,744,086		32,744,086		
0300032. 51 GA 3.00%	338,675				338,675
0399997. Totals (Gross)	139,308,041		138,969,014		339,027
0399998. Reinsurance ceded	338,675				338,675
0399999. SCWLC: Totals (Net)	138,969,366		138,969,014		352
0400001. 59 ADB 3.00%	553,825		421,237		132,588
0400002. 59 ADB + 58 CSO 2.50%	70,751		70,751		
0400003. 59 ADB + 58 CSO 3.50%	418,051		418,051		
0400004. 59 ADB + 58 CSO 4.50%	421,160		421,160		
0400005. 59 ADB + 58 CSO 5.50%	95		95		
0400006. 59 ADB + 58 CSO 6.00%	20		20		
0400007. 59 ADB + 80 CSO 4.00%	2		2		
0400008. 59 ADB + 80 CSO 4.50%	1,365,869		1,365,869		
0400009. 59 ADB + 80 CSO 5.00%	6		6		
0400010. 59 ADB + 80 CSO 5.50%	67		67		
0400011. 59 ADB + 80 CSO 6.00%	57		57		
0400012. 110% INTERCO DI + AE 3.00%	128		128		
0400013. 110% INTERCO DI + 41 CSO 2.50%	3,004		3,004		
0400014. 59 ADB + 2001 CSO 4.50%	16,276		16,276		
0499997. Totals (Gross)	2,849,311		2,716,723		132,588
0499998. Reinsurance ceded					
0499999. Accidental Death Benefits: Totals (Net)	2,849,311		2,716,723		132,588
0500001. 35-39 INTERCO + 46-49 2.50%	37		37		
0500002. 35-39 INTERCO + 58 CSO 2.50%	44,291		44,291		
0500003. 35-39 INTERCO + 58 CSO 3.50%	2,778,969		2,778,969		
0500004. 35-39 INTERCO + 58 CSO 4.00%	254		254		
0500005. 35-39 INTERCO + 58 CSO 4.50%	8		8		
0500006. 35-39 INTERCO + 80 CSO 4.50%	37,520,502		37,520,502		
0500007. 120% 52 INTERCO DISA 2.50%	23,841		23,841		
0500008. 120% 52 INTERCO DISA 3.00%	38,845		38,845		
0500009. 120% 52 INTERCO DISA 3.50%	3,562,966		3,562,966		
0500010. 120% 52 INTERCO DISA 4.00%	138,769		138,769		
0500011. 120% 52 INTERCO DISA 4.50%	48,853		48,853		
0500012. 120% 52 INTERCO DISA 5.00%	178		178		

EXHIBIT 5 - AGGREGATE RESERVE FOR LIFE CONTRACTS

1	2	3	4	5	6
Valuation Standard	Total	Industrial	Ordinary	Credit (Group and Individual)	Group
0500013. 120% 52 INTERCO DISA 5.50%	2,634		2,634		
0500014. 120% 52 INTERCO DISA 6.00%	1,223		1,223		
0500015. 1958 CSO Benefit 5 2.50%	4,103				4,103
0500016. 1985 NHHS 80 CSO 4.50%	12,310,880		12,310,880		
0500017. 1985 CIDA 4.00%	272,618				272,618
0500018. 35-39 INTERCO + 2001 CSO 3.50%	546,612		546,612		
0500019. 35-39 INTERCO + 2001 CSO 4.00%	57,769,308		57,769,308		
0500020. 35-39 INTERCO DISA + 58 CSO 4.50%	19,854		19,854		
0500021. MOD 52 DISAB TABLE BEN 5 4.00%	1,656				1,656
0599997. Totals (Gross)	115,086,401		114,808,024		278,377
0599998. Reinsurance ceded					
0599999. Disability-Active Lives: Totals (Net)	115,086,401		114,808,024		278,377
0600001. 35-39 INTERCO DISA + 58 CSO 2.50%	111,061		111,061		
0600002. MOD 52 DISAB TABLE BEN 5 4.00%	536,556				536,556
0600003. 1985 CIDA 4.00%	1,298,637				1,298,637
0600004. 1985 NHHS 80 CSO 4.00%	2,037,244		2,037,244		
0600005. 70 INTERCO DISA	189,342				189,342
0600006. 52 DISAB TABLE BEN 5 3.50%	1,761,069		1,761,069		
0600007. 52 DISAB TABLE BEN 5 4.00%	123,218,444		123,218,444		
0600008. 52 DISAB TABLE BEN 5 4.50%	96,491,942		96,491,942		
0600009. 52 DISAB TABLE BEN 5 5.00%	9,524,766		9,524,766		
0600010. 52 DISAB TABLE BEN 5 5.50%	22,787,463		22,787,463		
0600011. 52 DISAB TABLE BEN 5 6.00%	538,337		538,337		
0699997. Totals (Gross)	258,494,861		256,470,326		2,024,535
0699998. Reinsurance ceded	189,342				189,342
0699999. Disability-Disabled Lives: Totals (Net)	258,305,519		256,470,326		1,835,193
0700001. AG43 Reserve	471,417,091		471,417,091		
0700002. Apportionable	9,148,135		9,148,135		
0700003. Asset Adequacy Reserve	285,000,000		285,000,000		
0700004. Cash Flow Testing	213,026,568		213,026,568		
0700005. GMDB	369,309				369,309
0700006. Minimum Death Benefit	530,480,244		530,480,244		
0700007. Policy Loans	287,996		287,996		
0700008. Premium Deficiency	460,228,160		460,228,160		
0700009. Term Conversions	18,223,256		18,223,256		
0700010. Term Cost Reserve	4,410		4,410		
0700011. VACARVM - direct	770,001				770,001
0799997. Totals (Gross)	1,988,955,170		1,987,815,860		1,139,310
0799998. Reinsurance ceded	20,733,949		20,733,949		
0799999. Miscellaneous Reserves: Totals (Net)	1,968,221,221		1,967,081,911		1,139,310
9999999. Totals (Net) - Page 3, Line 1	119,010,301,284		75,416,440,808		43,593,860,476

EXHIBIT 5 - INTERROGATORIES

- 1.1 Has the reporting entity ever issued both participating and non-participating contracts?..... Yes [X] No []
- 1.2 If not, state which kind is issued.
- 2.1 Does the reporting entity at present issue both participating and non-participating contracts?..... Yes [X] No []
- 2.2 If not, state which kind is issued.
- 3. Does the reporting entity at present issue or have in force contracts that contain non-guaranteed elements?..... Yes [X] No []
If so, attach a statement that contains the determination procedures, answers to the interrogatories and an actuarial opinion as described in the instructions.
- 4. Has the reporting entity any assessment or stipulated premium contracts in force? Yes [] No [X]
If so, state:
4.1 Amount of insurance? \$
4.2 Amount of reserve? \$
4.3 Basis of reserve:
4.4 Basis of regular assessments:
4.5 Basis of special assessments:
4.6 Assessments collected during the year \$
- 5. If the contract loan interest rate guaranteed in any one or more of its currently issued contracts is less than 5%, not in advance, state the contract loan rate guarantees on any such contracts.
- 6. Does the reporting entity hold reserves for any annuity contracts that are less than the reserves that would be held on a standard basis? Yes [] No [X]
6.1 If so, state the amount of reserve on such contracts on the basis actually held: \$
6.2 That would have been held (on an exact or approximate basis) using the actual ages of the annuitants; the interest rate(s) used in 6.1; and the same mortality basis used by the reporting entity for the valuation of comparable annuity benefits issued to standard lives. If the reporting entity has no comparable annuity benefits for standard lives to be valued, the mortality basis shall be the table most recently approved by the state of domicile for valuing individual annuity benefits: \$
Attach statement of methods employed in their valuation.
- 7. Does the reporting entity have any Synthetic GIC contracts or agreements in effect as of December 31 of the current year? Yes [X] No []
7.1 If yes, state the total dollar amount of assets covered by these contracts or agreements \$ 7,641,008,986
7.2 Specify the basis (fair value, amortized cost, etc.) for determining the amount:
Fair Value
7.3 State the amount of reserves established for this business: \$
7.4 Identify where the reserves are reported in the blank:
- 8. Does the reporting entity have any Contingent Deferred Annuity contracts or agreements in effect as of December 31 of the current year? Yes [] No [X]
8.1 If yes, state the total dollar amount of account value covered by these contracts or agreements: \$
8.2 State the amount of reserves established for this business: \$
8.3 Identify where the reserves are reported in the blank:
- 9. Does the reporting entity have any Guaranteed Lifetime Income Benefit contracts, agreements or riders in effect as of December 31 of the current year? Yes [X] No []
9.1 If yes, state the total dollar amount of any account value associated with these contracts, agreements or riders: \$ 3,386,844,892
9.2 State the amount of reserves established for this business: \$ 4,144,031,984
9.3 Identify where the reserves are reported in the blank:
Reserves are reported in the general and separate account.

EXHIBIT 5A - CHANGES IN BASES OF VALUATION DURING THE YEAR

1	Valuation Basis		4
Description of Valuation Class	2	3	Increase in Actuarial Reserve Due to Change
	Changed from	Changed To	
9999999 - Total (Column 4, only)			

NONE

EXHIBIT 6 - AGGREGATE RESERVES FOR ACCIDENT AND HEALTH CONTRACTS

	1 Total	2 Group Accident and Health	3 Credit Accident and Health (Group and Individual)	4 Collectively Renewable	Other Individual Contracts				
					5 Non-Cancelable	6 Guaranteed Renewable	7 Non-Renewable for Stated Reasons Only	8 Other Accident Only	9 All Other
ACTIVE LIFE RESERVE									
1. Unearned premium reserves	82,408,169				43,896,919	37,975,001	536,248		
2. Additional contract reserves (a)	2,448,259,787				526,724,897	1,921,504,125	30,765		
3. Additional actuarial reserves-Asset/Liability analysis	660,000,000					660,000,000			
4. Reserve for future contingent benefits									
5. Reserve for rate credits									
6. Aggregate write-ins for reserves									
7. Totals (Gross)	3,190,667,955				570,621,816	2,619,479,127	567,013		
8. Reinsurance ceded	2,070,103,132					2,070,103,132			
9. Totals (Net)	1,120,564,823				570,621,816	549,375,994	567,013		
CLAIM RESERVE									
10. Present value of amounts not yet due on claims	2,070,173,897	793,776			1,854,507,173	212,159,601	2,713,346		
11. Additional actuarial reserves-Asset/Liability analysis									
12. Reserve for future contingent benefits									
13. Aggregate write-ins for reserves									
14. Totals (Gross)	2,070,173,897	793,776			1,854,507,173	212,159,601	2,713,346		
15. Reinsurance ceded	223,165,289	793,776			26,177,890	196,193,623			
16. Totals (Net)	1,847,008,608				1,828,329,284	15,965,978	2,713,346		
17. TOTAL (Net)	2,967,573,431				2,398,951,099	565,341,972	3,280,359		
18. TABULAR FUND INTEREST	116,041,050				99,291,482	16,613,795	135,773		
DETAILS OF WRITE-INS									
0601.									
0602.									
0603.									
0698. Summary of remaining write-ins for Line 6 from overflow page									
0699. TOTALS (Lines 0601 thru 0603 plus 0698) (Line 6 above)									
1301.									
1302.									
1303.									
1398. Summary of remaining write-ins for Line 13 from overflow page									
1399. TOTALS (Lines 1301 thru 1303 plus 1398) (Line 13 above)									

(a) Attach statement as to valuation standard used in calculating this reserve, specifying reserve bases, interest rates and methods.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 7 - DEPOSIT TYPE CONTRACTS

	1	2	3	4	5	6
	Total	Guaranteed Interest Contracts	Annuities Certain	Supplemental Contracts	Dividend Accumulations or Refunds	Premium and Other Deposit Funds
1. Balance at the beginning of the year before reinsurance	10,222,594,418	8,046,922,879	184,361,385	649,458,520	521,545,178	820,306,456
2. Deposits received during the year	4,667,992,584	1,043,514,538	548,770,273	153,030,118	28,924,814	2,893,752,841
3. Investment earnings credited to the account	298,419,046	176,111,998	69,878,503	18,418,675	15,034,581	18,975,289
4. Other net change in reserves	1,323,514,173	(5,538,008)	1,329,188,916	24	(109,124)	(27,635)
5. Fees and other charges assessed	53,576					53,576
6. Surrender charges						
7. Net surrender or withdrawal payments	3,168,684,293	1,355,116,603	294,609,999	181,724,706	56,333,087	1,280,899,898
8. Other net transfers to or (from) Separate Accounts	1,502,985,577					1,502,985,577
9. Balance at the end of current year before reinsurance (Lines 1+2+3+4-5-6-7-8)	11,840,796,775	7,905,894,804	1,837,589,078	639,182,631	509,062,362	949,067,900
10. Reinsurance balance at the beginning of the year	2,791,670,426					2,791,670,426
11. Net change in reinsurance assumed	(262,559,914)					(262,559,914)
12. Net change in reinsurance ceded						
13. Reinsurance balance at the end of the year (Lines 10+11-12)	2,529,110,512					2,529,110,512
14. Net balance at the end of current year after reinsurance (Lines 9 + 13)	14,369,907,287	7,905,894,804	1,837,589,078	639,182,631	509,062,362	3,478,178,412

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
EXHIBIT 8 - CLAIMS FOR LIFE AND ACCIDENT AND HEALTH CONTRACTS

PART 1 - Liability End of Current Year

	1 Total	2 Industrial Life	Ordinary			6 Credit Life (Group and Individual)	Group		Accident and Health		
			3 Life Insurance	4 Individual Annuities	5 Supplementary Contracts		7 Life Insurance	8 Annuities	9 Group	10 Credit (Group and Individual)	11 Other
1. Due and unpaid:											
1.1 Direct	17,775,389			573,824				1,115,852			16,085,713
1.2 Reinsurance assumed	1,435,664							1,435,664			
1.3 Reinsurance ceded	4,342,611										4,342,611
1.4 Net	14,868,442			573,824				2,551,516			11,743,102
2. In course of settlement:											
2.1 Resisted											
2.11 Direct	1,022,000		1,022,000								
2.12 Reinsurance assumed											
2.13 Reinsurance ceded											
2.14 Net	1,022,000		(b) 1,022,000	(b)		(b)	(b)				
2.2 Other											
2.21 Direct	467,062,035		365,360,239	634,425			89,592,202				11,475,169
2.22 Reinsurance assumed	30,773,678		26,525,858				4,247,820				
2.23 Reinsurance ceded	107,271,578		97,971,436				9,282,021				18,121
2.24 Net	390,564,135		(b) 293,914,661	(b) 634,425		(b)	(b) 84,558,001		(b)	(b)	(b) 11,457,048
3. Incurred but unreported:											
3.1 Direct	48,015,691		30,613,292				11,726,700		50,000		5,625,699
3.2 Reinsurance assumed	1,962,040		1,962,040								
3.3 Reinsurance ceded	20,084,406		12,526,100				6,169,600		50,000		1,338,706
3.4 Net	29,893,325		(b) 20,049,232	(b)		(b)	(b) 5,557,100		(b)	(b)	(b) 4,286,993
4. TOTALS											
4.1 Direct	533,875,115		396,995,531	1,208,249			101,318,902	1,115,852	50,000		33,186,581
4.2 Reinsurance assumed	34,171,382		28,487,898				4,247,820	1,435,664			
4.3 Reinsurance ceded	131,698,595		110,497,536				15,451,621		50,000		5,699,438
4.4 Net	436,347,902	(a)	(a) 314,985,893	1,208,249			(a) 90,115,101	2,551,516			27,487,143

(a) Including matured endowments (but not guaranteed annual pure endowments) unpaid amounting to \$ _____ in Column 2, \$ 1,186,058 in Column 3 and \$ _____ in Column 7.

(b) Include only portion of disability and accident and health claim liabilities applicable to assumed "accrued" benefits. Reserves (including reinsurance assumed and net of reinsurance ceded) for unaccrued benefits for Ordinary Life Insurance \$ 6,609,501
 Individual Annuities \$ _____, Credit Life (Group and Individual) \$ _____, and Group Life \$ _____, are included in Page 3, Line 1, (See Exhibit 5, Section on Disability Disabled Lives); and for Group Accident and Health \$ _____
 Credit (Group and Individual) Accident and Health \$ _____, and Other Accident and Health \$ _____ are included in Page 3, Line 2 (See Exhibit 6, Claim Reserve).

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
EXHIBIT 8 - CLAIMS FOR LIFE AND ACCIDENT AND HEALTH CONTRACTS

PART 2 - Incurred During the Year

	1 Total	2 Industrial Life (a)	Ordinary			6 Credit Life (Group and Individual)	Group		Accident and Health		
			3 Life Insurance (b)	4 Individual Annuities	5 Supplementary Contracts		7 Life Insurance (c)	8 Annuities	9 Group	10 Credit (Group and Individual)	11 Other
1. Settlements During the Year:											
1.1 Direct	4,766,402,373		2,145,973,598	619,005,183	14,836,103		294,665,834	1,301,850,884	332,193		389,738,578
1.2 Reinsurance assumed	208,799,209		115,639,200	194,546			14,470,542	78,494,921			
1.3 Reinsurance ceded	692,595,526		578,658,494				63,527,370		286,960		50,122,702
1.4 Net	(d) 4,282,606,056		1,682,954,304	619,199,729	14,836,103		245,609,006	1,380,345,805	45,233		339,615,876
2. Liability December 31, current year from Part 1:											
2.1 Direct	533,875,115		396,995,531	1,208,249			101,318,902	1,115,852	50,000		33,186,581
2.2 Reinsurance assumed	34,171,382		28,487,898				4,247,820	1,435,664			
2.3 Reinsurance ceded	131,698,595		110,497,536				15,451,621		50,000		5,699,438
2.4 Net	436,347,902		314,985,893	1,208,249			90,115,101	2,551,516			27,487,143
3. Amounts recoverable from reinsurers December 31, current year	78,307,613		72,630,992	75,447			5,446,477		14,000		140,697
4. Liability December 31, prior year:											
4.1 Direct	572,892,344		459,090,700	805,126			82,465,934	1,022,821	70,000		29,437,763
4.2 Reinsurance assumed	37,178,940		22,959,826				12,673,761	1,545,353			
4.3 Reinsurance ceded	134,449,263		114,723,625				15,121,874		70,000		4,533,764
4.4 Net	475,622,021		367,326,901	805,126			80,017,821	2,568,174			24,903,999
5. Amounts recoverable from reinsurers December 31, prior year	36,203,805		33,912,315				2,230,046				61,444
6. Incurred Benefits											
6.1 Direct	4,727,385,144		2,083,878,429	619,408,306	14,836,103		313,518,802	1,301,943,915	312,193		393,487,396
6.2 Reinsurance assumed	205,791,651		121,167,272	194,546			6,044,601	78,385,232			
6.3 Reinsurance ceded	731,948,666		613,151,082	75,447			67,073,548		280,960		51,367,629
6.4 Net	4,201,228,129		1,591,894,619	619,527,405	14,836,103		252,489,855	1,380,329,147	31,233		342,119,767

- (a) Including matured endowments (but not guaranteed annual pure endowments) amounting to \$ in Line 1.1, \$ in Line 1.4.
 \$ in Line 6.1, and \$ in Line 6.4.
- (b) Including matured endowments (but not guaranteed annual pure endowments) amounting to \$14,867,826 in Line 1.1, \$14,867,826 in Line 1.4.
 \$15,155,252 in Line 6.1, and \$15,155,252 in Line 6.4.
- (c) Including matured endowments (but not guaranteed annual pure endowments) amounting to \$ in Line 1.1, \$ in Line 1.4.
 \$ in Line 6.1, and \$ in Line 6.4.
- (d) Includes \$38,215,245 premiums waived under total and permanent disability benefits.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT OF NON-ADMITTED ASSETS

	1	2	3
	Current Year Total Nonadmitted Assets	Prior Year Total Nonadmitted Assets	Change in Total Nonadmitted Assets (Col. 2 - Col. 1)
1. Bonds (Schedule D)			
2. Stocks (Schedule D):			
2.1 Preferred stocks			
2.2 Common stocks			
3. Mortgage loans on real estate (Schedule B):			
3.1 First liens			
3.2 Other than first liens.....			
4. Real estate (Schedule A):			
4.1 Properties occupied by the company			
4.2 Properties held for the production of income.....			
4.3 Properties held for sale			
5. Cash (Schedule E - Part 1), cash equivalents (Schedule E - Part 2) and short-term investments (Schedule DA)			
6. Contract loans	462,724	858,338	395,614
7. Derivatives (Schedule DB)			
8. Other invested assets (Schedule BA)	43,866,156	44,931,819	1,065,663
9. Receivables for securities			
10. Securities lending reinvested collateral assets (Schedule DL)			
11. Aggregate write-ins for invested assets			
12. Subtotals, cash and invested assets (Lines 1 to 11)	44,328,880	45,790,157	1,461,277
13. Title plants (for Title insurers only)			
14. Investment income due and accrued	6,582,488	6,019,916	(562,572)
15. Premiums and considerations:			
15.1 Uncollected premiums and agents' balances in the course of collection	2,411,627	2,457,645	46,018
15.2 Deferred premiums, agents' balances and installments booked but deferred and not yet due ..			
15.3 Accrued retrospective premiums and contracts subject to redetermination			
16. Reinsurance:			
16.1 Amounts recoverable from reinsurers	6,211,923	5,540,359	(671,564)
16.2 Funds held by or deposited with reinsured companies			
16.3 Other amounts receivable under reinsurance contracts			
17. Amounts receivable relating to uninsured plans			
18.1 Current federal and foreign income tax recoverable and interest thereon			
18.2 Net deferred tax asset			
19. Guaranty funds receivable or on deposit			
20. Electronic data processing equipment and software	191,559,787	195,983,291	4,423,504
21. Furniture and equipment, including health care delivery assets	55,965,309	44,729,805	(11,235,504)
22. Net adjustment in assets and liabilities due to foreign exchange rates			
23. Receivables from parent, subsidiaries and affiliates			
24. Health care and other amounts receivable			
25. Aggregate write-ins for other than invested assets	1,915,737,153	1,205,966,697	(709,770,456)
26. Total assets excluding Separate Accounts, Segregated Accounts and Protected Cell Accounts (Lines 12 to 25)	2,222,797,167	1,506,487,870	(716,309,297)
27. From Separate Accounts, Segregated Accounts and Protected Cell Accounts			
28. Total (Lines 26 and 27)	2,222,797,167	1,506,487,870	(716,309,297)
DETAILS OF WRITE-INS			
1101.			
1102.			
1103.			
1198. Summary of remaining write-ins for Line 11 from overflow page			
1199. Totals (Lines 1101 thru 1103 plus 1198)(Line 11 above)			
2501. Pension plan asset	727,193,552	598,719,300	(128,474,252)
2502. Disallowed interest maintenance reserve	562,688,196	110,848,566	(451,839,630)
2503. Cash advances to agents	245,007,193	272,620,016	27,612,823
2598. Summary of remaining write-ins for Line 25 from overflow page	380,848,212	223,778,815	(157,069,397)
2599. Totals (Lines 2501 thru 2503 plus 2598)(Line 25 above)	1,915,737,153	1,205,966,697	(709,770,456)

NOTES TO FINANCIAL STATEMENTS

TABLE OF CONTENTS

- Note 1 – Summary of Significant Accounting Policies and Going Concern
- Note 2 – Accounting Changes and Corrections of Errors
- Note 3 – Business Combinations and Goodwill
- Note 4 – Discontinued Operations
- Note 5 – Investments
- Note 6 – Joint Ventures, Partnerships and Limited Liability Companies
- Note 7 – Investment Income
- Note 8 – Derivative Instruments
- Note 9 – Income Taxes
- Note 10 – Information Concerning Parent, Subsidiaries and Affiliates
- Note 11 – Debt
- Note 12 – Retirement Plans, Deferred Compensation, Postemployment Benefits and Compensated Absences and Other Postretirement Benefit Plans
- Note 13 – Capital and Surplus, Shareholders' Dividend Restrictions and Quasi-Reorganizations
- Note 14 – Liabilities, Contingencies and Assessments
- Note 15 – Leases
- Note 16 – Information About Financial Instruments With Off-Balance Sheet Risk and Financial Instruments With Concentrations of Credit Risk
- Note 17 – Sale, Transfer and Servicing of Financial Assets and Extinguishments of Liabilities
- Note 18 – Gain or Loss to the Reporting Entity from Uninsured Plans and the Uninsured Portion of Partially Insured Plans
- Note 19 – Direct Premium Written/Produced By Managing General Agents/Third Party Administrators
- Note 20 – Fair Value Measurements
- Note 21 – Other Items
- Note 22 – Events Subsequent
- Note 23 – Reinsurance
- Note 24 – Retrospectively Rated Contracts and Contracts Subject to Redetermination
- Note 25 – Change in Incurred Losses and Loss Adjustment Expenses
- Note 26 – Intercompany Pooling Arrangements
- Note 27 – Structured Settlements
- Note 28 – Health Care Receivables
- Note 29 – Participating Policies
- Note 30 – Premium Deficiency Reserves
- Note 31 – Reserves for Life Contracts and Annuity Contracts
- Note 32 – Analysis of Annuity Actuarial Reserves and Deposit Type Liabilities by Withdrawal Characteristics
- Note 33 – Premium and Annuity Considerations Deferred and Uncollected
- Note 34 – Separate Accounts
- Note 35 – Loss/Claim Adjustment Expenses

NOTES TO FINANCIAL STATEMENTS

Note 1 – Summary of Significant Accounting Policies and Going Concern

a. Accounting practices:

The accompanying financial statements of Massachusetts Mutual Life Insurance Company (the Company) have been prepared in conformity with the Statutory Accounting Practices (SAP) of the National Association of Insurance Commissioners (NAIC) and the accounting practices prescribed or permitted by the Commonwealth of Massachusetts Division of Insurance (the Division).

A reconciliation of the Company's net income and capital and surplus between NAIC SAP and practices prescribed and permitted by the Commonwealth of Massachusetts is shown below:

	SSAP #	F/S Page	F/S Line #	2018	2017
NET INCOME					
(1) State basis (Page 4, Line 35, Columns 1 & 2)	XXX	XXX	XXX	\$ (821,347,140)	\$ 52,076,396
(2) State prescribed practices that increase/(decrease) NAIC	N/A	N/A	N/A	-	-
(3) State permitted practices that increase/(decrease) NAIC	N/A	N/A	N/A	-	-
(4) NAIC SAP (1-2-3=4)	XXX	XXX	XXX	<u>\$ (821,347,140)</u>	<u>\$ 52,076,396</u>
SURPLUS					
(5) State basis (Page 3, Line 38, Columns 1 & 2)	XXX	XXX	XXX	\$ 15,609,786,669	\$ 15,705,216,653
(6) State prescribed practices that increase/(decrease) NAIC	N/A	N/A	N/A	-	-
(7) State permitted practices that increase/(decrease) NAIC	N/A	N/A	N/A	-	-
(8) NAIC SAP (5-6-7=8)	XXX	XXX	XXX	<u>\$ 15,609,786,669</u>	<u>\$ 15,705,216,653</u>

b. Use of estimates in the preparation of the financial statements:

The preparation of financial statements requires management to make estimates and assumptions that impact the reported amounts of assets and liabilities, the disclosure of assets and liabilities as of the date of the statutory financial statements and the reported amounts of revenues and expenses during the reporting periods. The most significant estimates include those used in determining the carrying values of investments including the amount of mortgage loan investment valuation reserves, other-than-temporary impairment(s) (OTTI), the value of the investment in MassMutual Holding LLC (MMHLLC), the liabilities for policyholders' reserves, the determination of admissible deferred tax assets (DTAs), and the liability for taxes and litigation contingencies. Future events including, but not limited to, changes in the level of mortality, morbidity, interest rates, persistency, asset valuations and defaults could cause results to differ from the estimates used in the statutory financial statements. Although some variability is inherent in these estimates, management believes the amounts presented are appropriate.

c. Accounting policy:

Life insurance premium revenue is generally recognized annually on the anniversary date of the policy. However, premium for flexible products, primarily universal life and variable universal life contracts, is recognized as revenue when received. Annuity premium is recognized as revenue when received. Disability income and long-term care premium is recognized as revenue when due. Expenses incurred in connection with acquiring new insurance business, including certain acquisition costs, such as commissions, are charged to current operations as incurred. Policy loans are carried at the outstanding loan balance less amounts unsecured by the cash surrender value of the policy. Unsecured amounts can occur when subsequent charges are incurred on the underlying policy without the receipt of additional premium. Where applicable, the values of invested assets have been adjusted for impairments considered OTTI.

Investment real estate, which the Company has the intent to hold for the production of income, and real estate occupied by the Company, are carried at depreciated cost, less encumbrances. Depreciation is calculated using the straight-line method over the estimated useful life of the real estate holding, not to exceed 40 years. Depreciation expense is included in net investment income. Real estate held for sale is initially carried at the lower of depreciated cost or fair value less estimated selling costs and is no longer depreciated. Adjustments to carrying value, including for further declines in fair value, are recorded in a valuation reserve, which is included in realized capital losses.

In addition, the Company uses the following accounting policies:

- (1) Short-term investments, which are carried at amortized cost, consist of all highly liquid investments purchased with maturities of greater than three months and less than or equal to 12 months. Investments in short-term bonds and money market mutual funds are classified as short-term investments.
- (2) Bonds are generally valued at amortized cost using the constant yield interest method with the exception of NAIC Category 6 bonds, which are in or near default, and certain residential mortgage-backed securities (RMBS) and commercial mortgage-backed securities (CMBS), which are rated by outside modelers, which are carried at the lower of amortized cost or fair value. NAIC ratings are applied to bonds and other securities. Categories 1 and 2 are considered investment grade, while Categories 3 through 6 are considered below investment grade. Bond transactions are recorded on a trade date basis, except for private placement bonds, which are recorded on the funding date.

The fair value of bonds is based on quoted market prices when available. If quoted market prices are not available, values provided by other third-party organizations are used. If values provided by other third-party organizations are unavailable, fair value is estimated using internal models by discounting expected future cash flows using observable current market rates applicable to yield, credit quality and maturity of the investment or using quoted market values for comparable investments. Internal inputs used in the determination of fair value include estimated prepayment speeds, default rates, discount rates and collateral values, among others. Structure characteristics and cash flow priority are also considered. Fair values resulting from internal models are those expected to be received in an orderly transaction between willing market participants.

Refer to Note 1c. "Accounting policy" (14) for information on the Company's policy for determining OTTI.

- (3) Unaffiliated common stocks are carried at fair value, which is based on quoted market prices when available. If quoted market prices are not available, values provided by third-party organizations are used. If values from third parties are unavailable, fair values are determined by management using estimates based upon internal models. The Company's internal models include estimates based upon comparable company analysis, review of financial statements, broker quotes and last traded price. Fair values resulting from internal models are those expected to be received in an orderly transaction between willing market participants.

Refer to Note 1c. "Accounting policy" (14) for information on the Company's policy for determining OTTI.

The Company held unaffiliated common stocks, for which the transfer of ownership was restricted by contractual requirements, with carrying values of \$164,205,785 as of December 31, 2018 and \$275,369,731 as of December 31, 2017.

- (4) Preferred stocks in good standing, those that are rated Categories 1 through 3 by the Securities Valuation Office (SVO) of the

NOTES TO FINANCIAL STATEMENTS

NAIC, are generally valued at amortized cost. Preferred stocks not in good standing, those that are rated Categories 4 through 6 by the SVO of the NAIC, are valued at the lower of amortized cost or fair value. Fair values are based on quoted market prices, when available. If quoted market prices are not available, values provided by third-party organizations are used. If values provided by third-party organizations are unavailable, fair value is estimated using internal models. These models use inputs not directly observable or correlated with observable market data. Typical inputs integrated into the Company's internal discounted expected earnings models include, but are not limited to, earnings before interest, taxes, depreciation and amortization estimates. Fair values resulting from internal models are those expected to be received in an orderly transaction between willing market participants.

Refer to Note 1c. "Accounting policy" (14) for information on the Company's policy for determining OTTI.

The Company held preferred stocks for which the transfer of ownership was restricted by contractual requirements with carrying values of \$680,779,390 as of December 31, 2018 and \$687,948,730 as of December 31, 2017.

- (5) Mortgage loans are valued at the unpaid principal balance of the loan, net of unamortized premium, discount, mortgage origination fees and valuation allowances. Interest income earned on impaired loans is accrued on the outstanding principal balance of the loan based on the loan's contractual coupon rate. Interest is not accrued for (a) impaired loans more than 60 days past due, (b) delinquent loans more than 90 days past due, or (c) loans that have interest that is not expected to be collected. The Company continually monitors mortgage loans where the accrual of interest has been discontinued, and will resume the accrual of interest on a mortgage loan when the facts and circumstances of the borrower and property indicate that the payments will continue to be received according to the terms of the original or modified mortgage loan agreement.

Mortgage loans comprised commercial mortgage loans and residential mortgage loans. The Company holds commercial mortgage loans for which it is the primary lender or a participant or co-lender in a mortgage loan agreement and mezzanine loans that are subordinate to senior secured first liens. The Company's loan agreements with the senior lender contain negotiated provisions that are designed to maximize the Company's influence with the objective of mitigating the Company's risks as the secondary lender for mezzanine loans. Commercial mortgage loans have varying risk characteristics including, among others, the borrower's liquidity, the underlying percentage of completion of a project, the returns generated by the collateral, the refinancing risk associated with maturity of the loan and deteriorating collateral value. Residential mortgage loans are primarily seasoned pools of homogeneous residential mortgage loans substantially backed by Federal Housing Administration (FHA) and Veterans Administration (VA) guarantees.

Refer to Note 1c. "Accounting policy" (14) for information on the Company's policy for determining OTTI.

- (6) For loan-backed and structured securities, such as asset-backed securities (ABS), mortgage-backed securities (MBS), including RMBS and CMBS, and structured securities, including collateralized debt obligations (CDOs), amortization or accretion is revalued quarterly based on the current estimated cash flows, using either the prospective or retrospective adjustment methodologies.

Certain fixed income securities, with the highest ratings from a rating agency follow the retrospective method of accounting. Under the retrospective method, the recalculated effective yield equates the present value of the actual and anticipated cash flows, including new prepayment assumptions, to the original cost of the investment. Prepayment assumptions are based on borrower constraints and economic incentives such as the original term, age and coupon of the loan as affected by the interest rate environment. The current carrying value is then increased or decreased to the amount that would have resulted had the revised yield been applied since inception, and investment income is correspondingly decreased or increased.

All other fixed income securities, such as floating rate bonds and interest only securities, including those that have been impaired, follow the prospective method of accounting. Under the prospective method, the recalculated future effective yield equates the carrying value of the investment to the present value of the anticipated future cash flows.

Refer to Note 1c. "Accounting policy" (14) for information on the Company's policy for determining OTTI.

- (7) Common stocks of unconsolidated subsidiaries, primarily C.M. Life Insurance Company (C.M. Life), MML Bay State Life Insurance Company (MML Bay State), and MassMutual Holding LLC (MMHLLC), are accounted for using the statutory equity method. The Company accounts for the value of MMHLLC at its underlying U.S. GAAP equity value, adjusted by a portion of its noncontrolling interests (NCI) after consideration of MMHLLC's fair value and the Company's capital levels. The Division has affirmed the statutory recognition of the Company's application of the NCI guidelines in MMHLLC's statutory carrying value. However, the Company has limited this recognition to \$2,748,787,850 as of December 31, 2018 and \$2,703,014,763 as of December 31, 2017. Operating results, less dividends declared, for MMHLLC is reflected as net unrealized capital gains (losses) in the Statutory Statements of Changes in Surplus. Dividends declared from MMHLLC are recorded in net investment income when declared and are limited to MMHLLC's U.S. GAAP retained earnings. The cost basis of common stocks - subsidiaries and affiliates is adjusted for impairments deemed to be other than temporary.

MassMutual International LLC (MMI) was classified as common stocks – subsidiaries and affiliates as of December 31, 2017 and as partnerships and LLCs as of December 31, 2018. MMI was accounted for using the statutory equity method in both years. Prior to December 31, 2018, the Company accounts for the value of MMI at its underlying U.S. GAAP equity value adjusted to remove certain nonadmitted and intangible assets. At December 31, 2018, the value of MMI was recorded at its underlying U.S. GAAP equity value. The change in the value of MMI is reflected as net unrealized capital gains (losses) in the Statutory Statements of Changes in Surplus.

Refer to Note 1c. "Accounting policy" (14) for information on the Company's policy for determining OTTI.

The Company held affiliated common stocks for which the transfer of ownership was restricted by contractual requirements with carrying values of \$5,444,260 as of December 31, 2018 and \$9,397,855 as of December 31, 2017.

- (8) Partnerships and limited liability companies (LLCs), except for partnerships that generate and realize low income housing tax credits (LIHTCs), are accounted for using the equity method with the change in the equity value of the underlying investment recorded in surplus. Distributions received are recognized as net investment income to the extent the distribution does not exceed previously recorded accumulated undistributed earnings.

MMI was classified as common stocks – subsidiaries and affiliates as of December 31, 2017 and as partnerships and LLCs as of December 31, 2018. MMI was accounted for using the statutory equity method in both years. Prior to December 31, 2018, the Company accounts for the value of MMI at its underlying U.S. GAAP equity value adjusted to remove certain nonadmitted and intangible assets. At December 31, 2018, the value of MMI was recorded at its underlying U.S. GAAP equity value. The change in the value of MMI is reflected as net unrealized capital gains (losses) in the Statutory Statements of Changes in Surplus

NOTES TO FINANCIAL STATEMENTS

Investments in partnerships that generate LIHTCs are carried at amortized cost unless considered impaired. Under the amortized cost method, the excess of the carrying value of the investment over its estimated residual value is amortized into income during the period in which tax benefits are recognized.

The equity method is suspended if the carrying value of the investment is reduced to zero due to losses from the investment. Once the equity method is suspended, losses are not recorded until the investment returns to profitability and the equity method is resumed. However, if the Company has guaranteed obligations of the investment or is otherwise committed to provide further financial support for the investment, losses will continue to be reported up to the amount of those guaranteed obligations or commitments.

Refer to Note 1c. "Accounting policy" (14) for information on the Company's policy for determining OTTI.

- (9) Interest rate swaps and credit default swaps associated with replicated assets are valued at amortized cost and all other derivative types are carried at fair value, which is based primarily upon quotations obtained from counterparties and independent sources. These quotations are compared to internally derived prices and a price challenge is lodged with the counterparties and independent sources when a significant difference cannot be explained by appropriate adjustments to the internal model. When quoted market values are not reliable or available, the value is based on an internal valuation process using market observable inputs that other market participants would use. Changes in the fair value of these instruments other than interest rate swaps and credit default swaps associated with replicated assets are recorded as unrealized capital gains (losses) in surplus. Gains and losses realized on settlement, termination, closing or assignment of contracts are recorded as realized capital gains (losses). Amounts receivable and payable are accrued as net investment income.
- (10) The Company does not utilize anticipated investment income as a factor in the premium deficiency calculation in accordance with Statement of Statutory Accounting Principles (SSAP) No. 54 "Individual and Group Accident and Health Contracts."
- (11) Unpaid claims and claim expense reserves are related to disability and long-term care claims. Unpaid disability claim liabilities are projected based on the average of the last three disability payments. Long-term care unpaid claim liabilities are projected using policy specific daily benefit amounts and aggregate utilization factors. Claim expense reserves are based on an analysis of the unit expenses related to the processing and examination of new and ongoing claims. Interest accrued on reserves is calculated by applying NAIC prescribed interest rates to the average reserves by year incurred.
- (12) The Company has not modified its capitalization policy from the prior period.
- (13) The Company did not issue any business that would give rise to pharmaceutical rebates or risk sharing receivables.
- (14) The book values of investments are written down when declines in values are considered to be other than temporary.

Bonds - general

The Company employs a systematic methodology to evaluate OTTI by conducting a quarterly analysis of bonds. OTTI is evaluated in a manner consistent with market participant assumptions. The Company considers the following factors, where applicable depending on the type of securities, in the evaluation of whether a decline in value is other than temporary: (a) the likelihood that the Company will be able to collect all amounts due according to the contractual terms of the debt security; (b) the present value of the expected future cash flows of the security; (c) the characteristics, quality and value of the underlying collateral or issuer securing the position; (d) collateral structure; (e) the length of time and extent to which the fair value has been below amortized cost; (f) the financial condition and near-term prospects of the issuer; (g) adverse conditions related to the security or industry; (h) the rating of the security; (i) the Company's ability and intent to hold the investment for a period of time sufficient to allow for an anticipated recovery to amortized cost; and (j) other qualitative and quantitative factors in determining the existence of OTTI including, but not limited to, unrealized loss trend analysis and significant short-term changes in value.

In addition, if the Company has the intent to sell, or the inability, or lack of intent to retain the investment for a period sufficient to recover the amortized cost basis, an OTTI is recognized as a realized loss equal to the entire difference between the investment's amortized cost basis and its fair value at the balance sheet date.

When a bond is other-than-temporarily impaired, a new cost basis is established.

Bonds - corporate

For corporate securities, if it is determined that a decline in the fair value of a bond is other than temporary, OTTI is recognized as a realized loss equal to the difference between the investment's amortized cost basis and, generally, its fair value at the balance sheet date.

Bonds - loan-backed and structured securities

For loan-backed and structured securities, if the present value of cash flows expected to be collected is less than the amortized cost basis of the security, an OTTI is recognized as a realized loss equal to the difference between the investment's amortized cost basis and the present value of cash flows expected to be collected. The expected cash flows are discounted at the security's effective interest rate. Internal inputs used in determining the amount of the OTTI on structured securities include collateral performance, prepayment speeds, default rates, and loss severity based on borrower and loan characteristics, as well as deal structure including subordination, over-collateralization and cash flow priority.

ABS and MBS are evaluated for OTTI using scenarios and assumptions based on the specifics of each security including collateral type, loan type, vintage and subordination level in the structure. Cash flow estimates are based on these assumptions and inputs obtained from external industry sources along with internal analysis and actual experience. Where applicable, assumptions include prepayment speeds, default rates and loss severity, weighted average maturity and changes in the underlying collateral values.

The Company has a review process for determining if CDOs are at risk for OTTI. For the senior, mezzanine and junior debt tranches, cash flows are modeled using multiple scenarios based on the current ratings and values of the underlying corporate credit risks and incorporating prepayment and default assumptions that vary according to collateral attributes of each CDO. The prepayment and default assumptions are varied within each model based upon rating (base case), historical expectations (default), rating change improvement (optimistic), rating change downgrade (pessimistic) and fair value (market). The default rates produced by these multiple scenarios are assigned an expectation weight according to current market and economic conditions and fed into a final scenario. OTTI is recorded if this final scenario results in the loss of any principal or interest payments due.

NOTES TO FINANCIAL STATEMENTS

For the most subordinated junior CDO tranches, the present value of the projected cash flows in the final scenario is measured using an effective yield. If the current book value of the security is greater than the present value measured using an effective yield, an OTTI is taken in an amount sufficient to produce its effective yield. Certain CDOs cannot be modeled using all of the scenarios because of limitations on the data needed for all scenarios. The cash flows for these CDOs, including foreign currency denominated CDOs, are projected using a customized scenario management believes is reasonable for the applicable collateral pool.

For loan-backed and structured securities, any difference between the new amortized cost basis and any increased present value of future cash flows expected to be collected is accreted into net investment income over the expected remaining life of the bond.

Common and preferred stock

The cost basis of common and preferred stocks is adjusted for impairments deemed to be other than temporary. The Company considers the following factors in the evaluation of whether a decline in value is other than temporary: (a) the financial condition and near-term prospects of the issuer; (b) the Company's ability and intent to retain the investment for a period sufficient to allow for a near-term recovery in value; and (c) the period and degree to which the value has been below cost. The Company conducts a quarterly analysis of issuers whose common or preferred stock is not-in-good standing or valued below 80% of cost. The Company also considers other qualitative and quantitative factors in determining the existence of OTTI including, but not limited to, unrealized loss trend analysis and significant short-term changes in value.

Mortgage loans

The Company performs internal reviews at least annually to determine if individual mortgage loans are performing or nonperforming. The fair values of performing mortgage loans are estimated by discounting expected future cash flows using current interest rates for similar loans with similar credit risk. For nonperforming loans, the fair value is the estimated collateral value of the underlying real estate. If foreclosure is probable, the Company will obtain an external appraisal.

Mortgage loans are considered to be impaired when, based upon current available information and events, it is probable that the Company will be unable to collect all amounts of principal and interest due according to the contractual terms of the mortgage loan agreement. A valuation allowance is recorded on a loan-by-loan basis in net unrealized capital losses for the excess of the carrying value of the mortgage loan over the fair value of its underlying collateral. Such information or events could include property performance, capital budgets, future lease roll, a property inspection as well as payment trends. Collectability and estimated decreases in collateral values are also assessed on a loan-by-loan basis considering all events and conditions relevant to the loan. This evaluation is inherently subjective as it requires estimates that are susceptible to significant revisions as more information becomes available, as changes occur in the market or as negotiations with the borrowing entity evolve. If there is a change in the fair value of the underlying collateral or the estimated loss on the loan, the valuation allowance is adjusted accordingly. An OTTI occurs upon the realization of a credit loss, typically through foreclosure or after a decision is made to accept a discounted payoff, and is recognized in realized capital losses. The previously recorded valuation allowance is reversed from unrealized capital losses. When an OTTI is recorded, a new cost basis is established reflecting estimated value of the collateral.

Real estate

For real estate held for the production of income, depreciated cost is adjusted for impairments whenever events or changes in circumstances indicate the carrying amount of the asset may not be recoverable, with the impairment being included in realized capital losses. An impairment is recorded when the property's estimated future net operating cash flows over ten years, undiscounted and without interest charges, is less than book value.

Adjustments to the carrying value of real estate held for sale are recorded in a valuation reserve as realized capital losses when the fair value less estimated selling costs is less than the carrying value.

Partnerships and LLCs

When it is probable that the Company will be unable to recover the outstanding carrying value of an investment based on undiscounted cash flows, or there is evidence indicating an inability of the investee to sustain earnings to justify the carrying value of the investment, OTTI is recognized in realized capital losses reflecting the excess of the carrying value over the estimated fair value of the investment. The estimated fair values of limited partnership interests are generally based on the Company's share of the net asset value (NAV) as provided in the financial statements of the investees. In certain circumstances, management may adjust the NAV by a premium or discount when it has sufficient evidence to support applying such adjustments.

For determining impairments in partnerships that generate LIHTCs, the Company uses the present value of all future benefits, the majority of which are tax credits, discounted at a risk-free rate for future benefits of ten or more years and compares the results to its current book value. Impairments are recognized in realized capital losses reflecting the excess of the carrying value over the estimated fair value of the investment.

- d. **Going concern:**
There is not substantial doubt regarding the Company's ability to continue as a going concern.

NOTES TO FINANCIAL STATEMENTS

Note 2 – Accounting Changes and Corrections of Errors

- a. For the year ended December 31, 2018, corrections of prior years' errors were recorded in surplus, net of tax:

	Increase (Decrease) to:		
	Prior Years' Net Income	Current Year Surplus	Asset or Liability Balances
Partnerships and limited liability companies	\$ -	\$ (58,641,016)	\$ (58,641,016)
Deferred income taxes	-	(36,021,141)	(36,021,141)
Other than invested assets	(12,901,373)	(12,901,373)	12,901,373
Other liabilities	(2,343,609)	(2,343,609)	2,343,609
Policyholders' reserves	(27,892,090)	(27,892,090)	27,892,090
Policyholders' dividends	(3,397,000)	(3,397,000)	3,397,000
Total	<u>\$ (46,534,072)</u>	<u>\$ (141,196,229)</u>	

Of the \$141,196,229 decrease to surplus for prior years' errors, \$46,534,072 was recorded as prior period adjustments with an additional amount of \$58,641,016 that was recorded as a change in nonadmitted assets, net of taxes and \$36,021,141 that was recorded as a change in net deferred income taxes in the Summary of Operations.

- For the year ended December 31, 2017, corrections of prior years' errors were recorded in surplus, net of tax:

	Increase (Decrease) to:		
	Prior Years' Net Income	Current Year Surplus	Asset or Liability Balances
Common stocks - subsidiaries and affiliates	\$ -	\$ (25,144,082)	\$ (25,144,082)
Partnerships and limited liability companies	-	(26,477,867)	(26,477,867)
Deferred income taxes	21,600,000	21,600,000	21,600,000
Other than invested assets	4,115,825	4,115,825	4,115,825
Policyholders' reserves	23,575,262	23,575,262	(23,575,262)
General expenses due or accrued	(3,835,198)	(3,835,198)	3,835,198
Other Liabilities	246,229	246,229	(246,229)
Total	<u>\$ 45,702,118</u>	<u>\$ (5,919,831)</u>	

Of the \$5,919,831 decrease to surplus for prior years' errors, \$45,702,118 was recorded as an increase to prior period adjustments, partially offset by \$50,144,082 that was recorded as a change in net unrealized capital gains (losses) and \$1,477,867 that was recorded as a change in nonadmitted assets, net of tax in the Statutory Statements of Changes in Surplus.

- b. Adoption of new accounting standards:

In June 2016, the NAIC adopted substantive revisions to Statements of Statutory Accounting Principles (SSAP) No. 51R, Life Contracts, to incorporate references to the Valuation Manual and to facilitate the implementation of principles-based reserving (PBR), which were effective on January 1, 2017. The adoption of PBR only applies to new life insurance policies issued after January 1, 2017, however the Company plans to adopt these revisions to SSAP No. 51R using the 3-year phased in approach by no later than January 1, 2020. The Company currently uses formulas and assumptions to determine reserves as prescribed by state laws and regulations. Under PBR, the Company will be required to hold the higher of (a) the reserve using prescribed factors and (b) the PBR reserve which considers a wide range of future economic conditions, computed using justified company experience factors, such as mortality, policyholder behavior and expenses. The modifications are not expected to have a material effect on the Company's total life reserves and surplus in the financial statements.

In January 2017, the NAIC adopted modifications to SSAP No. 86, Derivatives, which were effective January 1, 2018. The modifications maintain gross reporting of derivative variation margin as a separate unit of account, rather than characterizing as a legal settlement with mark-to-market changes recorded in surplus. Regarding exchange traded futures, these modifications further clarified that variation margin and mark-to-market changes should be recorded in the same manner as all other derivative instruments. Starting in 2018, the Company records mark-to-market gains and losses from exchange traded futures as unrealized gains or losses instead of realized gains or losses and grosses up the derivatives and collateral line items on its financial statements. These modifications did not impact total surplus and did not have a material impact on the Company's financial statements.

In April 2017, the NAIC adopted modifications to SSAP No. 69, Statement of Cash Flows, to adopt Accounting Standards Update (ASU) No. 2016-15, Classification of Certain Cash Receipts and Cash Payments, in its entirety, effective January 1, 2018 on a retrospective basis. These modifications address the classification and disclosure of certain items within the statements of cash flows. Upon adoption, proceeds from the settlement of the Company's corporate owned life insurance policies were classified as investing activities instead of operating activities. Additionally, the Company elected to apply the nature of distribution approach to subsidiary, controlled or affiliated equity method investments and the cumulative earnings approach to all other equity method investments in determining whether distributions received from equity method investees are returns on investment, recorded as operating activities, or returns of investment, recorded as investing activities. Although the adoption of these modifications required reclassification between investing and operating cash flows, they did not have a material impact on the Company's financial statements.

In November 2017, the NAIC adopted modifications to SSAP No. 100R, Fair Value, allowing NAV per share as a practical expedient to fair value, either when specifically named in a SSAP or when the investee qualifies as an investment company, which were effective January 1, 2018. These modifications adopted, with modification, applicable U.S. GAAP, allowing greater consistency with Financial Accounting Standards Board's allowable use of NAV. These modifications also included the U.S. GAAP requirement to report instruments measured at NAV as a practical expedient outside of the fair value hierarchy disclosure as a separate item, along with a description of the terms and conditions of redemption features, amounts of unfunded commitments, restrictions to sell, and various other items. As a result of these modifications, the NAIC issued SSAP No. 100R, Fair Value. The adoption of these modifications did not have an impact on the Company's financial statements.

In November 2017, the NAIC adopted modifications to SSAP No. 97, Investments in Subsidiary, Controlled and Affiliated Entities, for Subsidiary and Controlled Affiliate (SCA) loss tracking and filing deadlines, which were effective December 31, 2018. The modifications add a loss-tracking disclosure for inclusion in year-end financial statements, which will track the losses beginning when the SCA's equity value falls below zero and will remain as long as the SCA's equity value remains in a deficit position and through the first year in which

NOTES TO FINANCIAL STATEMENTS

the equity position becomes positive. The modifications further clarify the SCA filing deadlines that have extended the Sub-1 filings from a 30-day to a 90-day timeframe and the Sub 2 from a June 30th deadline to an August 31st deadline. For SCA filings that regularly occur after the August 31st deadline, the filing is due one month after the audit date. The Company has adopted these modifications and currently has very few SCAs in a loss position. The adoption of this modification did not materially impact the Company's financial statements.

In February 2018, the NAIC adopted modifications to SSAP No. 9, Subsequent Events, and SSAP No. 101, Income Taxes, to temporarily allow any revised tax calculations resulting from the Tax Cuts and Job Act (the Act) that occurred after statutory filing, to be classified as changes in estimate, thus avoiding classification as Type 1 subsequent events. Under SSAP No. 9, reporting entities are generally required to amend their filed statutory financial statements in their domestic state to ensure that the statutory financial statements and the audited financial statements are consistent if a Type 1 event is identified after the statutory financial statements are filed, but before the audited financial statements are issued. The adoption of this modification did not materially impact the Company's financial statements.

In February 2018, the NAIC adopted modifications to SSAP No. 92, Pensions, and SSAP No. 102, Postretirement Benefits Other Than Pension, to eliminate the reconciliation of level 3 pension plan assets from the Company's financial statement disclosures, which were effective March 24, 2018. These modifications further clarify that detailed information regarding the reconciliation of the level 3 fair value categories of these assets is no longer required for statutory reporting purposes as the plan assets are not reported in the balance sheet of insurance entities. The Company has adopted these modifications.

In November 2018, the NAIC adopted modifications to SSAP No. 15, Debt and Holding Company Obligations, and SSAP No. 25, Affiliates and Other Related Parties, to clarify that (1) forgiveness of a reporting entity obligation should be recognized as contributed capital; (2) forgiveness of an amount owed to the reporting entity should be recognized as a dividend; and (3) waivers or modifications to 'amounts charged' in transactions involving services provided between related parties should be reassessed to determine that the fair and reasonable standards requirement continues to be met. These modifications also clarify that if the transaction is with a parent or other stockholder and the charge for services has been fully waived the guidance in SSAP No. 72, Surplus and Quasi-Reorganization, for recognition as contributed capital (forgiveness of a reporting entity obligation) or as a dividend (forgiveness of amount owed to the reporting entity) should be applied. The Company has adopted these modifications.

Note 3 – Business Combinations and Goodwill

- a. The Company did not have any business combinations accounted for using the statutory purchase method.
- b. There were no business combinations taking the form of a statutory merger.
- c. The Company did not enter into any assumption reinsurance agreements.
- d. The Company did not recognize an impairment loss on the transactions described above.

Note 4 – Discontinued Operations

The Company did not have any discontinued operations.

Note 5 – Investments

- a. Mortgage loans, including mezzanine real estate loans:
 - (1) The maximum and minimum lending rates for new mortgage loans during 2018 were:
Commercial mortgage loans 9.8% and 3.3% and residential mortgage loans 4.6% and 3.6%. The Company did not originate any new mezzanine real estate loans.

The maximum and minimum lending rates for new mortgage loans during 2017 were:
Commercial mortgage loans 6.0% and 3.2%, residential mortgage loans 4.4% and 4.1% and mezzanine real estate loans, both the maximum and the minimum, 9.6%.
 - (2) The maximum percentage of any one commercial mortgage loan to the estimated value of secured collateral at the time the loan was originated, exclusive of mezzanine, insured, guaranteed or purchase money mortgages, was 81.6% as of December 31, 2018 and 2017. The maximum percentage of any one mezzanine loan to the estimated value of secured collateral at the time the loan was originated was 61.3% as of December 31, 2018 and 2017.
 - (3) As of December 31, 2018 and 2017, the Company did not have any taxes, assessments and amounts advanced and not included in the mortgage loan total.

NOTES TO FINANCIAL STATEMENTS

(4) Age analysis of mortgage loans and identification of mortgage loans in which the insurer is a participant or co-lender in a mortgage loan agreement:

	Farm	Residential		Commercial		Mezzanine	Total
		Insured	All Other	Insured	All Other		
a. 2018							
1. Recorded investment (all)							
(a) Current	\$	- \$ 1,263,118,614	\$ 3,570,038	- \$	22,287,149,476	\$ 69,969,401	\$ 23,623,807,529
(b) 30-59 days past due	-	-	-	-	-	-	-
(c) 60-89 days past due	-	-	-	-	-	-	-
(d) 90-179 days past due	-	-	-	-	-	-	-
(e) 180+ days past due	-	-	-	-	-	-	-
2. Accruing interest 90-179 days past due							
(a) Recorded investment	\$	- \$	- \$	- \$	- \$	- \$	- \$
(b) Interest accrued	-	-	-	-	-	-	-
3. Accruing interest 180+ days past due							
(a) Recorded investment	\$	- \$	- \$	- \$	- \$	- \$	- \$
(b) Interest accrued	-	-	-	-	-	-	-
4. Interest reduced							
(a) Recorded investment	\$	- \$	- \$	- \$	- \$	- \$	- \$
(b) Number of loans	-	-	-	-	-	-	-
(c) Percent reduced	-	-	-	-	-	-	-
5. Participant or co-lender in a mortgage loan agreement							
(a) Recorded investment	\$	- \$	- \$	- \$	664,807,549	- \$	664,807,549
b. 2017							
1. Recorded investment (all)							
(a) Current	\$	- \$ 1,799,245,795	\$ 4,084,783	- \$	20,728,890,909	\$ 47,625,132	\$ 22,579,846,619
(b) 30-59 days past due	-	-	-	-	-	-	-
(c) 60-89 days past due	-	-	-	-	-	-	-
(d) 90-179 days past due	-	-	-	-	-	-	-
(e) 180+ days past due	-	-	-	-	-	-	-
2. Accruing interest 90-179 days past due							
(a) Recorded investment	\$	- \$	- \$	- \$	- \$	- \$	- \$
(b) Interest accrued	-	-	-	-	-	-	-
3. Accruing interest 180+ days past due							
(a) Recorded investment	\$	- \$	- \$	- \$	- \$	- \$	- \$
(b) Interest accrued	-	-	-	-	-	-	-
4. Interest reduced							
(a) Recorded investment	\$	- \$	- \$	- \$	- \$	- \$	- \$
(b) Number of loans	-	-	-	-	-	-	-
(c) Percent reduced	-	-	-	-	-	-	-
5. Participant or co-lender in a mortgage loan agreement							
(a) Recorded investment	\$	- \$	- \$	- \$	671,043,949	- \$	671,043,949

NOTES TO FINANCIAL STATEMENTS

- (5) Investment in impaired loans with or without allowance for credit losses and impaired loans subject to a participant or co-lender mortgage loan agreement for which the reporting entity is restricted from unilaterally foreclosing on the mortgage loan:

	Residential			Commercial		Mezzanine	Total
	Farm	Insured	All Other	Insured	All Other		
a. 2018							
1. With allowance for credit losses	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2. No allowance for credit losses	-	-	-	-	-	-	-
3. Total (1+2)	-	-	-	-	-	-	-
4. Subject to a participant or co-lender mortgage loan agreement for which the reporting entity is restricted from unilaterally foreclosing on the mortgage loan	-	-	-	-	-	-	-
b. 2017							
1. With allowance for credit losses	-	-	-	-	-	-	-
2. No allowance for credit losses	-	-	-	-	-	-	-
3. Total (1+2)	-	-	-	-	-	-	-
4. Subject to a participant or co-lender mortgage loan agreement for which the reporting entity is restricted from unilaterally foreclosing on the mortgage loan	-	-	-	-	-	-	-

- (6) Investment in impaired loans - average recorded investment, interest income recognized, recorded investment on nonaccrual status and amount of interest income recognized using a cash-basis method of accounting:

	Residential			Commercial		Mezzanine	Total
	Farm	Insured	All Other	Insured	All Other		
a. 2018							
1. Average recorded investment	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2. Interest income recognized	-	-	-	-	-	-	-
3. Recorded investment on nonaccrual status	-	-	-	-	-	-	-
4. Amount of interest income recognized using a cash-basis method of accounting	-	-	-	-	-	-	-
b. 2017							
1. Average recorded investment	-	-	-	-	-	-	-
2. Interest income recognized	-	-	-	-	-	-	-
3. Recorded investment on nonaccrual status	-	-	-	-	-	-	-
4. Amount of interest income recognized using a cash-basis method of accounting	-	-	-	-	-	-	-

	Years Ended December 31,	
	2018	2017
(7) Allowance for credit losses:		
a. Balance at beginning of period	\$ -	\$ (2,250,000)
b. Additions charged to operations	-	-
c. Direct write-downs charged against the allowances	-	-
d. Recoveries of amounts previously charged off	-	2,250,000
e. Balance at end of period	<u>\$ -</u>	<u>\$ -</u>

- (8) As of December 31, 2018, the Company did not have any mortgage loans derecognized as a result of foreclosure.

- (9) Interest income earned on impaired loans is accrued on the outstanding principal balance of the loan based on the loan's contractual coupon rate. Interest is not accrued for (a) impaired loans more than 60 days past due, (b) delinquent loans more than 90 days past due, or (c) loans that have interest that is not expected to be collected. The Company continually monitors mortgage loans where the accrual of interest has been discontinued, and will resume the accrual of interest on a mortgage loan when the facts and circumstances of the borrower and property indicate that the payments will continue to be received according to the terms of the original or modified mortgage loan agreement.

b. Debt restructuring:

As of December 31, 2018 and 2017, the Company did not have any restructured debt.

c. Reverse mortgages:

As of December 31, 2018 and 2017, the Company did not have any reverse mortgages.

d. Loan-backed securities:

NOTES TO FINANCIAL STATEMENTS

- (1) Prepayment assumptions for loan-backed and structured securities are based on various assumptions and inputs obtained from external industry sources along with internal analysis and actual experience.
- (2) The following contains loan-backed and structured securities that recognized other-than-temporary impairments (OTTI) classified on the following bases for recognizing OTTI:

	(1) Amortized Cost Basis Before OTTI	(2) OTTI Recognized in Loss		(3) Fair Value 1-(2a+2b)
		(2a) Interest	(2b) Non-interest	
OTTI recognized in the first quarter				
a. Intent to sell	\$ -	\$ -	\$ -	\$ -
b. Inability or lack of intent to retain the investment in the security for a period of time sufficient to recover the amortized cost basis	<u>645,690</u>	<u>-</u>	<u>157,509</u>	<u>488,181</u>
c. Total first quarter	<u>\$ 645,690</u>	<u>\$ -</u>	<u>\$ 157,509</u>	<u>\$ 488,181</u>
OTTI recognized in the second quarter				
d. Intent to sell	\$ -	\$ -	\$ -	\$ -
e. Inability or lack of intent to retain the investment in the security for a period of time sufficient to recover the amortized cost basis	<u>634,235</u>	<u>-</u>	<u>355,014</u>	<u>279,221</u>
f. Total second quarter	<u>\$ 634,235</u>	<u>\$ -</u>	<u>\$ 355,014</u>	<u>\$ 279,221</u>
OTTI recognized in the third quarter				
g. Intent to sell	\$ -	\$ -	\$ -	\$ -
h. Inability or lack of intent to retain the investment in the security for a period of time sufficient to recover the amortized cost basis	<u>4,320,826</u>	<u>-</u>	<u>657,645</u>	<u>3,663,181</u>
i. Total third quarter	<u>\$ 4,320,826</u>	<u>\$ -</u>	<u>\$ 657,645</u>	<u>\$ 3,663,181</u>
OTTI recognized in the fourth quarter				
j. Intent to sell	\$ -	\$ -	\$ -	\$ -
k. Inability or lack of intent to retain the investment in the security for a period of time sufficient to recover the amortized cost basis	<u>4,550,173</u>	<u>-</u>	<u>734,614</u>	<u>3,815,559</u>
l. Total fourth quarter	<u>\$ 4,550,173</u>	<u>\$ -</u>	<u>\$ 734,614</u>	<u>\$ 3,815,559</u>
m. Annual aggregate total		<u>\$ -</u>	<u>\$ 1,904,782</u>	

All impairments were taken due to the present value of cash flows expected to be collected being less than the amortized cost basis.

- (3) The following is a CUSIP detail list of impaired structured securities where the present value of cash flows expected to be collected is less than the amortized cost basis.

NOTES TO FINANCIAL STATEMENTS

CUSIP	Amortized Cost before OTTI	Projected Cash Flow	Recognized OTTI	Amortized Cost after OTTI	Fair Value at Time of OTTI	Date of Financial Instrument Where Reported
07386HEN7	\$ 43,711	\$ 2,334	\$ (41,377)	\$ 2,334	\$ 1,609	March 31, 2018
79548KXQ6	520,764	476,293	(44,471)	476,293	365,994	March 31, 2018
45660NZY4	81,215	9,554	(71,661)	9,554	80,891	March 31, 2018
59020UW43	337,732	271,686	(66,046)	271,686	354,508	June 30, 2018
76110H4M8	6,848	1,969	(4,879)	1,969	1,713	June 30, 2018
863579DV7	289,655	5,567	(284,089)	5,567	30,531	June 30, 2018
05535DCF9	3,454,425	3,141,048	(313,377)	3,141,048	3,134,409	September 30, 2018
07384YPP5	321,829	148,884	(172,945)	148,884	132,968	September 30, 2018
07386HCP4	2,164	(6,255)	(8,418)	(6,255)	320	September 30, 2018
76110H4M8	1,715	(3,719)	(5,434)	(3,719)	641	September 30, 2018
79548KXQ6	423,086	383,222	(39,864)	383,222	292,015	September 30, 2018
939336Z48	117,607	-	(117,607)	-	126,945	September 30, 2018
65106FAG7	205,885	17,668	(188,218)	17,668	21,031	December 31, 2018
18974BAA7	306,428	295,291	(11,137)	295,291	294,986	December 31, 2018
22541QQR6	28,742	(9,704)	(38,446)	(9,704)	1	December 31, 2018
32051GCF0	32,493	20,481	(12,012)	20,481	20,063	December 31, 2018
17309FAE8	203,743	202,326	(1,417)	202,326	201,875	December 31, 2018
57643QAE5	3,657,695	3,177,611	(480,084)	3,177,611	3,365,017	December 31, 2018
92990GAE3	115,186	111,886	(3,300)	111,886	111,541	December 31, 2018
Totals	\$ 10,150,923	\$ 8,246,142	\$ (1,904,782)	\$ 8,246,142	\$ 8,537,057	

(4) As of December 31, 2018, the gross unrealized losses and fair values for investments in structured and loan-backed securities for which an OTTI has not been recognized in earnings follow:

a. The aggregate amount of unrealized losses:	
1. Less than 12 months	\$ (140,591,033)
2. 12 months or longer	\$ (78,157,559)
b. The aggregate related fair value of securities with unrealized losses:	
1. Less than 12 months	\$ 7,858,775,698
2. 12 months or longer	\$ 2,133,441,123

(5) No additional information.

e. Dollar repurchase agreements and/or securities lending transactions: The Company did not have any dollar repurchase agreements and/or securities lending transactions.

f. Repurchase agreements transactions accounted for as secured borrowing:

(1) The Company has entered into repurchase agreements whereby the Company sells securities and simultaneously agrees to repurchase the same or substantially the same securities. These repurchase agreements are accounted for as collateralized borrowings with the proceeds from the sale of the securities recorded as a liability and the underlying securities continue to be recorded as an investment by the Company. Earnings on these investments are recorded as investment income and the difference between the proceeds and the amount at which the securities will be subsequently reacquired is amortized as interest expense. Repurchase agreements are used as a tool for overall portfolio management to help ensure the Company maintains adequate assets in order to provide yield, spread and duration to support liabilities and other corporate needs.

The Company provides collateral, as dictated by the repurchase agreements, to the counterparty in exchange for a loan. If the fair value of the securities sold becomes less than the loan, the counterparty may require additional collateral.

The carrying value, which is at cost, reported in the Company's assets as repurchase agreements approximates the fair value.

(2) Type of Repo Trades Used

	1 FIRST QUARTER	2 SECOND QUARTER	3 THIRD QUARTER	4 FOURTH QUARTER
a. Bilateral (YES/NO)	YES	YES	YES	YES
b. Tri-Party (YES/NO)	NO	NO	NO	NO

(3) Original (Flow) & Residual Maturity

	FIRST QUARTER				SECOND QUARTER			
	1 MINIMUM	2 MAXIMUM	3 AVERAGE DAILY BALANCE	4 ENDING BALANCE	5 MINIMUM	6 MAXIMUM	7 AVERAGE DAILY BALANCE	8 ENDING BALANCE
a. Open – No Maturity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
b. Overnight	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
c. 2 Days to 1 Week	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
d. > 1 Week to 1 Month	\$ -	\$ 1,121,882,350	\$ 320,537,814	\$ -	\$ -	\$ -	\$ -	\$ -
e. > 1 Month to 3 Months	\$ 94,828,125	\$ 2,105,640,126	\$ 964,706,241	\$ 1,496,137,626	\$ 1,007,169,375	\$ 2,119,566,600	\$ 1,563,633,781	\$ 1,007,169,375
f. > 3 Months to 1 Year	\$ 1,741,826,405	\$ 4,108,773,155	\$ 2,864,718,629	\$ 2,604,256,939	\$ 1,971,923,013	\$ 3,087,912,301	\$ 2,536,512,794	\$ 3,087,912,301
g. > 1 Year	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

NOTES TO FINANCIAL STATEMENTS

	THIRD QUARTER				FOURTH QUARTER			
	9	10	11	12	13	14	15	16
	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE
a. Open – No Maturity	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
b. Overnight	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
c. 2 Days to 1 Week	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
d. > 1 Week to 1 Month	\$ 319,312,500	\$ 744,687,500	\$ 294,852,809	\$ 425,375,000	\$ 92,830,883	\$ 151,250,000	\$ 56,326,358	\$ -
e. > 1 Month to 3 Months	\$ 92,596,875	\$ 2,293,329,751	\$ 839,267,760	\$ 2,293,329,751	\$ 678,847,188	\$ 2,703,242,175	\$ 1,596,434,995	\$ 1,490,913,125
f. > 3 Months to 1 Year	\$ 2,112,693,673	\$ 4,103,662,024	\$ 3,482,143,563	\$ 2,112,693,673	\$ 1,945,502,598	\$ 4,096,037,148	\$ 3,136,821,366	\$ 3,277,580,775
g. > 1 Year	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

(4) The company did not have any repurchase agreements where securities sold and/or acquired resulted in default as of December 31, 2018.

(5) Securities "Sold" Under Repo – Secured Borrowing

	FIRST QUARTER				SECOND QUARTER			
	1	2	3	4	5	6	7	8
	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE
a. BACV	XXX	XXX	XXX	\$ 4,100,394,564	XXX	XXX	XXX	\$ 4,095,081,676
b. Nonadmitted - Subset of BACV	XXX	XXX	XXX	\$ -	XXX	XXX	XXX	\$ -
c. Fair Value	\$ 4,100,394,564	\$ 4,203,824,405	\$ 4,149,962,685	\$ 4,100,394,564	\$ 4,090,299,176	\$ 4,113,037,064	\$ 4,100,146,575	\$ 4,095,081,676

	THIRD QUARTER				FOURTH QUARTER			
	9	10	11	12	13	14	15	16
	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE
a. BACV	XXX	XXX	XXX	\$ 4,831,398,424	XXX	XXX	XXX	\$ 4,768,493,900
b. Nonadmitted - Subset of BACV	XXX	XXX	XXX	\$ -	XXX	XXX	XXX	\$ -
c. Fair Value	\$ 4,097,581,676	\$ 4,856,687,174	\$ 4,616,264,132	\$ 4,831,398,424	\$ 4,768,493,900	\$ 4,865,363,220	\$ 4,789,582,719	\$ 4,768,493,900

(6) Securities Sold Under Repo – Secured Borrowing by NAIC Designation

ENDING BALANCE

	1	2	3	4	5	6	7	8
	NONE	NAIC 1	NAIC 2	NAIC 3	NAIC 4	NAIC 5	NAIC 6	NON-ADMITTED
a. Bonds - BACV	\$ -	\$ 4,768,493,900	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
b. Bonds - FV	-	4,768,493,900	-	-	-	-	-	-
c. LB & SS - BACV	-	-	-	-	-	-	-	-
d. LB & SS - FV	-	-	-	-	-	-	-	-
e. Preferred Stock - BACV	-	-	-	-	-	-	-	-
f. Preferred Stock - FV	-	-	-	-	-	-	-	-
g. Common Stock	-	-	-	-	-	-	-	-
h. Mortgage Loans - BACV	-	-	-	-	-	-	-	-
i. Mortgage Loans - FV	-	-	-	-	-	-	-	-
j. Real Estate - BACV	-	-	-	-	-	-	-	-
k. Real Estate - FV	-	-	-	-	-	-	-	-
l. Derivatives - BACV	-	-	-	-	-	-	-	-
m. Derivatives - FV	-	-	-	-	-	-	-	-
n. Other Invested Assets - BACV	-	-	-	-	-	-	-	-
o. Other Invested Assets - FV	-	-	-	-	-	-	-	-
p. Total Assets - BACV	\$ -	\$ 4,768,493,900	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
q. Total Assets - FV	\$ -	\$ 4,768,493,900	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

p=a+c+e+g+h+j+l+n

q=b+d+f+g+i+k+m+o

(7) Collateral Received – Secured Borrowing

	FIRST QUARTER				SECOND QUARTER			
	1	2	3	4	5	6	7	8
	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE
a. Cash	\$ 624,582	\$ 10,857,033	\$ 6,430,230	\$ 10,295,552	\$ 388,552	\$ 2,390,171	\$ 1,255,946	\$ 503,580
b. Securities (FV)	\$ 3,778,390,472	\$ 4,206,605,166	\$ 4,126,411,115	\$ 4,108,428,154	\$ 4,096,770,136	\$ 4,125,503,202	\$ 4,109,336,506	\$ 4,103,040,109

	THIRD QUARTER				FOURTH QUARTER			
	9	10	11	12	13	14	15	16
	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE
a. Cash	\$ 503,580	\$ 9,502,602	\$ 5,067,207	\$ 9,502,602	\$ 6,589,802	\$ 9,850,085	\$ 8,243,419	\$ 6,589,802
b. Securities (FV)	\$ 4,107,196,773	\$ 4,869,201,192	\$ 4,628,107,460	\$ 4,842,429,259	\$ 4,780,467,473	\$ 4,824,937,914	\$ 4,794,473,385	\$ 4,787,261,314

NOTES TO FINANCIAL STATEMENTS

(8) Cash & Non-Cash Collateral Received – Secured Borrowing by NAIC Designation

ENDING BALANCE

	1	2	3	4	5	6	7	8
	NONE	NAIC 1	NAIC 2	NAIC 3	NAIC 4	NAIC 5	NAIC 6	DOES NOT QUALIFY AS ADMITTED
a. Cash	\$ 6,589,802	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
b. Bonds - FV	-	4,787,600,007	-	-	-	-	-	-
c. LB & SS - FV	-	-	-	-	-	-	-	-
d. Preferred Stock - FV	-	-	-	-	-	-	-	-
e. Common Stock	-	-	-	-	-	-	-	-
f. Mortgage Loans - FV	-	-	-	-	-	-	-	-
g. Real Estate - FV	-	-	-	-	-	-	-	-
h. Derivatives - FV	-	-	-	-	-	-	-	-
i. Other Invested Assets - FV	-	-	-	-	-	-	-	-
Total Collateral Assets - FV (Sum of a through i)	\$ 6,589,802	\$ 4,787,600,007	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

(9) Allocation of Aggregate Collateral by Remaining Contractual Maturity

	FAIR VALUE
a. Overnight and Continuous	\$ -
b. 30 Days or Less	\$ 2,978,192,475
c. 31 to 90 Days	\$ 1,790,301,425
d. > 90 Days	\$ -

(10) The company did not have any repurchase agreements where cash collateral received was reinvested as of December 31, 2018.

(11) Liability to Return Collateral – Secured Borrowing (Total)

	FIRST QUARTER				SECOND QUARTER			
	1	2	3	4	5	6	7	8
	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE
a. Cash (Collateral – All) Securities Collateral (FV)	\$ 624,582	\$ 10,857,033	\$ 6,430,230	\$ 10,295,552	\$ 388,552	\$ 2,390,171	\$ 1,255,946	\$ 503,580
b. Securities Collateral (FV)	\$ 3,778,390,472	\$ 4,206,605,166	\$ 4,126,411,115	\$ 4,108,428,154	\$ 4,096,770,136	\$ 4,125,503,202	\$ 4,109,336,506	\$ 4,103,040,109

	THIRD QUARTER				FOURTH QUARTER			
	9	10	11	12	13	14	15	16
	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE	MINIMUM	MAXIMUM	AVERAGE DAILY BALANCE	ENDING BALANCE
a. Cash (Collateral – All) Securities Collateral (FV)	\$ 503,580	\$ 9,502,602	\$ 5,067,207	\$ 9,502,602	\$ 6,589,802	\$ 9,850,085	\$ 8,243,419	\$ 6,589,802
b. Securities Collateral (FV)	\$ 4,107,196,773	\$ 4,869,201,192	\$ 4,628,107,460	\$ 4,842,429,259	\$ 4,780,487,473	\$ 4,824,937,914	\$ 4,794,473,385	\$ 4,787,261,314

- g. Reverse repurchase agreements transactions accounted for as secured borrowing: The Company did not have any reverse repurchase agreements transactions accounted for as secured borrowing.
- h. Repurchase agreements transactions accounted for as a sale: The Company did not have any repurchase agreements transactions accounted for as a sale.
- i. Reverse repurchase agreements transactions accounted for as a sale: The Company did not have any reverse repurchase agreements transactions accounted for as a sale.
- j. Real estate:

- (1) There were no impairments on real estate for the years ended December 31, 2018 and 2017. Fair value is generally estimated using the present value of expected future cash flows discounted at a rate commensurate with the underlying risks. The Company also obtains external appraisals for a rotating selection of properties annually. If an external appraisal is not obtained, an internal appraisal is performed.
- (2) Properties are acquired and managed for net income growth and increasing value. Upon management's approval for the sale of a property it is classified as held for sale.
 - a. Refer to Note 5f. "Real estate" (2)b. for information on the Company's real estate investments.
 - b. Gains or losses recognized on the sale of real estate are presented in the Summary of Operations, line 34. Net realized capital gains (losses).

In 2018, five hotel, one apartment and one office property were transferred to held for sale and sold in 2018 including the one property that was transferred in 2017, with proceeds of \$274,414,910 and a gain of \$167,933,741. Additionally, two single family residences were acquired and classified as held for sale under an employee relocation program for a total of four properties. Of these residences, four were sold for a net loss of \$403,431. As of December 31, 2018, the Company did not hold any single family residences classified as held for sale.

In 2017, two apartment properties, one hotel and one office property were transferred to held for sale and sold in 2017, with proceeds of \$224,912,764 and a gain of \$83,106,177. Two other properties were transferred to held for sale during 2017, but have not yet sold, with held for sale reserve loss of \$15,690,573. Additionally, six single family residences were acquired and classified as held for sale under an employee relocation program for a total of eight properties. Of these residences, six were sold for a net loss of \$434,264. As of December 31, 2017, the Company held two single family residences classified as held for sale.

NOTES TO FINANCIAL STATEMENTS

- (3) The Company did not experience changes to a plan of sale in 2018 or 2017.
- (4) The Company did not engage in retail land sales in 2018 or 2017.
- (5) The Company did not hold real estate investments with participating mortgage loan features in 2018 or 2017.

k. Low income housing tax credit properties:

- (1) LIHTC investments currently have unexpired tax credits which range from one to thirteen years and have an initial 15-year holding period requirement.
- (2) There are no LIHTC investments subject to regulatory review for the years ended December 31, 2018 or 2017.
- (3) Aggregate LIHTC investments did not exceed 10% of total admitted assets for the years ended December 31, 2018 or 2017.
- (4) LIHTC investments had a carrying value of \$286,715,752 as of December 31, 2018 and \$329,502,387 as of December 31, 2017.
- (5) The Company recognized tax benefits from LIHTC investments of \$46,544,843 in 2018 and \$48,965,852 in 2017.
- (6) For determining impairments in partnerships that generate LIHTC, the Company uses the present value of all future benefits, the majority of which are tax credits, discounted at a risk-free rate ranging from 2.5% for future benefits of two years to 2.7% for future benefits of ten or more years, and compares the result to current carrying value. OTTI for LIHTC investments for the years ended December 31, 2018 and 2017 were as follows:

	Years Ended	
	December 31,	
	2018	2017
Alliant Tax Credit Fund XXIV A LP	\$ 22,084	\$ 101,379
Boston Capital Commonwealth Tax Credit Fund II	68,875	
Boston Capital Commonwealth Tax Credit Fund III A LP	333,596	
Boston Financial MassMutual Fund III LP	487,431	
Boston Financial MassMutual Fund IV LP	2,497,753	
Citi Guaranteed Tax Credit Fund	44,383	25,388
Countryside Corporate Tax Credit V		6,604
Countryside Corporate Tax Credits X LP	68,235	272,337
MassMutual-Guilford Fund A LP	7,245	110,158
NHT XVI Tax Credit Fund LP	663,197	
NHT XX Tax Credit Fund LP	55,463	469,299
NHT XXV Tax Credit Fund LP	47,329	
Raymond James XXIII LP		770,819
Raymond James XXVII LP	399,798	121,124
Total	<u>\$ 4,695,389</u>	<u>\$ 1,877,108</u>

- (7) There were no write-downs or reclassifications made during the years ended December 31, 2018 or 2017 due to forfeiture, ineligibility of tax credits or similar issues.

NOTES TO FINANCIAL STATEMENTS

I. Restricted assets:

(1) Restricted assets (including pledged):

Restricted Asset Category	Gross (Admitted & Nonadmitted) Restricted						
	Current Year					6 Total From Prior Year	7 Increase/ (Decrease) (5 minus 6)
	1 Total General Account (G/A)	2 G/A Supporting S/A Activity (a)	3 Total Separate Account (S/A) Restricted Assets	4 S/A Assets Supporting G/A Activity (b)	5 Total (1 plus 3)		
a. Subject to contractual obligation for which liability is not shown	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
b. Collateral held under security lending agreements	-	-	-	-	-	-	-
c. Subject to repurchase agreements	4,787,600,007	-	-	-	4,787,600,007	4,212,546,085	575,053,922
d. Subject to reverse repurchase agreements	-	-	-	-	-	-	-
e. Subject to dollar repurchase agreements	-	-	-	-	-	-	-
f. Subject to dollar reverse repurchase agreements	-	-	-	-	-	-	-
g. Placed under option contracts	-	-	-	-	-	-	-
h. Letter stock or securities restricted as to sale - excluding FHLB capital stock	787,285,175	-	-	-	787,285,175	915,016,316	(127,731,141)
i. FHLB capital stock	73,700,000	-	-	-	73,700,000	73,700,000	-
j. On deposit with states	8,784,414	-	-	-	8,784,414	8,804,085	(19,671)
k. On deposit with other regulatory bodies	-	-	-	-	-	-	-
l. Pledged collateral to FHLB (including assets backing funding agreements)	1,509,010,539	-	-	-	1,509,010,539	1,570,016,757	(61,006,218)
m. Pledged as collateral not captured in other categories	1,813,256,287	-	-	-	1,813,256,287	1,470,328,064	342,928,223
n. Other restricted assets	-	-	-	-	-	-	-
o. Total Restricted Assets	\$ 8,979,636,422	\$ -	\$ -	\$ -	\$ 8,979,636,422	\$ 8,250,411,307	\$ 729,225,115

(a) Subset of column 1

(b) Subset of column 3

NOTES TO FINANCIAL STATEMENTS

Restricted Asset Category	Current Year			
	8 Total Nonadmitted Restricted	9 Total Admitted Restricted (5 minus 8)	Percentage	
			10 Gross (Admitted & Nonadmitted) Restricted to Total Assets (c)	11 Admitted Restricted to Total Admitted Assets (d)
a. Subject to contractual obligation for which liability is not shown	\$ -	\$ -	-%	-%
b. Collateral held under security lending agreements	-	-	-	-
c. Subject to repurchase agreements	-	4,787,600,007	1.947	1.965
d. Subject to reverse repurchase agreements	-	-	-	-
e. Subject to dollar repurchase agreements	-	-	-	-
f. Subject to dollar reverse repurchase agreements	-	-	-	-
g. Placed under option contracts	-	-	-	-
h. Letter stock or securities restricted as to sale - excluding FHLB capital stock	-	787,285,175	0.320	0.323
i. FHLB capital stock	-	73,700,000	0.030	0.030
j. On deposit with states	-	8,784,414	0.004	0.004
k. On deposit with other regulatory bodies	-	-	-	-
l. Pledged collateral to FHLB (including assets backing funding agreements)	-	1,509,010,539	0.614	0.619
m. Pledged as collateral not captured in other categories	-	1,813,256,287	0.737	0.744
n. Other restricted assets	-	-	-	-
o. Total Restricted Assets	\$ -	\$ 8,979,636,422	3.652%	3.686%

(c) Column 5 divided by Asset Page, Column 1, Line 28

(d) Column 9 divided by Asset Page, Column 3, Line 28

(2) Detail of Assets Pledged as Collateral Not Captured in Other Categories (Contracts that Share Similar Characteristics, Such as Reinsurance and Derivatives Are Reported in the Aggregate)

Description of Assets	Gross (Admitted & Nonadmitted) Restricted							8 Total Current Year Admitted Restricted	Percentage	
	Current Year					6 Total from Prior Year	7 Increase/ (Decrease) (5 minus 6)		9 Gross (Admitted & Nonadmitted) Restricted to Total Assets	10 Admitted Restricted Total Admitted Assets
	1 Total General Account (G/A)	2 G/A Supporting S/A Activity (a)	3 Total Separate Account (S/A) Restricted Assets	4 S/A Assets Supporting G/A Activity (b)	5 Total (1 plus 3)					
Derivatives	\$ 1,643,270,922	\$ -	\$ -	\$ -	\$ 1,643,270,922	\$ 1,277,680,324	\$ 365,590,598	\$ 1,643,270,922	0.668%	0.674%
Futures	163,059,281	-	-	-	163,059,281	155,901,291	7,157,990	163,059,281	0.066%	0.067%
MBS Forwards	-	-	-	-	-	3,361,399	(3,361,399)	-	0.000%	0.000%
Repurchase Margin	6,926,084	-	-	-	6,926,084	33,385,050	(26,458,966)	6,926,084	0.003%	0.003%
Total (c)	\$ 1,813,256,287	\$ -	\$ -	\$ -	\$ 1,813,256,287	\$ 1,470,328,064	\$ 342,928,223	\$ 1,813,256,287	0.737%	0.744%

(a) Subset of column 1

(b) Subset of column 3

(c) Total Line for Column 1 through 7 should equal 5L (1) in Columns 1 through 7 respectively and Total Line for Columns 8 through 10 should equal 5L (1) Columns 9 through 11 respectively

NOTES TO FINANCIAL STATEMENTS

(3) Detail of Other Restricted Assets (Contracts that Share Similar Characteristics, Such as Reinsurance and Derivatives, Are Reported in the Aggregate)

Description of Assets	Gross (Admitted & Nonadmitted) Restricted					6	7	8	Percentage	
	Current Year								9	10
	1	2	3	4	5					
	Total General Account (G/A)	G/A Supporting S/A Activity (a)	Total Separate Account (S/A) Restricted Assets	S/A Assets Supporting G/A Activity (b)	Total (1 plus 3)	Total from Prior Year	Increase/ (Decrease) (5 minus 6)	Total Current Year Admitted Restricted	Gross (Admitted & Nonadmitted) Restricted to Total Assets	Admitted Restricted Total Assets
	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	% -	% -
	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-
*Total (c)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	% -	% -

(a) Subset of column 1

(b) Subset of column 3

(c) Total Line for Columns 1 through 7 should equal 5L(1) in Columns 1 through 7 respectively and Total Line for Columns 8 through 10 should equal 5L(1) in Columns 9 through 11 respectively

(4) Collateral Received and Reflected as Assets Within the Reporting Entity's Financial Statements

Collateral Assets	1 Book/Adjusted Carrying Value (BACV)	2 Fair Value	3 % of BACV Total Assets (Admitted and Nonadmitted)*	4 % of BACV to Total Admitted Assets **
a. Cash, Cash Equivalents and Short-Term Investments	\$ 2,660,944,773	\$ 2,660,944,773	1.543 %	1.557 %
b. Schedule D, Part 1	-	-	- %	- %
c. Schedule D, Part 2, Section 1	-	-	- %	- %
d. Schedule D, Part 2, Section 2	-	-	- %	- %
e. Schedule B	-	-	- %	- %
f. Schedule A	-	-	- %	- %
g. Schedule BA, Part 1	-	-	- %	- %
h. Schedule DL, Part 1	-	-	- %	- %
i. Other	-	-	- %	- %
j. Total Collateral Assets (a+b+c+d+e+f+g+h+i)	\$ 2,660,944,773	\$ 2,660,944,773	1.543%	1.557%

* Column 1 divided by Asset Page, Line 26 (Column 1)

** Column 1 divided by Asset Page, Line 26 (Column 3)

	1 Amount	2 % of Liability to Total Liabilities*
k. Recognized Obligation to Return Collateral Asset	\$ -	- %

* Column 1 divided by Liability Page, Line 26 (Column 1)

(4) Collateral Received and Reflected as Assets Within the Reporting Entity's Financial Statements

Collateral Assets	1 Book/Adjusted Carrying Value (BACV)	2 Fair Value	3 % of BACV Total Assets (Admitted and Nonadmitted)*	4 % of BACV to Total Admitted Assets **
a. Cash, Cash Equivalents and Short-Term Investments	\$ 2,660,944,773	\$ 2,660,944,773	1.543 %	1.557 %
b. Schedule D, Part 1	-	-	- %	- %
c. Schedule D, Part 2, Section 1	-	-	- %	- %
d. Schedule D, Part 2, Section 2	-	-	- %	- %
e. Schedule B	-	-	- %	- %
f. Schedule A	-	-	- %	- %
g. Schedule BA, Part 1	-	-	- %	- %
h. Schedule DL, Part 1	-	-	- %	- %
i. Other	-	-	- %	- %
j. Total Collateral Assets (a+b+c+d+e+f+g+h+i)	\$ 2,660,944,773	\$ 2,660,944,773	1.543%	1.557%

* Column 1 divided by Asset Page, Line 26 (Column 1)

** Column 1 divided by Asset Page, Line 26 (Column 3)

	1 Amount	2 % of Liability to Total Liabilities*
k. Recognized Obligation to Return Collateral Asset	\$ -	- %

* Column 1 divided by Liability Page, Line 26 (Column 1)

m. Working capital finance investments: The Company did not invest in working capital finance investments.

NOTES TO FINANCIAL STATEMENTS

n. Offsetting and netting of assets and liabilities: The Company reports derivative and repurchase agreement assets and liabilities as gross in the financial statements without offsetting.

o. Structured notes:

A structured note is a direct debt issuance by a corporation, municipality, or government entity, ranking pari-passu with the issuer's other debt issuance of equal seniority where either: (a) the coupon and/or principal payments are linked, in whole or in part, to prices or payment streams from index or indices, or assets deriving their value from other than the issuer's credit quality, or (b) the coupon and/or principal payments are leveraged by a formula that is different from either a fixed coupon, or a non-leveraged floating rate coupon linked to an interest rate index, including but not limited to the London Interbank Offered Rate (LIBOR) or the prime rate. As structured notes are issuer obligations without a trust, they are within the scope of SSAP No. 26, "Bonds, Excluding Loan-backed and Structured Securities". Structured notes are different than the asset backed structured securities, which are accounted for under SSAP No. 43R, "Revised - Loan-Backed and Structured Securities", as they lack either a trust or assets backing them. The disclosure below allows regulators to assess the volume of activity in structured notes and to determine whether additional accounting or reporting revisions, such as valuation and risk-based capital, are needed. To satisfy this request, the Company is required to separately identify structured notes, on a CUSIP basis and provide information by CUSIP for actual cost, fair value, book/adjusted carrying value, and whether the structured note is a mortgage-referenced security. The following sets forth the actual cost, fair value and carrying value of structured notes as of December 31, 2018:

CUSIP Identification	Actual Cost	Fair Value	Book / Adjusted Carrying Value	Mortgage-Referenced Security (YES/NO)
30711XDK7	\$ 223,984	\$ 218,225	\$ 223,324	YES
391164AF7	8,467,560	7,945,553	8,215,311	NO
P7794GAH5	1,262,834	1,275,462	1,270,692	NO
912810FR4	4,944,283	6,121,357	5,723,654	NO
912810PS1	1,874,118	2,630,205	2,370,614	NO
059514AC3	9,327,385	9,606,875	9,361,838	NO
Total	\$ 26,100,164	\$ 27,797,677	\$ 27,165,433	XXX

p. 5* Securities:

Investment	Number of 5* Securities		Aggregate BACV		Aggregate Fair Value	
	Current Year	Prior Year	Current Year	Prior Year	Current Year	Prior Year
(1) Bonds - AC	92	26	669,688,836	231,812,447	651,777,531	231,193,912
(2) LB&SS - AC	-	-	-	-	-	-
(3) Preferred Stock - AC	4	3	15,232,649	14,600,149	19,902,853	17,316,290
(4) Preferred Stock - FV	-	-	-	-	-	-
(5) Total (1+2+3+4)	96	29	\$684,921,485	\$246,412,596	\$671,680,384	\$248,510,202

AC - Amortized Cost FV - Fair Value

q. Short Sales - The Company does not engage in short sale transactions.

r. Prepayment Penalty and Acceleration Fees:

	Year Ended December 31, 2018	
	General Account	Separate Account
1. Number of CUSIPS	108	32
2. Aggregate Amount of Investment Income	\$ 48,945,474	\$ 4,319,763

Note 6 – Joint Ventures, Partnerships and Limited Liability Companies

a. The Company has one individual investment in joint ventures, partnerships or LLCs which exceeds 10% of admitted assets for the years ended December 31, 2018. There were no individual investment in joint ventures, partnerships or LLCs exceeding 10% of admitted assets for the year ended December 31, 2017.

MM International LLC is owned 100% by the Company is accounted for using the equity method with the change in the equity value of the underlying investment recorded in surplus. Distributions received are recognized as net investment income to the extent the distribution does not exceed previously recorded accumulated undistributed earnings. The carry value of MM International LLC is \$997,506,405.

b. The accumulated unrealized losses are realized when they are not expected to be recovered. The Company recognized \$61,918,108 in 2018 and \$53,462,250 in 2017 in impairments on its investments in joint ventures, partnerships and LLCs.

Refer to Note 1c. "Accounting policy" (14) for information on the Company's policy for determining OTTI.

Note 7 – Investment Income

a. Accrued investment income consists primarily of interest and dividends. Interest is recognized on an accrual basis and dividends are recorded as earned on the ex-dividend date.

b. The total amount of due and accrued investment income excluded from surplus was \$6,582,488 for the year ended December 31, 2018 and \$6,019,916 for the year ended December 31, 2017.

Note 8 – Derivative Instruments

a. The Company's principal derivative exposures to market risk are interest rate risk, which includes inflation and credit risk. Interest rate risk pertains to the change in fair value of the derivative instruments as a result of changes in market interest rates. The Company is exposed to credit-related losses in the event of nonperformance by counterparties to derivative financial instruments. The Company regularly monitors counterparty credit ratings, derivative positions, valuations and the value of collateral posted to ensure counterparties are credit-worthy and the concentration of exposure is minimized, and monitors its derivative credit exposure as part of its overall risk management program.

NOTES TO FINANCIAL STATEMENTS

The Company enters derivative transactions through bilateral derivative agreements with counterparties, or through over the counter cleared derivatives with a counterparty and the use of a clearinghouse. To minimize credit risk for bilateral transactions, the Company and its counterparties generally enter into master netting agreements based on agreed upon requirements that outline the framework for how collateral is to be posted in the amount owed under each transaction, subject to certain minimums. For over the counter cleared derivative transactions between the Company and a counterparty, the parties enter into a series of master netting and other agreements that govern, among other things, clearing and collateral requirements. These transactions are cleared through a clearinghouse and each derivative counterparty is only exposed to the default risk of the clearinghouse. Certain interest rate swaps and credit default swaps are considered cleared transactions. These cleared transactions require initial and daily variation margin collateral postings. These agreements allow for contracts in a positive position, in which amounts are due to the Company, to be offset by contracts in a negative position. This right of offset, combined with collateral obtained from counterparties, reduces the Company's credit exposure.

- b. The Company uses derivative financial instruments in the normal course of business to manage risks, primarily to reduce currency, interest rate and duration imbalances determined in asset/liability analyses. The Company also uses a combination of derivatives and fixed income investments to create synthetic investments. These synthetic investments are created when they are economically more attractive than the actual instrument or when similar instruments are unavailable. Synthetic investments are created either to hedge and reduce the Company's credit and foreign currency exposure or to create an investment in a particular asset. The Company held synthetic investments with a notional amount of \$15,521,672,879 as of December 31, 2018 and \$13,137,050,000 as of December 31, 2017. These notional amounts included replicated asset transaction values of, \$13,581,622,879 as of December 31, 2018 and \$11,517,000,000 as of December 31, 2017, as defined under statutory accounting practices as the result of pairing of a long derivative contract with cash instruments.

The Company's derivative strategy employs a variety of derivative financial instruments, including: interest rate, currency, equity, bond, and credit default swaps; options; forward contracts and financial futures. Investment risk is assessed on a portfolio basis and individual derivative financial instruments are not generally designated in hedging relationships; therefore, as allowed by statutory accounting practices, the Company intentionally has not applied hedge accounting.

Interest rate swaps are primarily used to more closely match the cash flows of assets and liabilities. Interest rate swaps are also used to mitigate changes in the value of assets anticipated to be purchased and other anticipated transactions and commitments. A net realized loss on closed contracts of \$104,875,621 and a net unrealized loss on the mark-to-market of open contracts of \$389,658,110 was recorded for the year ended December 31, 2018. A net realized loss on closed contracts of \$224,265,850 and a net unrealized gain on the mark-to-market of open contracts of \$202,387,476 was recorded for the year ended December 31, 2017.

The Company uses currency swaps for the purpose of managing currency exchange risks in its assets and liabilities.

The Company does not sell credit default swaps as a participant in the credit insurance market. The Company does, however, use credit default swaps as part of its investment management process. The Company buys credit default swaps as an efficient means to reduce credit exposure to particular issuers or sectors in the Company's investment portfolio. The Company sells credit default swaps in order to create synthetic investment positions that enhance the return on its investment portfolio by providing comparable exposure to fixed income securities that might not be available in the primary market. A net realized gain on closed contracts of \$12,141,449 and a net unrealized gain on mark-to-market of open contracts of \$2,379,742 was recorded for the year ended December 31, 2018. A net realized gain on closed contracts of \$22,914,345 and a net unrealized gain on mark-to-market of open contracts of \$280,238 was recorded for the year ended December 31, 2017.

Options grant the purchaser the right to buy or sell a security or enter a derivative transaction at a stated price within a stated period. The Company's option contracts have terms of up to 15 years. A swaption is an option to enter an interest rate swap to either receive or pay a fixed rate at a future date. The Company purchases these options for the purpose of managing interest rate risks in its assets and liabilities.

The Company adopted a clearly defined hedging strategy (CDHS) to enable the Company to incorporate currently held hedges in RBC calculations. The CDHS is used to significantly mitigate the impact that movements in capital markets have on the liabilities associated with annuity guarantees. The hedge portfolio consists mainly of interest rate swaps, equity swaps, interest rate swaptions and equity futures, and provides protection in the stress scenarios under which RBC is calculated. The hedge portfolio has offsetting impacts relative to the total asset requirement for RBC and surplus for guaranteed minimum death benefits (GMDB) and variable annuity guaranteed living benefits.

The Company utilizes certain other agreements including forward contracts and financial futures. Currency forwards are contracts in which the Company agrees with other parties to exchange specified amounts of identified currencies at a specified future date. Typically, the exchange rate is agreed upon at the time of the contract. In addition, the Company also uses "to be announced" forward contracts (TBAs) to hedge interest rate risk and participate in the MBS market in an efficient and cost effective way. Typically, the price is agreed upon at contract inception and payment is made at a specified future date. The Company usually does not purchase TBAs with settlement by the first possible delivery date and thus accounts for these TBAs as derivatives. TBAs that settle on the first possible delivery date are accounted for as bonds. The Company's futures contracts are exchange traded and have credit risk. Margin requirements are met with the deposit of securities. Futures contracts are generally settled with offsetting transactions. Forward contracts and financial futures are used by the Company to reduce exposures to various risks including interest rates and currency rates.

Net collateral pledged by the counterparties was \$2,242,987,555 as of December 31, 2018 and \$2,493,143,655 as of December 31, 2017. In the event of default the full market value exposure at risk in a net gain position, net of offsets and collateral, was \$146,189,320 as of December 31, 2018 and \$114,506,479 as of December 31, 2017. The statutory net amount at risk, defined as net collateral pledged and statement values excluding accrued interest, was \$695,286,723 as of December 31, 2018 and \$594,786,805 as of December 31, 2017.

The Company had the right to rehypothecate or repledge securities totaling \$709,423,839 of the \$2,242,987,555 as of December 31, 2018 and \$634,765,413 of the \$2,493,143,655 as of December 31, 2017 of net collateral pledged by counterparties. There were no securities rehypothecated to other counterparties as of December 31, 2018 or December 31, 2017.

- c. Changes in the fair value of these contracts other than interest rate swaps associated with replicated assets are recorded as unrealized gains or losses in surplus. Gains and losses realized on the termination, closing, or assignment of contracts are recorded as realized capital gains or losses. Amounts receivable and payable are accrued.
- d. No unrealized gains or losses recognized on derivatives were excluded from the assessment of effectiveness for the years ended December 31, 2018 or 2017, since the Company has decided not to apply hedge accounting. The Company uses portfolio hedging as a risk mitigation factor. The Company assesses the derivatives' effectiveness to hedge the sensitivity of the net asset and liability portfolio to interest and volatility movements in the context of the current market environment.
- e. The Company uses portfolio hedging as a risk mitigation factor, which does not qualify for hedge accounting.
- f. The Company does not account for derivatives as cash flow hedges of a forecasted transaction.

NOTES TO FINANCIAL STATEMENTS

Note 9 – Income Taxes

A. The Company provides for deferred income taxes based on an admissibility limitation of 15% of surplus and a three year reversal/realization period.

1. The net DTA or net deferred tax liability (DTL) recognized in the Company's assets, liabilities and surplus is as follows:

	December 31, 2018		
	Ordinary	Capital	Total
(a) Gross DTAs	\$ 2,655,214,374	\$ 334,138,315	\$ 2,989,352,689
(b) Statutory valuation allowance adjustment	-	-	-
(c) Adjusted gross DTAs	2,655,214,374	334,138,315	2,989,352,689
(d) DTAs nonadmitted	-	-	-
(e) Subtotal net admitted DTA	2,655,214,374	334,138,315	2,989,352,689
(f) Total gross DTLs	1,548,215,227	458,411,777	2,006,627,004
(g) Net admitted DTA(L)	\$ 1,106,999,147	\$ (124,273,462)	\$ 982,725,685

	December 31, 2017		
	Ordinary	Capital	Total
(a) Gross DTAs	\$ 2,479,300,505	\$ 153,751,078	\$ 2,633,051,583
(b) Statutory valuation allowance adjustment	-	-	-
(c) Adjusted gross DTAs	2,479,300,505	153,751,078	2,633,051,583
(d) DTAs nonadmitted	-	-	-
(e) Subtotal net admitted DTA	2,479,300,505	153,751,078	2,633,051,583
(f) Total gross DTLs	1,637,479,646	234,515,688	1,871,995,334
(g) Net admitted DTA(L)	\$ 841,820,859	\$ (80,764,610)	\$ 761,056,249

	Change		
	Ordinary	Capital	Total
(a) Gross DTAs	\$ 175,913,869	\$ 180,387,237	\$ 356,301,106
(b) Statutory valuation allowance adjustment	-	-	-
(c) Adjusted gross DTAs	175,913,869	180,387,237	356,301,106
(d) DTAs nonadmitted	-	-	-
(e) Subtotal net admitted DTA	175,913,869	180,387,237	356,301,106
(f) Total gross DTLs	89,264,419	(223,896,089)	(134,631,670)
(g) Net admitted DTA(L)	\$ 265,178,288	\$ (43,508,852)	\$ 221,669,436

NOTES TO FINANCIAL STATEMENTS

2. The amount of adjusted gross DTA admitted under each component of the guidance and the resulting change by tax character are as follows:

	December 31, 2018		
	Ordinary	Capital	Total
(a) Federal income taxes paid in prior years recoverable through loss carrybacks	\$ -	\$ 51,655,629	\$ 51,655,629
(b) Adjusted gross DTAs expected to be realized (excluding the amount of DTAs from 2(a) above) after application of the threshold limitation (the lesser of 2(b)1 and 2(b)2 below)	1,018,554,333	-	1,018,554,333
1. Adjusted gross DTAs expected to be realized following the balance sheet date	1,018,554,333	-	1,018,554,333
2. Adjusted gross DTAs allowed per limitation threshold	2,055,020,441	-	2,055,020,441
(c) Adjusted gross DTAs (excluding the amount of DTAs from 2(a) and 2(b) above) offset by gross DTLs	1,636,660,041	282,482,686	1,919,142,727
(d) DTAs admitted as the result of application of SSAP no. 101			
Total (2(a) + 2(b) + 2(c))	<u>\$ 2,655,214,374</u>	<u>\$ 334,138,315</u>	<u>\$ 2,989,352,689</u>

	December 31, 2017		
	Ordinary	Capital	Total
(a) Federal income taxes paid in prior years recoverable through loss carrybacks	\$ -	\$ 66,688,831	\$ 66,688,831
(b) Adjusted gross DTAs expected to be realized (excluding the amount of DTAs from 2(a) above) after application of the threshold limitation (the lesser of 2(b)1 and 2(b)2 below)	879,750,446	-	879,750,446
1. Adjusted gross DTAs expected to be realized following the balance sheet date	879,750,446	-	879,750,446
2. Adjusted gross DTAs allowed per limitation threshold	2,202,035,327	-	2,202,035,327
(c) Adjusted gross DTAs (excluding the amount of DTAs from 2(a) and 2(b) above) offset by gross DTLs	1,599,550,059	87,062,247	1,686,612,306
(d) DTAs admitted as the result of application of SSAP no. 101			
Total (2(a) + 2(b) + 2(c))	<u>\$ 2,479,300,505</u>	<u>\$ 153,751,078</u>	<u>\$ 2,633,051,583</u>

	Change		
	Ordinary	Capital	Total
(a) Federal income taxes paid in prior years recoverable through loss carrybacks	\$ -	\$ (15,033,202)	\$ (15,033,202)
(b) Adjusted gross DTAs expected to be realized (excluding the amount of DTAs from 2(a) above) after application of the threshold limitation (the lesser of 2(b)1 and 2(b)2 below)	138,803,887	-	138,803,887
1. Adjusted gross DTAs expected to be realized following the balance sheet date	138,803,887	-	138,803,887
2. Adjusted gross DTAs allowed per limitation threshold	(147,014,886)	-	(147,014,886)
(c) Adjusted gross DTAs (excluding the amount of DTAs from 2(a) and 2(b) above) offset by gross DTLs	37,109,982	195,420,439	232,530,421
(d) DTAs admitted as the result of application of SSAP no. 101			
Total (2(a) + 2(b) + 2(c))	<u>\$ 175,913,869</u>	<u>\$ 180,387,237</u>	<u>\$ 356,301,106</u>

NOTES TO FINANCIAL STATEMENTS

3. The Company's total realization threshold limitations are as follows:

	December 31,	
	2018	2017
(a) Ratio percentage used to determine recovery period and threshold limitation amount	861%	867%
(b) Amount of adjusted capital and surplus used to determine recovery period and threshold limitation in 2(b)2 above.	\$ 13,700,136,271	\$ 14,680,235,514

4. The ultimate realization of DTAs depends on the generation of future taxable income during the periods in which the temporary differences are deductible. Management considers the scheduled reversal of DTLs (including the impact of available carryback and carryforward periods), projected taxable income and tax-planning strategies in making this assessment. The impact of tax-planning strategies is as follows:

	December 31, 2018	
	Ordinary	Capital
(a) Determination of adjusted gross DTAs and net admitted DTAs, by tax character as a percentage.		
1. Adjusted Gross DTAs amount from Note 9A1(c)	\$ 2,655,214,374	\$ 334,138,315
2. Percentage of adjusted gross DTAs by tax character attributable to the impact of tax planning strategies	-%	-%
3. Net admitted DTAs amount from Note 9A1(e)	\$ 2,655,214,374	\$ 334,138,315
4. Percentage of net admitted DTAs by tax character attributable to the impact of tax planning strategies	77%	0%

	December 31, 2017	
	Ordinary	Capital
(a) Determination of adjusted gross DTAs and net admitted DTAs, by tax character as a percentage.		
1. Adjusted Gross DTAs amount from Note 9A1(c)	\$ 2,479,300,505	\$ 153,751,078
2. Percentage of adjusted gross DTAs by tax character attributable to the impact of tax planning strategies	-%	-%
3. Net admitted DTAs amount from Note 9A1(e)	\$ 2,479,300,505	\$ 153,751,078
4. Percentage of net admitted DTAs by tax character attributable to the impact of tax planning strategies	57%	0%

	Change	
	Ordinary	Capital
(a) Determination of adjusted gross DTAs and net admitted DTAs, by tax character as a percentage.		
1. Adjusted Gross DTAs amount from Note 9A1(c)	\$ 175,913,869	\$ 180,387,237
2. Percentage of adjusted gross DTAs by tax character attributable to the impact of tax planning strategies	-%	-%
3. Net admitted DTAs amount from Note 9A1(g)	\$ 175,913,869	\$ 180,387,237
4. Percentage of net admitted DTAs by tax character attributable to the impact of tax planning strategies	20%	0%
(b) Does the Company's tax planning strategies include the use of reinsurance?	Yes ___	No <u>X</u>

- B. The Company does not have any deferred tax liabilities not recognized.

NOTES TO FINANCIAL STATEMENTS

C. The provision for current tax (benefit) expense on earnings is as follows:

	Years Ended December 31,		
	2018	2017	Change
(a) Federal	\$ (169,154,501)	\$ (321,144,524)	\$ 151,990,023
(b) Foreign	770,354	1,538,726	(768,372)
(c) Subtotal	<u>(168,384,147)</u>	<u>(319,605,798)</u>	<u>151,221,651</u>
(d) Federal income tax on net capital gains	(48,168,368)	(175,563,193)	127,394,825
(e) Utilization of capital loss carry-forwards	-	-	-
(f) Other	-	-	-
(g) Federal and foreign income taxes incurred	<u>\$ (216,552,515)</u>	<u>\$ (495,168,991)</u>	<u>\$ 278,616,476</u>

The tax effects of temporary differences that give rise to significant portions of the DTAs and DTLs are as follows:

	December 31,		
	2018	2017	Change
2. Deferred Tax Assets:			
(a) Ordinary			
(1) Discounting of unpaid losses	\$ -	\$ -	\$ -
(2) Unearned premium reserve	-	-	-
(3) Policyholder reserves	1,141,286,745	1,058,721,405	82,565,340
(4) Investments	136,680,131	153,734,718	(17,054,587)
(5) Deferred acquisition costs	505,281,560	459,451,812	45,829,748
(6) Policyholder dividends accrual	195,920,393	188,885,218	7,035,175
(7) Fixed assets	-	-	-
(8) Compensation and benefits accrual	-	-	-
(9) Pension accrual	184,413,913	190,877,290	(6,463,377)
(10) Receivables - nonadmitted	-	-	-
(11) Net operating loss carry-forward	-	-	-
(12) Tax credit carry-forward	-	-	-
(13) Other	491,631,632	427,630,062	64,001,570
(14) Subtotal	<u>2,655,214,374</u>	<u>2,479,300,505</u>	<u>175,913,869</u>
(b) Statutory valuation allowance adjustment	-	-	-
(c) Nonadmitted	-	-	-
(d) Admitted ordinary DTAs (2a14 - 2b - 2c)	<u>2,655,214,374</u>	<u>2,479,300,505</u>	<u>175,913,869</u>
(e) Capital			
(1) Investments	334,138,315	153,751,078	180,387,237
(2) Net capital loss carry-forward	-	-	-
(3) Real estate	-	-	-
(4) Other	-	-	-
(5) Subtotal	<u>334,138,315</u>	<u>153,751,078</u>	<u>180,387,237</u>
(f) Statutory valuation allowance adjustment	-	-	-
(g) Nonadmitted	-	-	-
(h) Admitted capital DTAs (2e5 - 2f - 2g)	<u>334,138,315</u>	<u>153,751,078</u>	<u>180,387,237</u>
(i) Admitted DTAs (2d + 2h)	<u>2,989,352,689</u>	<u>2,633,051,583</u>	<u>356,301,106</u>

NOTES TO FINANCIAL STATEMENTS

3. Deferred Tax Liabilities:

(a) Ordinary

(1) Investments	416,196,933	544,329,926	(128,132,993)
(2) Fixed Assets	38,404,080	51,845,165	(13,441,085)
(3) Deferred and uncollected premium	227,406,063	212,114,371	15,291,692
(4) Policyholder reserves	493,958,934	528,914,368	(34,955,434)
(5) Other	<u>372,249,217</u>	<u>300,275,816</u>	<u>71,973,401</u>
(6) Subtotal	<u>1,548,215,227</u>	<u>1,637,479,646</u>	<u>(89,264,419)</u>

(b) Capital

(1) Investments	458,411,777	234,515,688	223,896,089
(2) Real estate	-	-	-
(3) Other	<u>-</u>	<u>-</u>	<u>-</u>
(4) Subtotal	<u>458,411,777</u>	<u>234,515,688</u>	<u>223,896,089</u>

(c) Total DTLs (3a6 + 3b4)

	<u>2,006,627,004</u>	<u>1,871,995,334</u>	<u>134,631,670</u>
--	----------------------	----------------------	--------------------

4. Net DTA(L) (2i - 3c)

	<u>\$ 982,725,685</u>	<u>\$ 761,056,249</u>	<u>\$ 221,669,436</u>
--	-----------------------	-----------------------	-----------------------

The change in net deferred income taxes is comprised of the following:

	Years Ended December 31,	
	2018	2017
(1) Net DTA(L)	\$ 221,669,436	\$ (889,389,131)
Less: Items not recorded in the change in net deferred income taxes:	-	-
(2) Tax-effect of unrealized gains/(losses)	68,154,831	(188,008,155)
(3) Tax-effect of changes from acquisitions/transfers	-	(6,819,261)
(4) Change in net deferred income taxes	<u>\$ 289,824,267</u>	<u>\$ (1,084,216,547)</u>

D. The components of federal and foreign income tax on operating items are recorded on the Summary of Operations and Capital and Surplus Account and are different from that which would be obtained by applying the prevailing federal income tax rate to operating income before taxes. The significant items causing this difference are as follows:

	Years Ended December 31,	
	2018	2017
(1) Provision computed at statutory rate	\$ (298,797,284)	\$ (150,738,016)
(2) Nonadmitted assets	(55,538,630)	66,781,695
(3) Foreign governmental income taxes	770,354	1,538,726
(4) Expense items	1,526,325	6,438,356
(5) Investment items	(20,844,100)	(249,584,754)
(6) Tax credits	(47,353,542)	(50,549,116)
(7) Change in reserve valuation basis	(7,414,353)	15,033,449
(8) Corporate rate reduction	-	918,972,692
(9) Other	<u>(78,725,551)</u>	<u>31,154,525</u>
Total statutory income tax expense (benefit)	<u>\$ (506,376,781)</u>	<u>\$ 589,047,556</u>
(10) Federal and foreign income tax benefit	\$ (216,552,514)	\$ (495,168,991)
(11) Change in net deferred income taxes	<u>(289,824,267)</u>	<u>1,084,216,547</u>
Total statutory income tax expense (benefit)	<u>\$ (506,376,781)</u>	<u>\$ 589,047,556</u>

E. (1) As of December 31, 2018, the Company had no net operating or capital loss carryforwards to include in deferred income taxes. The Company has no tax credit carryforwards included in deferred taxes.

(2) The Company received refunds of federal income taxes of \$162,238,125 and paid federal income taxes of \$2,936,449 in 2017.

(3) As of December 31, 2018 and 2017, the Company did not recognize any protective deposits as admitted assets.

F. (1) The Company and its eligible U.S. subsidiaries are included in a consolidated U.S. federal income tax return. The Company and its subsidiaries and affiliates also file income tax returns in various states and foreign jurisdictions.

(2) The Company and its eligible subsidiaries and certain affiliates (the Parties) have executed and are subject to a written tax allocation agreement (the Agreement). The Agreement sets forth the manner in which the total combined federal income tax is allocated among the Parties. The Agreement provides the Company with the enforceable right to recoup federal income taxes paid in prior years in the event of future net losses, which it may incur. Further, the Agreement provides the Company with the enforceable right to utilize its net losses carried forward as an offset to future net income subject to federal income taxes.

NOTES TO FINANCIAL STATEMENTS

- G. (1) Companies are generally required to disclose unrecognized tax benefits, which are the tax effect of positions taken on their tax returns that may be challenged by the various taxing authorities, in order to provide users of financial statements more information regarding potential liabilities. The Company recognizes tax benefits and related reserves in accordance with existing SAP for liabilities, contingencies and impairments of assets.
- (2) On December 22, 2017, the president signed into law H.R. 1/Public Law 115-97, commonly known as the Act. The Act contains several key provisions that have significant financial statement effects in both the current and prior reporting periods. Effective January 1, 2018, the Act reduces the corporate tax rate to 21 percent, eliminates the corporate alternative tax, increases the capitalization rates for determining deferred acquisition costs and extends the amortization period, modifies the life company proration rules, reduces the dividends received deduction applicable to corporate shareholders, and modifies the net operating loss deduction applicable to corporate taxpayers. The Act also imposed in 2017 a tax liability for mandatory deemed repatriation of previously untaxed foreign earnings, changed the method for computing deductions for life insurance reserves, introduced new taxes on foreign subsidiaries, and modified the provision for expensing of certain capital costs.
- (3) As a result of the reduction of the corporate tax rate to 21 percent, the Company remeasured its net admitted deferred taxes as of the enactment date and recognized a decrease in surplus of \$507,370,832 in 2017. Of the \$507,370,832 net decrease, \$918,972,692 was reflected in the change in other deferred income taxes, \$27,970,266 was reflected in the change in net unrealized foreign exchange capital gains (losses), offset by increases of \$439,572,126 reflected in the change in net unrealized capital gains (losses).
- (4) Effective January 1, 2018, the Act increased the capitalization rates for determining specified policy acquisition expenses. The provision increases the capitalization rate for annuity contracts from 1.75 percent to 2.09 percent, the rate for group life insurance contracts from 2.05 percent to 2.45 percent, and the rate for all other specified contracts from 7.7 percent to 9.2 percent. This provision extends the amortization period for capitalized deferred acquisition costs (DAC) to 180 months from 120 months. A transition rule allows capitalized DAC as of December 31, 2017 to continue to be amortized over 10-years.
- (5) Effective January 1, 2018, the Act modified the life company proration rules by defining the company's share as 70 percent and the policyholders' share as 30 percent for purposes of the dividends received deduction and tax-exempt interest income.
- (6) Effective January 1, 2018, the Act reduced the dividends received deduction applicable to corporate shareholders for the 70 percent deductions to 50 percent, and for the 80 percent deduction to 65 percent. The 100 percent dividends received deduction remains in effect for dividends from affiliated group members.
- (7) The Act modifies the deduction for NOLs and imposes the general corporate regime on life insurers. Under prior law, NOLs generally had a carry back period of two years (three years in the case of a life insurance company) and a carryforward period of 20 years (15 years in the case of a life insurance company). The Act eliminates the carry back period and makes the carryforward period indefinite. The amount of the NOL deduction allowed is limited to 80 percent of taxable income computed without regard to the NOL deduction. This provision applies to NOLs arising in taxable years beginning after December 31, 2017.
- (8) Under the Act, a company is required to establish a liability for taxes due on mandatory deemed repatriation of previously untaxed foreign earnings. The Company recorded a provisional tax benefit of \$2,453,252 in the Statutory Statements of Operations for year ended December 31, 2017. The Company has completed the calculation of the deemed repatriation tax liability and reported \$1,190,113 decrease in income tax expense for year ended December 31, 2018.
- (9) The Act revised the computation of life insurance tax reserves to be the greater of the net surrender value of a contract and 92.81 percent of statutory reserves. The revised reserve computation is effective for taxable years beginning after December 31, 2017. A transition rule requires life insurers to evenly spread the difference between the prior year end reserves computed on the old basis and those computed on the new basis over eight years as either income or a deduction. For the year ended December 31, 2017, the Company recorded an estimated provision for this change by recognizing a net \$487,128,600 increase in its deferred tax asset, offset by a corresponding increase in its deferred tax liability (DTL) that will reverse over the eight year transition period. The Company adjusted this provisional amount for year ended December 31, 2018 by recognizing a \$63,291,332 decrease in its DTA, offset by a corresponding decrease in its DTL. In addition, the Company recognized \$52,979,658 in income tax expense reported on the Statutory Statements of Operations to reflect the first year's amortization of the eight-year transition rule.
- (10) The Act introduces a new tax on global intangible low-taxed income. Generally, a CFC may incur a global intangible low taxed income (GILTI) tax if its income exceeds a prescribed return on its tangible business property. For the year ended December 31, 2018, the estimated GILTI tax was de minimis.
- (11) The Act introduces full expensing as the principal capital cost recovery regime, increasing the current first-year "bonus" depreciation deduction from 50 percent to 100 percent on a temporary basis of the cost of qualified plant and equipment acquired and placed in services after September 27, 2017 and before January 1, 2023. This expensing regime goes further than current law bonus depreciation by applying to both new and used property. The 100 percent bonus depreciation rule applies through 2022, then phases down 20 percent annual through 2026. For qualified property acquired before September 27, 2017, the applicable bonus percentage is 50 percent if placed in services before January 1, 2018, 40 percent if placed in service in 2018, 30 percent if placed in service in 2019, and 0 percent thereafter. The Company recorded a provisional current tax benefit of \$22,047,150 for qualified property acquired and placed in service after September 27, 2017, offset by a corresponding (DTL) that will reverse over the useful life of the qualified property. For the year ended December 31, 2018, the Company updated the provisional estimate by recording an additional current tax expense of \$5,782,133, offset by a corresponding deferred tax asset that will reverse over the useful life of the qualified property.
- (12) The Internal Revenue Service (IRS) has completed its examination of the tax returns filed for years 2013 and prior. The IRS commenced its exam of years 2014-2016 in September 2017. The adjustments resulting from the examinations are not expected to materially affect the position or liquidity of the Company.
- (13) With respect to the admitted DTAs calculation, effective January 1, 2018, the Act eliminates the ability to carryback net operating losses, therefore the amount of adjusted gross DTA admitted based on recoverable federal taxes is limited only to capital DTAs.

Note 10 – Information Concerning Parent, Subsidiaries and Affiliates

a-c. MMHLLC declared \$900,000,000 in dividends, of which \$250,000,000 was paid for during the year ended December 31, 2018 and declared and paid \$424,470,200 during the year ended December 31, 2017.

In November 2018, MassMutual International (MMI) completed the sale of MassMutual Asia Limited (MM Asia) to Yunfeng Financial Group (Yunfeng FG) and several Asia-based investors. Under the terms of the agreement, MMI received \$1,011,783,113 in cash and 800 million shares of Yunfeng FG, which represented approximately 24.8% ownership at the time of the close. In turn, Yunfeng FG will hold a 60% interest in MM Asia and the other investors will hold the remainder. The transaction was initially announced in November of 2017.

NOTES TO FINANCIAL STATEMENTS

In October 2018, MassMutual announced a transaction in which Invesco Ltd. (Invesco), a global asset manager, will acquire MassMutual's retail asset management affiliate, OppenheimerFunds, Inc (OFI). In turn, MassMutual is expected to receive an approximate 15.5% common equity interest in the combined company. Under the terms of the agreement, MassMutual and OFI employee shareholders will receive 81.9 million shares of Invesco common equity and \$3,948,653,000 in preferred shares with a fixed dividend rate of 5.9%. As part of this transaction, Invesco and MassMutual will enter into a shareholder agreement in which MassMutual will have customary minority shareholder rights, including appointment of a director to Invesco's board of directors. Pending regulatory and other customary approvals, the transaction is expected to close in the second quarter of 2019.

In March, 2018, MassMutual and MMI entered into an agreement to sell 85.1% of MassMutual Life Insurance Company in Japan (MM Japan), a wholly-owned life insurance and wealth management subsidiary of MMI, to Nippon Life. MMI estimated the fair value of the retained portion of MM Japan based upon the agreed selling price of the sold portion of MM Japan with the buyer. The sale of MM Japan closed in May 2018. MMI received \$960,126,929 in cash proceeds from the sale.

The amount of the proceeds from the sale of MM Japan and MM Asia was less than MMI's book value. As such, MMI's book value was reduced to an estimated fair value of \$2,700,000,000 and an impairment of \$1,257,307,000 was recorded in net realized capital gains (losses).

MassMutual contributed additional capital of \$214,267,226 to MMI during the year ended December 31, 2018 and \$55,642,341 during the year ended December 31, 2017.

During the year ended December 31, 2018 MassMutual received \$1,583,000,000 as a return of capital from MMI.

MassMutual contributed additional capital of \$343,488,638 to MMHLLC during the year ended December 31, 2018 and \$144,035,628 during the year ended December 31, 2017.

- d. The Company reported \$81,873,078 as amounts due from subsidiaries and affiliates as of December 31, 2018 and \$59,367,747 as of December 31, 2017. The Company reported (\$17,130,060) as amounts due to subsidiaries and affiliates as of December 31, 2018 and (\$7,053,829) as of December 31, 2017. Terms generally require settlement of these amounts within 30 to 90 days.
- e. The Company has reinsurance agreements with its subsidiary, C.M. Life, and its indirect subsidiary, MML Bay State, including stop-loss, modified coinsurance (Modco) and yearly renewable term agreements on life insurance products. The Company also has coinsurance agreements with C.M. Life where the Company assumes substantially all of the premium on certain universal life policies.

The net amounts due to C.M. Life and MML Bay State were \$39,702,346 as of December 31, 2018 and \$39,122,261 as of December 31, 2017. These outstanding balances are due and payable with terms ranging from monthly to annually, depending on the agreement in effect.

The following summarizes the reinsurance transactions for these agreements:

	Years Ended December 31,	
	2018	2017
Premium assumed	\$ 49,077,954	\$ 52,442,947
Modco adjustments, included in fees and other income	11,932,442	14,383,351
Expense allowances on reinsurance assumed, included in fees and other expense	(20,013,092)	(19,697,627)
Policyholders' benefits	(138,536,910)	(133,761,931)
Experience refunds (paid) received	(2,997,489)	929,698

- f. The Company has management and service contracts and cost-sharing arrangements with various subsidiaries and affiliates where the Company, for a fee, will furnish a subsidiary or affiliate, as required, operating facilities, human resources, computer software development and managerial services. Fees from C.M. Life accounted for \$135,598,508 in 2018 and \$77,214,806 in 2017. Fees from MML Bay State accounted for \$11,303,040 in 2018 and \$8,645,579 in 2017.

The Company has agreements with its subsidiaries and affiliates, including Barings LLC (Barings), and MM Investment Advisers, LLC, where the Company receives revenue for certain recordkeeping and other services that the Company provides to customers who select, as investment options, mutual funds managed by these affiliates.

The Company has agreements with its subsidiaries, MM Copper Hill LLC, Insurance Road LLC, Barings, Barings Real Estate Advisers, LLC (BREA), MML Investment Advisers LLC, MSI Financial Services, Inc. and OFI, which provide investment advisory services to the Company.

In 2018, the Company contributed \$476,113,707 in private equity investments and \$81,111,847 in bonds to its subsidiary Insurance Road LLC. In December 2018, Insurance Road, LLC declared a distribution to the Company of \$749,254,863.

In December 2018, MassMutual Trust co. declared and paid \$2,500,000 to the Company.

In November 2017, MassMutual contributed certain receivables of \$314,988,153 million to CHLLC, a wholly-owned subsidiary. The contribution was recorded at book value with no gain or loss recognized on the transaction. In December 2017, CHLLC paid a return of capital to the Company of \$304,859,082 million.

In June 2017, MassMutual contributed certain intellectual property, with no carrying value, in an affiliated transaction with IRLLC, a wholly-owned subsidiary of MassMutual and therefore no gain or loss was recognized on the transaction.

In June 2017, MassMutual became party to an agreement with MassMutual Intellectual Property LLC (MMIP) effective June 30, 2017 that gave MassMutual the right to use certain intellectual property in the operation of its business. MassMutual incurred an expense of \$56,000,000 in 2018 and \$26,460,000 in 2017 for these rights.

In 2017, MassMutual contributed its ownership in certain partnerships and LLCs with a carrying value of approximately \$743,087,927 million to IRLLC in an affiliated transaction and therefore no gain or loss was recognized on the transaction.

NOTES TO FINANCIAL STATEMENTS

The following table summarizes the transactions between the Company and the related parties:

	Years Ended December 31,	
	2018	2017
Fee income:		
Management and service contracts and cost-sharing arrangements	\$ 439,909,558	\$ 340,796,568
Investment advisory income	23,793,013	22,893,450
Recordkeeping and other services	22,033,760	23,153,753
Fee expenses:		
Investment advisory services	269,990,791	247,972,956
Royalty and licensing fees	56,000,000	26,460,000

The Company's indirectly wholly owned subsidiaries, Barings and BREA, invest a portion of their nonqualified compensation plan in guaranteed interest contracts with the Company. For the year ended December 31, 2018, the Company credited interest on deposits of (\$262,586) to the Barings contract and (\$316,122) to the BREA contract. For the year ended December 31, 2017, the Company credited interest on deposits of \$2,023,093 to the Barings contract and \$1,010,750 to the BREA contract.

The Company participates in variable annuity exchange programs with its subsidiary, C.M. Life (including MML Bay State) where certain variable annuity contract holders of the Company, C.M. Life or MML Bay State can make nontaxable exchanges of their contracts for enhanced variable annuity contracts of the Company or C.M. Life. The Company did not record premium income or surrender benefits related to these exchange programs in 2018. The Company recorded premium income of \$275,000 and surrender benefits of \$6,566,063 related to these exchange programs in 2017. C.M. Life did not record premium income and surrender benefits related to these exchange programs in 2018. C.M. Life recorded premium income of \$6,566,063 and surrender benefits of \$275,000 related to these exchange programs in 2017. The Company has an agreement with C.M. Life to compensate them or to be compensated for the lost revenue associated with the exchange of contracts that are within the surrender charge period. As a result of these exchanges, the Company did not pay any net commissions to C.M. Life as of December 31, 2018 or December 31, 2017.

In the normal course of business, the Company provides specified guarantees and funding to MMHLLC and certain of its subsidiaries. Refer to Note 14 "Liabilities, Contingencies and Assessments" for information on the Company's accounting policies regarding these related party commitments and information on the guarantees.

- g. Subsidiaries of MMHLLC are involved in litigation and investigations arising in the ordinary course of their business, which seek compensatory damages, punitive damages and equitable remedies. Although the Company is not aware of any actions or allegations that reasonably could give rise to a material adverse impact to the Company's financial position or liquidity, the outcome of litigation cannot be foreseen with certainty. It is the opinion of management that the ultimate resolution of these matters will not materially impact the Company's financial position or liquidity. However, the outcome of a particular proceeding may be material to the Company's Statutory Statements of Changes in Surplus for a particular period depending upon, among other factors, the size of the loss and the level of the Company's changes in surplus for the period.

The Company has no parent and is not directly or indirectly controlled by any other entity.

- h. The Company does not have an upstream intermediate entity or ultimate parent. Therefore, no amounts were deducted from the value of an upstream intermediate entity or ultimate parent owned, either directly or indirectly, via a downstream subsidiary, controlled or affiliated entity.
- i. As of December 31, 2018, the Company did not have an investment in SCAs exceeding 10% of admitted assets.
- j. In 2018, the Company did not have impairment write-downs on its investments in affiliated bonds. The Company recognized \$6,346,276 in impairment write-downs on its investments in affiliated joint ventures, including partnerships and LLCs of SCAs. OTTI were determined based on internally developed models.

In 2017, the Company recognized \$33,551 in impairment write-downs on its investments in affiliated bonds. The Company recognized \$36,808,081 in impairment write-downs on its investments in affiliated joint ventures, including partnerships and LLCs of SCAs. OTTI were determined based on internally developed models.

In 2018 and 2017, the Company did not have any impairment write-downs on its investments in common stock of affiliates.

- k. The Company has no foreign insurance subsidiary whose value is calculated by adjusting annuity GAAP account value reserves using the Commissioners' Annuity Reserve Valuation Method and the related Actuarial Guidelines.
- l. The Company obtains audited financial statements of its downstream noninsurance holding company, MMHLLC.

NOTES TO FINANCIAL STATEMENTS

m. The following presents certain information for the Company's noninsurance SCA investments:

All SCA Investments

(1) Balance Sheet Value (Admitted and Nonadmitted) All SCAs (Except 8bi Entities):

SCA Entity	Percentage of SCA Ownership	Gross Amount	Admitted Amount	Nonadmitted Amount
a. SSAP No. 97 8a Entities				
None	-	\$ -	\$ -	\$ -
b. SSAP No. 97 8b(ii) Entities				
MassMutual Holding LLC (57543#-11-8)	100.0	\$ 9,337,733,346	\$ 9,337,733,346	\$ -
Cornerstone Global REIT Corp (21926@10-5)	92.3	188,515	188,515	-
Total SSAP No. 97 8b(ii) Entities	XXXXXX	\$ 9,337,921,861	\$ 9,337,921,861	\$ -
c. SSAP No. 97 8b(iii) Entities				
The MassMutual Trust Co, FSB (57631@10-5)	100.0	26,658,638	26,658,638	-
MML Management Corporation (55338@-10-5)	100.0	1,012,033,389	1,012,033,389	-
Total SSAP No. 97 8b(iii) Entities	-	\$ 1,038,692,027	\$ 1,038,692,027	\$ -
d. SSAP No. 97 8b(iv) Entities				
None	-	\$ -	\$ -	\$ -
e. Total SSAP No. 97 8b Entities (except 8bi) (b+c+d)	-	\$ 10,376,613,888	\$ 10,376,613,888	\$ -
f. Aggregate Total (a+e)	XXXXXX	\$ 10,376,613,888	\$ 10,376,613,888	\$ -

(2) NAIC Filing Response :

SCA Entity (Should be same entities as shown in M(1) above)	Type of NAIC Filing*	Date of Filing to the NAIC	NAIC Valuation Amount	NAIC Response Received Y/N	NAIC Disallowed Entities Valuation Method. Resubmission Required Y/N	Code**
a. SSAP No. 97 8a Entities						
b. SSAP No. 97 8b(ii) Entities						
MassMutual Holding LLC (57543#-11-8)	S2	7/31/2018	\$ 9,115,667,747	Y	N	I
Cornerstone Global REIT Corp (21926@10-5)	S2	7/31/2018	172,758	Y	N	I
Total SSAP No. 97 8b(ii) Entities	XXXXXX	XXXXXX	\$ 9,115,840,505	XXXXXX	XXXXXX	XXXXXX
c. SSAP No. 97 8b(iii) Entities						
The MassMutual Trust Co, FSB (57631@10-5)	S2	7/31/2018	21,990,048	Y	N	I
MML Management Corporation (55338@-10-5)	S2	8/30/2018	956,429,851.0	Y	N	I
Total SSAP No. 97 8b(iii) Entities	XXXXXX	XXXXXX	\$ 978,419,899	XXXXXX	XXXXXX	XXXXXX
d. SSAP No. 97 8b(iv) Entities						
None	N/A	N/A	\$ -	N/A	N/A	N/A
e. Total SSAP No. 97 8b Entities (except 8bi) (b+c+d)	XXXXXX	XXXXXX	\$ 10,094,260,404	XXXXXX	XXXXXX	XXXXXX
f. Aggregate Total (a+e)	XXXXXX	XXXXXX	\$ 10,094,260,404	XXXXXX	XXXXXX	XXXXXX

* S1 - Sub-1, S2 - Sub-2 or RDF - Resubmission of Disallowed Filing

** I - Immaterial or M - Material

The U.S. GAAP equity value of MMHLLC is \$10,759,089,239 as of December 31, 2018, which is higher than the statutory carrying value, presented as gross value, in the preceding table, as portions of the equity value are nonadmitted under statutory accounting principles. The current fair value of MMHLLC remains significantly greater than its statutory carrying value.

Note 11 – Debt

a. The Company had commercial paper outstanding with a carrying value and face amount of \$249,786,188 as of December 31, 2018 and \$249,867,743 as of December 31, 2017. The commercial paper issued in 2018 had interest rates ranging from 2.05% to 2.50% with maturity dates ranging from 25 to 40 days. There are no collateral requirements on the Company's outstanding commercial paper. The commercial paper does not include terms for reverse repurchase agreements.

Interest expense for the commercial paper was \$5,145,583 for the year ended December 31, 2018 and \$2,626,570 for the year ended December 31, 2017.

The Company has a \$1,000,000,000 five-year credit facility, with a syndicate of lenders that can be used for general corporate purposes and to support commercial paper borrowings. During December 2018, the facility was renewed and the scheduled maturity is December

NOTES TO FINANCIAL STATEMENTS

2023. The facility includes two one-year extension options that may be exercised with proper notification as set forth in the agreement. The facility has an upside option for an additional \$500,000,000. The terms of the credit facility additionally provide for, among other provisions, covenants pertaining to liens, fundamental changes, transactions with affiliates and adjusted statutory surplus. As of and for the years ended December 31, 2018 and 2017, the Company was in compliance with all covenants under the credit facility. For the years ended December 31, 2018 and 2017, there were no draws on the credit facilities. Credit facility fees were less than \$1,000,000 for the years ended December 31, 2018 and 2017.

The Company held debt issued by MMHLLC that amounted to \$1,769,461,399 as of December 31, 2018 and \$1,769,461,398 as of December 31, 2017. The Company recorded interest income on MMHLLC debt of \$74,321,689 in 2018 and \$64,620,627 in 2017.

The Company did not have any capital notes as of December 31, 2018 or 2017.

The Company did not have any debt that was considered to be extinguished by in-substance defeasance.

The Company did not set aside assets after the effective date of this statement solely for satisfying debt obligations.

The Company does not have any repurchase agreements as part of debt. See Note 5(E) for information on the Company's repurchase agreements.

b. Federal Home Loan Bank agreements:

(1) The Company is a member of the Federal Home Loan Bank of Boston (FHLB Boston). Through its membership, the Company has conducted business activity (borrowings) with the FHLB Boston. The Company uses these funding agreements with the FHLB Boston in an investment spread strategy, consistent with its other investment spread operations. The Company has determined the actual maximum borrowing capacity as \$2,000,000,000. The Company's unused capacity was \$896,249,545 as of December 31, 2018.

(2) FHLB Boston capital stock

a. Aggregate totals:

		December 31, 2018		
		1 Total 2+3	2 General Account	3 Separate Account
1. Current Year:				
(a) Membership stock - Class A	\$	-	-	-
(b) Membership stock - Class B		25,000,000	25,000,000	-
(c) Activity Stock		48,700,000	48,700,000	-
(d) Excess Stock		-	-	-
(e) Aggregate Total		\$ 73,700,000	\$ 73,700,000	\$ -
(f) Actual or Estimated Borrowing Capacity as Determined by the Insurer	\$	2,000,000,000	2,000,000,000	\$ -
2. Prior Year-end:				
(a) Membership stock - Class A	\$	-	-	-
(b) Membership stock - Class B		25,000,000	25,000,000	-
(c) Activity Stock		48,700,000	48,700,000	-
(d) Excess Stock		-	-	-
(e) Aggregate Total		\$ 73,700,000	\$ 73,700,000	\$ -
(f) Actual or Estimated Borrowing Capacity as determined by the Insurer	\$	2,000,000,000	2,000,000,000	\$ -

b. Membership Stock (Class A and B) Eligible and Not Eligible for Redemption:

		Years Ended December 31, 2018					
Membership Stock	1 Current Year Total	2 Not Eligible for Redemption	Eligible for Redemption				
			3 Less Than 6 Months	4 6 Months to Less Than 1 Year	5 1 to Less Than 3 Years	6 3 to 5 Years	
1. Class A	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
2. Class B	25,000,000	25,000,000	-	-	-	-	

NOTES TO FINANCIAL STATEMENTS

(3) Collateral pledged to FHLB:

a. Amount pledged as of December 31, 2018:

1. Current year total general and separate accounts:

	Fair Value	Carrying Value	Aggregate Total Borrowing
Total collateral pledged	\$ 1,585,921,118	\$ 1,217,470,617	\$ 1,103,750,455

2. Current year general account:

	Fair Value	Carrying Value	Aggregate Total Borrowing
Total collateral pledged	\$ 1,585,921,118	\$ 1,217,470,617	\$ 1,103,750,455

3. Current year separate accounts:

	Fair Value	Carrying Value	Aggregate Total Borrowing
Total collateral pledged	\$ -	\$ -	\$ -

4. Prior year-end total general and separate accounts:

	Fair Value	Carrying Value	Aggregate Total Borrowing
Total collateral pledged	\$ 1,550,269,200	\$ 1,166,181,238	\$ 1,053,569,379

b. Maximum amount pledged for the year ended December 31, 2018:

1. Current year total general and separate accounts:

	Fair Value	Carrying Value	Amount Borrowed at Time of Maximum Collateral
Maximum collateral pledged	\$ 1,635,548,627	\$ 1,246,429,701	\$ 1,103,750,455

2. Current year general account:

	Fair Value	Carrying Value	Amount Borrowed at Time of Maximum Collateral
Maximum collateral pledged	\$ 1,635,548,627	\$ 1,246,429,701	\$ 1,103,750,455

3. Current year separate accounts:

	Fair Value	Carrying Value	Amount Borrowed at Time of Maximum Collateral
Maximum collateral pledged	\$ -	\$ -	\$ -

4. Prior year-end total general and separate accounts:

	Fair Value	Carrying Value	Amount Borrowed at Time of Maximum Collateral
Maximum collateral pledged	\$ 1,680,502,867	\$ 1,260,781,053	\$ 1,107,520,273

NOTES TO FINANCIAL STATEMENTS

(4) Borrowing from FHLB:

a. Amount:

1. Current year:

	December 31, 2018			
	1 Total 2+3	2 General Account	3 Separate Account	4 Funding Agreements Reserves Established
(a) Debt	\$ -	\$ -	\$ -	\$ -
(b) Funding agreements	1,103,750,455	1,103,750,455	-	1,103,750,455
(c) Other	-	-	-	-
(d) Aggregate total	<u>\$ 1,103,750,455</u>	<u>\$ 1,103,750,455</u>	<u>\$ -</u>	<u>\$ 1,103,750,455</u>

2. Prior Year-end:

	December 31, 2017			
	1 Total 2+3	2 General Account	3 Separate Account	4 Funding Agreements Reserves Established
(a) Debt	\$ -	\$ -	\$ -	\$ -
(b) Funding agreements	1,053,569,379	1,053,569,379	-	1,053,569,379
(c) Other	-	-	-	-
(d) Aggregate total	<u>\$ 1,053,569,379</u>	<u>\$ 1,053,569,379</u>	<u>\$ -</u>	<u>\$ 1,053,569,379</u>

b. Maximum Amount:

	Years Ended December 31, 2018		
	1 Total 2+3	2 General Account	3 Separate Account
1. Debt	\$ -	\$ -	\$ -
2. Funding	1,103,750,455	1,103,750,455	-
3. Other	-	-	-
4. Aggregate	<u>\$ 1,103,750,455</u>	<u>\$ 1,103,750,455</u>	<u>\$ -</u>

c. FHLB - Prepayment Obligations:

	Does the company have prepayment obligations under the following arrangements (YES/NO)?
1. Debt	N/A
2. Funding agreements	NO
3. Other	N/A

Note 12 – Retirement Plans, Deferred Compensation, Postemployment Benefits and Compensated Absences and Other Postretirement Benefit Plans

a. Defined Benefit Plan

The Company has funded and unfunded noncontributory defined benefit pension plans that cover substantially all employees, agents and retirees. The qualified defined benefit plan includes a defined benefit formula and a cash balance formula. Participants earn benefits under the plan based on the defined benefit formula, the cash balance formula or a combination of both formulas as determined by their date of hire or rehire. Under the defined benefit formula, benefits are calculated based on final average earnings and length of service. Benefits under the cash balance formula are determined based on age, service and salary during the participants' careers.

The Company's policy is to fund qualified pension costs in accordance with the Employee Retirement Income Security Act of 1974. The Company contributed \$188,000,000 in 2018 and \$88,000,000 in 2017 to its qualified defined benefit plan.

The determination of the discount rate is based upon rates commensurate with current yields on high quality corporate bonds as of a December 31 measurement date (The Measurement Date). A spot yield curve is developed from this data that is used to determine the present value for the obligation. The projected plan cash flows are discounted to the Measurement Date based on the spot yield curve. A single discount rate is utilized to ensure the present value of the benefits cash flow equals the present value computed using the spot yield curve. A 25 basis point change in the discount rate results in approximately a \$87,393,628 change in the projected pension benefit obligation. The methodology includes producing a cash flow of annual accrued benefits. See section 8 of this Note, "Assumptions" for details on the discount rate.

A summary of assets, obligations and assumptions of the pension benefits, postretirement benefits, and special or contractual termination benefits per SSAP No. 11 are as follows using a December 31 measurement date:

NOTES TO FINANCIAL STATEMENTS

	December 31,			
	2018	2017	2018	2017
	Overfunded		Underfunded	
(1) Change in benefit obligation:				
a. Pension Benefits				
1. Benefit obligation, beginning of year	\$	-	\$	-
2. Service cost			\$ 3,036,125,481	\$ 2,785,261,912
3. Interest cost			112,767,899	125,949,069
4. Contributions by plan participants			107,594,163	112,277,481
5. Actuarial (gains) losses			-	-
6. Foreign currency exchange rates			(264,086,628)	158,463,691
7. Benefits paid			-	-
8. Plan amendments			(142,398,349)	(145,826,672)
9. Business combinations, divestitures, curtailments, settlements, and special termination benefits			-	-
10. Benefit obligation, end of year	\$	-	\$	-
			\$ 2,850,002,566	\$ 3,036,125,481

	December 31,			
	2018	2017	2018	2017
	Overfunded		Underfunded	
b. Postretirement Benefits				
1. Benefit obligation, beginning of year	\$	-	\$	-
2. Service cost			\$ 353,900,998	\$ 340,107,025
3. Interest cost			13,723,294	12,043,906
4. Contributions by plan participants			11,727,741	12,516,839
5. Actuarial (gains) losses			524,826	547,348
6. Foreign currency exchange rates			(25,343,103)	4,088,132
7. Benefits paid			-	-
8. Plan amendments			(14,015,326)	(15,402,252)
9. Business combinations, divestitures, curtailments, settlements, and special termination benefits			-	-
10. Benefit obligation, end of year	\$	-	\$	-
			\$ 340,518,430	\$ 353,900,998

	December 31,			
	2018	2017	2018	2017
	Overfunded		Underfunded	
c. Special or contractual benefits per SSAP #11				
1. Benefit obligation, beginning of year	\$	-	\$	-
2. Service cost			-	-
3. Interest cost			-	-
4. Contributions by plan participants			-	-
5. Actuarial (gains) losses			-	-
6. Foreign currency exchange rates			-	-
7. Benefits paid			-	-
8. Plan amendments			-	-
9. Business combinations, divestitures, curtailments, settlements, and special termination benefits			-	-
10. Benefit obligation, end of year	\$	-	\$	-
			-	-

NOTES TO FINANCIAL STATEMENTS

	December 31,					
	2018		2017		2018	2017
	Pension Benefits		Postretirement		Special or Contractual Benefits Per SSAP No 11	
(2) Change in plan assets:						
a. Fair value of plan assets, beginning of year	\$ 2,485,344,734	\$ 2,180,274,356	\$ 4,117,117	\$ 4,386,770	\$ -	\$ -
b. Actual return on plan assets	(147,815,399)	330,848,237	83,742	44,163	-	-
c. Foreign currency exchange rates changes	-	-	-	-	-	-
d. Contributions by reporting entity	207,660,938	120,048,813	12,908,400	14,541,088	-	-
e. Contributions by plan participants	-	-	524,826	547,348	-	-
f. Benefits paid	(142,398,349)	(145,826,672)	(14,015,326)	(15,402,252)	-	-
g. Business combinations, divestitures, curtailments, settlements, and special termination benefits	-	-	-	-	-	-
h. Fair value of plan assets, end of year	\$ 2,402,791,924	\$ 2,485,344,734	\$ 3,618,759	\$ 4,117,117	\$ -	\$ -

	December 31,			
	2018		2017	
	Pension Benefits		Other Postretirement Benefits	
(3) Funded status				
a. Components:				
1. Prepaid benefit costs	\$ 727,193,552	\$ 598,719,300	\$ -	\$ -
2. Overfunded plan assets	-	-	-	-
3. Accrued benefit costs	272,715,746	245,084,637	379,614,571	370,486,456
4. Liability for pension benefits	174,494,896	302,462,527	(42,714,900)	(20,702,575)
b. Assets and liabilities recognized				
1. Assets (nonadmitted)	\$ 727,193,552	\$ 598,719,300	\$ -	\$ -
2. Liabilities recognized	447,210,642	547,547,164	336,899,671	349,783,881
c. Unrecognized liabilities	\$ -	\$ 3,233,583	\$ -	\$ 349,783,881

	Years Ended December 31,					
	2018		2017		2018	2017
	Pension Benefits		Postretirement Benefits		Special or Contractual Benefits per SSAP No 11	
(4) Components of net periodic benefit cost						
a. Service cost	\$ 112,767,89	\$ 125,949,06	\$ 13,723,294	\$ 12,043,906	\$ -	\$ -
b. Interest cost	107,594,16	112,277,48	11,727,741	12,516,839	-	-
c. Expected return on plan	(171,508,40)	(147,429,50)	(78,514)	(86,603)	-	-
d. Transition asset or obligation	-	-	-	-	-	-
e. Gains and losses	54,841,449	65,195,485	2,183,494	1,539,093	-	-
f. Prior service cost or (credit)	3,122,684	3,122,684	(5,519,500)	(5,519,500)	-	-
g. Gain or loss recognized due settlement or curtailment	-	-	-	-	-	-
h. Total net periodic benefit cost	\$ 106,817,79	\$ 159,115,21	\$ 22,036,515	\$ 20,493,735	\$ -	\$ -

(5) The following sets forth the amounts in unassigned funds (surplus) recognized as components of net periodic benefit cost:

	December 31,			
	2018		2017	
	Pension Benefits		Postretirement Benefits	
a. Items not yet recognized as a component of net periodic cost in prior year	\$ 904,415,410	\$ 997,688,624	\$ (20,682,575)	\$ (28,912,352)
b. Net transition asset or obligation recognized	-	-	-	-
c. Net prior service cost or credit arising during the period	-	-	-	-
d. Net prior service cost or credit recognized	(3,122,684)	(3,122,684)	5,519,500	5,519,500
e. Net gain and loss arising during the period	55,237,171	(24,955,045)	(25,348,331)	4,249,370
f. Net gain and loss recognized	(54,841,449)	(65,195,485)	(2,183,494)	(1,539,093)
g. Items not yet recognized as a component of net periodic cost in current year	\$ 901,688,448	\$ 904,415,410	\$ (42,694,900)	\$ (20,682,575)

NOTES TO FINANCIAL STATEMENTS

- (6) The following sets forth the amounts in unassigned funds (surplus) expected to be recognized in the next fiscal year as components of net periodic benefit cost:

	December 31,			
	2019	2018	2019	2018
	Pension Benefits		Postretirement Benefits	
a. Net transition asset or obligation	\$ -	\$ -	\$ -	\$ -
b. Net prior service cost or credit	-	3,122,684	(5,519,500)	(5,519,500)
c. Net recognized gains and losses	56,493,471	54,841,450	(288,441)	2,268,542

- (7) The following sets forth the amounts in unassigned funds (surplus) that have not yet been recognized as components of net periodic benefit cost:

	December 31,			
	2018	2017	2018	2017
	Pension Benefits		Postretirement Benefits	
a. Net transition asset or obligation	\$ -	\$ -	\$ -	\$ -
b. Net prior service cost or credit	-	3,122,684	(40,985,500)	(46,505,000)
c. Net recognized gains and losses	901,688,448	901,292,726	(1,729,400)	25,802,425

- (8) The assumptions the Company used to calculate the benefit obligations and to determine the benefit costs are as follows:

	December 31,			
	2018	2017	2018	2017
	Pension Benefits		Other Postretirement Benefits	
Weighted-average assumptions used to determine net periodic benefit cost as of December 31:				
a. Weighted-average discount rate	3.60 %	4.10 %	3.40 %	3.85 %
b. Expected long-term rate of return on plan assets	6.75 %	6.75 %	3.00 %	3.00 %
c. Rate of compensation increase	3.50 %	3.50 %	3.50 %	3.50 %
Weighted-average assumptions used to determine projected benefit obligation as of December 31:				
d. Weighted-average discount rate	4.20 %	3.60 %	4.05 %	3.40 %
e. Rate of compensation increase	3.50 %	3.50 %	3.50 %	3.50 %

- (9) The amount of the accumulated benefit obligation for defined benefit pension plans was \$2,739,168,171 as of December 31, 2018 and \$2,935,812,500 as of December 31, 2017.

- (10) The Company sponsors multiple employee benefit plans, providing retirement, life, health and other benefits to employees, certain employees of unconsolidated subsidiaries, agents, general agents and retirees who meet plan eligibility requirements.

MMHLLC has the obligation to pay the Company's other postretirement benefits. The transfer of this obligation to MMHLLC does not relieve the Company of its primary liability. MMHLLC is allocated other postretirement expenses related to interest cost, amortization of actuarial gains (losses) and expected return on plan assets, whereas service cost and prior service cost are recorded by the Company.

Substantially all of the Company's U.S. employees and agents may become eligible to receive other postretirement benefits. These benefits are funded as the benefits are provided to the participants. For employees who retire after 2009, except certain employees who were close to retirement in 2010, the Company's cost is limited to a retiree health reimbursement account "RHRA" which accumulates during an employee's career and can be drawn down by the retiree to purchase coverage outside of the Company or for other health care costs. Retired employees with an RHRA also may choose to purchase coverage through the private retiree exchange.

For other current and future retired employees, and current and future retired agents, the Company provides access to postretirement health care plans through a private retiree exchange. The Company's cost is limited to the fixed annual subsidy provided to retirees through a Health Reimbursement Account each year that the retiree can use to purchase coverage on the exchange or for other health care costs.

Company-paid basic life insurance is provided to retirees who retired before 2010 and certain employees who retire after 2009 but were close to retirement in 2010. Supplemental life insurance is available to certain retirees on a retiree-pay-all basis.

The Company provides retiree life insurance coverage for home office employees who, as of January 1, 2010, were age 50 with at least 10 years of service or had attained 75 points, generally age plus service, with a minimum 10 years of service.

- (11) Assumed health care cost trend rates do not have a significant effect on the amounts reported for the health care plans. A one percentage point change in the assumed health care cost trend rate would have had the following effects in 2018.

NOTES TO FINANCIAL STATEMENTS

	One Percentage Point Increase	One Percentage Point Decrease
a. Effect on total service and interest cost components	\$ 100,000	\$ (100,000)
b. Effect on other postretirement benefit obligations	1,200,000	(900,000)

(12) The expected future pension and other postretirement benefit payments, which reflect expected future service, are as follows:

	Year(s)	Amount
a.	2019	\$ 114,555,212
b.	2020	121,300,609
c.	2021	127,550,619
d.	2022	133,166,064
e.	2023	139,255,525
f.	2024 through 2028	778,558,201

(13) The Company intends to fund \$35,107,404 in 2019 to meet its expected current obligations under its qualified and non-qualified pension and other postretirement benefit plans.

(14) The Company's qualified pension plan assets managed by the Company and its indirectly wholly owned subsidiaries are as follows:

	December 31,	
	2018	2017
General Investment Account	\$ 246,655,739	\$ 240,842,977
Separate investment accounts:		
Barings Long Duration Bond Fund	289,413,077	262,896,089
Oppenheimer International Growth Fund	118,584,314	134,454,036
Alternative Investment Separate Account	84,583,419	147,046,742
Oppenheimer Large Core Fund	79,101,962	115,370,560
MM Select Large Cap Value Fund	54,713,535	60,586,543
MM Select Blue Chip Growth Fund	38,358,160	52,528,924
MM Select Growth Opportunities Fund	38,639,479	51,232,840
MM Premier Strategic Emerging Markets Fund	46,090,086	50,009,635
Oppenheimer Small Capitalization Core Fund	32,460,517	47,767,386
MM Select Small Cap Value Fund	19,528,817	29,785,883
MM Select Small Cap Growth Fund	-	29,103,457
	\$ 1,048,129,105	\$ 1,221,625,072

The approximate amount of annual benefits to be paid to plan participants covered by a group annuity contract issued by the employer or related parties is \$79,447,808 for 2019.

(15) The Company does not use alternative amortization methods.

(16) The Company does not use any substantive commitments as the basis for accounting for the benefit obligation.

(17) The Company did not have any special contractual benefits recognized during the period.

(18) The Company did not have any significant changes in benefit obligations or plan assets not otherwise apparent in the other disclosure required by current statutory guidance regarding accounting for pensions.

(19) The Company does not expect any plan assets to be returned during the 12 month period following the most recent annual statement of financial position presented.

NOTES TO FINANCIAL STATEMENTS

(20) The following sets forth the accumulated benefit obligation funded status of the plans:

	December 31,			
	2018	2017	2018	2017
	Overfunded		Underfunded	
Pension:				
a. Accumulated benefit obligation	\$ -	\$ -	\$ 2,739,168,171	\$ 2,935,812,500
b. Less: Assets	-	-	2,402,791,924	2,485,344,734
c. Accumulated benefit obligation funded status	\$ -	\$ -	\$ 336,376,247	\$ 450,467,766

	December 31,			
	2018	2017	2018	2017
	Overfunded		Underfunded	
Postretirement:				
a. Accumulated benefit obligation	\$ -	\$ -	\$ 340,518,432	\$ 353,900,998
b. Less: Assets	-	-	3,618,759	4,117,117
c. Accumulated benefit obligation funded status	\$ -	\$ -	\$ 336,899,673	\$ 349,783,881

The following sets forth the projected benefit obligation funded status of the plans:

	December 31,			
	2018	2017	2018	2017
	Overfunded		Underfunded	
Pension:				
a. Projected benefit obligation	\$ -	\$ -	\$ 2,850,002,566	\$ 3,036,125,481
b. Less: fair value of plan assets	-	-	2,402,791,924	2,485,344,734
c. Projected benefit obligation funded status	\$ -	\$ -	\$ 447,210,642	\$ 550,780,747

	December 31,			
	2018	2017	2018	2017
	Overfunded		Underfunded	
Postretirement:				
a. Projected benefit obligation	\$ -	\$ -	\$ 340,518,432	\$ 353,900,998
b. Less: fair value of plan assets	-	-	3,618,759	4,117,117
c. Projected benefit obligation funded status	\$ -	\$ -	\$ 336,899,673	\$ 349,783,881

The qualified pension plan was underfunded by \$70,709,500 as of December 31, 2018 and by \$145,388,815 as of December 31, 2017. The nonqualified pension plans are not funded and have total projected benefit obligations of \$376,501,142 as of December 31, 2018 and \$406,391,932 as of December 31, 2017.

(21) The Society of Actuaries released an updated mortality improvement scale in October 2017 (MP 2017). The Company adopted the new mortality table and other key plan assumptions as part of its fourth quarter 2017 remeasurement. As a result of this change in projection scale, the Company's aggregate projected benefit obligation decreased by approximately \$19,812,588 as of December 31, 2017.

b. The target range allocations for the qualified pension plan assets are 13% to 23% domestic equity securities, 25% to 45% long duration bond securities, 5% to 15% GIA and aggregate bond assets, 13% to 23% international equity securities and 10% to 30% alternative investments. Domestic equities primarily include investments in large capitalization (large-cap) companies and small capitalization (small-cap) companies. Long duration bond securities invest in several long-duration bond exchange traded funds. International equities include investments in American Depository Receipts and limited partnerships that trade primarily in foreign markets in Europe, Latin America and Asia. The pension plan assets invested in the GIA through the unallocated group annuity contract earn a fixed interest. These assets comprised approximately 10% of the plan assets as of December 31, 2018 and 10% as of December 31, 2017.

c. Fair value of plan assets

The assets of the qualified pension plan are invested in a Massachusetts Mutual Life Insurance Company group annuity contract and the following separate investment account options as well as certain private equity funds, hedge funds, private real estate funds and an all cap U.S. equity index exchange traded fund held in the MassMutual Pension Plan Trust (Pension Trust Assets). The group annuity contract invests in the General Investment Account (GIA) of the Company and separate investment accounts. The separate investment accounts are managed by the Company, the Company's indirectly wholly owned asset manager, subsidiaries, as well as unaffiliated asset managers.

The General Investment Account is designed to provide stable, long-term investment growth. The account value is maintained at a stable value (generally referred to as "book value") regardless of financial market fluctuations, however, if the plan sponsor initiates a full or partial termination, the amount liquidated is subject to an adjustment that could result in an increase or decrease in the book value of the plan's investment.

The majority of the assets of the qualified pension plan are invested in the following separate investment account options as well as certain private equity funds, hedge funds, private real estate funds and an all cap U.S. equity index exchange traded fund held in the MassMutual Pension Plan Trust (Pension Trust Assets):

Pacific Investment Management Company Long Duration Bond Fund is a separate investment account advised by Pacific Investment Management Company that invests in a diversified portfolio of fixed-income securities, including short-term, intermediate and long-term credit and government securities and cash. The specific performance objective is to outperform the total return of the Bloomberg Barclays U.S. Long Government/Credit Bond index.

NOTES TO FINANCIAL STATEMENTS

Goldman Sachs Asset Management Long Duration Bond Fund is a separate investment account advised by Goldman Sachs Asset Management that invests in a diversified portfolio of fixed-income securities, including short-term, intermediate and long-term credit, government securities and cash. The specific performance objective is to outperform the total return of the Bloomberg Barclays U.S. Long Government/Credit Bond index.

Barings Long Duration Bond Fund is a separate investment account advised by Barings with a long duration bond strategy that invests in a diversified portfolio of fixed-income securities, including, short-term, intermediate and long-term credit, government securities and cash. The specific performance objective is to outperform the total return of the Bloomberg Barclays U.S. Long Government/Credit Bond index.

Oakmark International Collective Fund is a separate investment account advised by Harris Associates that invests primarily in developed market international large-cap equity securities, which may include common stocks, preferred stocks, securities that are convertible into common stocks, depositary receipts and rights and warrants to buy common stocks. This international equity strategy seeks out companies that it believes to be trading in the market at significant discounts to their underlying values.

Oppenheimer International Growth Fund is a separate investment account investing in a mutual fund sub-advised by OFI Institutional Asset Management (OFI Institutional) that invests in international large-cap securities, primarily in the developed international markets. This international equity strategy focuses on well-positioned, well-managed businesses that have strong revenue growth, sustainable profit margins, capital efficiency and/or business integrity.

MassMutual Pension Plan Trust is a trust account with a strategy of investing in alternative investments as directed by the Company. These investments include private equity, hedge funds, and private real estate, with allocations temporarily awaiting investment held in an all cap U.S. equity index exchange traded fund.

NOTES TO FINANCIAL STATEMENTS

The following presents the fair value hierarchy of the Company's pension plan assets by asset class:

	December 31, 2018			Total
	Level 1	Level 2	Level 3	
Investments in the qualified pension plan:				
Separate investment accounts:				
Common stocks:				
U.S. large capitalization	\$ 65,730,850	\$ 222,427,286	\$ -	\$ 288,158,136
U.S. small capitalization value	18,585,686	41,027,507	-	59,613,193
U.S. mid capitalization	20,567,864	-	-	20,567,864
International large capitalization	2,958,851	118,584,314	-	121,543,165
International small/mid capitalization	3,719,228	-	-	3,719,228
Total common stocks	111,562,479	382,039,107	-	493,601,586
Debt instruments:				
Corporate and other bonds	-	387,837,829	-	387,837,829
Long-term bond mutual fund	133,575,162	-	-	133,575,162
Short-term bond mutual funds	14,611,386	-	-	14,611,386
Total debt instruments	148,186,548	387,837,829	-	536,024,377
Registered investment companies:				
U.S. large capitalization	16,475,610	-	-	16,475,610
Emerging markets	-	58,629,183	-	58,629,183
Total registered investment companies	16,475,610	58,629,183	-	75,104,793
Limited partnerships				
Private equity/venture capital	-	-	35,508,706	35,508,706
Total limited partnerships	-	-	35,508,706	35,508,706
Other:				
Government securities	-	353,440,122	-	353,440,122
Collective investment trust	-	159,587,039	-	159,587,039
Real estate	-	-	32,599,103	32,599,103
Emerging markets	-	46,090,086	-	46,090,086
Other	2,032,634	18,384,203	-	20,416,837
Total other	2,032,634	577,501,450	32,599,103	612,133,187
Total separate investment accounts	278,257,271	1,406,007,569	68,107,809	1,752,372,649
Pension trust assets:				
Common stocks:				
U.S. large capitalization	82,792,404	-	-	82,792,404
Collective investment trust	-	46,633,853	-	46,633,853
Limited partnerships:				
Other	-	-	272,347,527	272,347,527
Other	(70)	1,989,822	-	1,989,752
Total pension trust assets	82,792,334	48,623,675	272,347,527	403,763,536
Total General Investment Account option	-	-	246,655,739	246,655,739
Total	\$ 361,049,605	\$ 1,454,631,244	\$ 587,111,075	\$ 2,402,791,924

NOTES TO FINANCIAL STATEMENTS

	December 31, 2017			
	Level 1	Level 2	Level 3	Total
Investments in the qualified pension plan:				
Separate investment accounts:				
Common stocks:				
U.S. large capitalization	\$ 83,075,230	\$ 243,457,675	\$ 1,808	\$ 326,534,713
U.S. small capitalization value	34,808,152	58,889,340	-	93,697,492
U.S. mid capitalization	28,334,502	-	-	28,334,502
International small/mid capitalization	8,301,137	-	-	8,301,137
International large capitalization value	7,236,866	147,046,742	-	154,283,608
Total common stocks	<u>\$ 161,755,887</u>	<u>\$ 449,393,757</u>	<u>1,808</u>	<u>\$ 611,151,452</u>
Debt Instruments:				
Corporate and other bonds	-	367,123,093	-	367,123,093
Long-term bond mutual fund	110,771,218	-	-	110,771,218
Short-term bond mutual funds	14,189,929	-	-	14,189,929
Total debt instruments	<u>\$ 124,961,147</u>	<u>\$ 367,123,093</u>	<u>\$ -</u>	<u>\$ 492,084,240</u>
Registered investment companies:				
U.S. large capitalization	16,712,589	-	-	16,712,589
Emerging markets	-	85,830,102	-	85,830,102
Total registered investment companies	<u>\$ 16,712,589</u>	<u>\$ 85,830,102</u>	<u>\$ -</u>	<u>\$ 102,542,691</u>
Limited partnerships:				
International small/mid capitalization	-	209,256,520	-	209,256,520
Multi-strategy hedge funds	-	-	42,629,859	42,629,859
Total limited partnerships	<u>\$ -</u>	<u>\$ 209,256,520</u>	<u>\$ 42,629,859</u>	<u>\$ 251,886,379</u>
Other:				
Government securities	-	302,528,932	-	302,528,932
Other	1,326,823	93,876,972	19,286,230	114,490,025
Real Estate	-	-	53,279,819	53,279,819
Total other	<u>\$ 1,326,823</u>	<u>\$ 396,405,904</u>	<u>\$ 72,566,049</u>	<u>\$ 470,298,776</u>
Total separate investment accounts	<u>\$ 304,756,446</u>	<u>\$ 1,508,009,376</u>	<u>\$ 115,197,716</u>	<u>\$ 1,927,963,538</u>
Pension trust assets:				
Common stocks:				
U.S. large capitalization	125,304,120	-	-	125,304,120
Limited partnerships:				
Other	-	-	60,657,947	60,657,947
Real estate	-	-	47,693,014	47,693,014
Other	-	1,353,643	37,691,554	39,045,197
Total pension trust assets	<u>125,304,120</u>	<u>45,191,584</u>	<u>146,042,515</u>	<u>316,538,219</u>
Total general investment account	<u>-</u>	<u>-</u>	<u>240,842,977</u>	<u>240,842,977</u>
Total	<u>\$ 430,060,566</u>	<u>\$ 1,553,200,960</u>	<u>\$ 502,083,208</u>	<u>\$ 2,485,344,734</u>

(3) Fair Value Measurements

The Company's fair value hierarchy is defined in Note 20 "Fair Value Measurements."

The following is a description of the valuation methodologies used to measure fair value for the investments in the qualified pension plan.

Separate Investment Accounts: There are two methods of determining unit value for the separate investment accounts. The portfolio method is used when the separate investment account invests in a portfolio of securities or two or more underlying mutual funds, bank collective trust funds or other investment vehicles (each an "Underlying fund"). Under this method, the unit value of a separate investment account is determined by dividing the market value of such separate investment account on any valuation date by the total number of units in the separate investment account. The net investment factor method ("NIF") is used when the separate investment account invests in shares or units of a single underlying fund. Under this method, the unit value of a separate investment account is determined by taking the unit value for the prior valuation day and multiplying it by the net investment factor for the current valuation day. Under both of these methods the separate investment accounts are therefore classified as Level 2. As of December 31, 2018, the Plan had no specific plans or intentions to sell investments at amounts other than NAV. These investments can be redeemed on a daily basis and have no lockups or funding commitments.

Corporate debt instruments: Valued using the closing price reported on the active market on which the individual securities are traded. If Level 1 valuations are not available, the fair value is determined using models such as matrix pricing and therefore, is classified as Level 2, which uses quoted market prices of debt securities with similar characteristics.

PIMCO bond funds: Valued using the closing price reported on the active market on which the individual securities are traded and therefore classified as Level 1.

Government securities: Marked to market daily based on values provided by third-party vendors or market makers to the extent available or based on model prices. Valuations furnished by a pricing service take into account factors such as institutional-size trading in similar securities, yield, quality, coupon rate, maturity, type of issue, trading characteristics, and other market data and are therefore classified as Level 2.

Common stocks: Valued using the closing price reported on the active market on which the individual securities are traded and therefore classified as Level 1.

Collective investment trust: Valued using the NAV per unit. The net asset value per unit of the Funds is calculated on each business day by dividing the total value of assets, less liabilities, by the number of units outstanding. Unit issuances and redemptions are based on the net asset value determined at the end of the current day and therefore classified as Level 2.

NOTES TO FINANCIAL STATEMENTS

Limited partnerships: The Plan utilizes the practical expedient to calculate fair value of its investments based on the Plan's pro rata interest in net assets of each underlying partnership. All valuations utilize financial information supplied by the partnership, including income, expenses, gains and losses. The underlying investments of the partnership are accounted for at fair value as described in the partnership's audited financial statements. The multi-strategy hedge fund can be redeemed semi-annually with 95 days notice. The remaining funds can be redeemed periodically with notice that generally ranges from 45 to 90 days. There are no lockups or funding commitments. These limited partnership investments are classified as Level 3.

Registered investment companies: There are two methods of determining the unit value for the registered investment companies. For the registered investment company that is valued at an unaffiliated company the investment is valued using the closing price reported on the active market on which the funds are traded and is therefore classified as Level 1. For the registered investment company that is valued in-house on the unival system the NIF method is used which takes the unit value for the prior valuation day and multiplies it by the NIF for the current valuation day and is therefore classified as Level 2.

Other: Valued using the closing price reported on the active market on which the individual securities are traded. If Level 1 valuations are not available, the fair value is determined using models such as matrix pricing and therefore, is classified as Level 2, which uses quoted market prices with similar characteristics. Investments included in this category include short term investments, real estate investment trusts, asset backed securities, mortgage backed securities, swaps, derivatives, futures and options. Investments in multi-strategy hedge fund and real estate are based on the Plan's pro rata interest in the net assets of the partnership and have a redemption period and are reported in the Level 3 column. The multi-strategy hedge fund is comprised of two funds, one of which has a quarterly redemption period and the other with a monthly redemption period. They both require 45 days notice. The real estate fund does not have a specific redemption period, but is dependent upon the liquidation of underlying assets. None of the funds have a lock up period or funding commitment.

Cash: Stated at cost, which is equal to fair value, and held by an unaffiliated bank.

General Investment Account option: Liquidation value based on an actuarial formula as defined under the terms of the contract.

- d. The Company employs a total return investment approach whereby a mix of equities and fixed-income investments are used to maximize the long-term return of plan assets with a prudent level of risk. Risk tolerance is established through consideration of plan liabilities, plan funded status and the Company's financial condition. The investment portfolio contains a diversified blend of equity and fixed-income investments. Alternative assets such as private equity funds, hedge funds, private real estate funds, equity index exchange traded funds and bond index exchange traded funds are used to improve portfolio diversification. Investment risk is measured and monitored on an ongoing basis through quarterly investment portfolio reviews, annual liability measurements, and periodic asset and liability studies.
- e. **Defined Contribution Plan:**
The Company sponsors funded (qualified 401(k) thrift savings) and unfunded (nonqualified deferred compensation thrift savings) defined contribution plans for its employees, agents and retirees. The qualified 401(k) thrift savings plan's net assets available for benefits were \$2,831,042,432 as of December 31, 2018 and \$2,873,561,595 as of December 31, 2017. The Company match for the qualified 401(k) thrift savings plan is limited to 5% of eligible W-2 compensation. The Company's total matching thrift savings contributions included in general insurance expenses were \$50,768,968 for the year ended December 31, 2018 and \$56,325,820 for the year ended December 31, 2017.
- The Company also maintains a defined contribution plan for agents, which was frozen in 2001. The net assets available for these benefits were \$163,856,796 as of December 31, 2018 and \$181,944,285 as of December 31, 2017.
- f. The Company did not participate in multi-employer plans.
- g. The Company did not participate in consolidated or holding company plans.
- h. The Company provides severance-related postemployment benefits for home office employees. The net accumulated liability for these benefits was \$48,735,861 as of December 31, 2018 and \$51,695,461 as of December 31, 2017.
- The Company accrues postemployment benefits for the health benefits of agents who qualify for long-term disability and are not retired. The net accumulated liability for these benefits was \$4,998,651 as of December 31, 2018 and \$5,090,138 as of December 31, 2017.
- i. The Company has determined that benefits provided by its plan are actuarially equivalent to Medicare Part D under the Medicare Modernization Act.

Note 13 – Capital and Surplus, Shareholders' Dividend Restrictions and Quasi-Reorganizations

- (1) The Company is a mutual company, and as such does not have any capital stock.
- (2) As a mutual company, the Company has not issued any preferred stocks.
- (3) The Company is a mutual company, and as such does not have any cumulative stockholders' dividends.
- (4) The Company is a mutual company, and as such does not pay stockholders' dividends.
- (5) The Company is a mutual company, and as such does not pay stockholders' dividends.
- (6) There are no restrictions on unassigned surplus, which is held for the benefit of all policyholders.

The Company has absolutely and irrevocably guaranteed that, of the \$1,704,768,185 total apportionment from its surplus funds for policyholder dividends for the period beginning January 1, 2019 and ending December 31, 2019, it will pay or cause to be applied during 2019, in all events, annual dividends for participating individual life and annuity policies issued after December 31, 1983, in an amount of not less than \$1,160,000,000. This guarantee covers policies in the aggregate only and does not confer a dividend guarantee on any specific policy.

- (7) The Company did not make any advances to surplus.
- (8) The Company is a mutual company, and as such does not have any capital stock held for special purposes.
- (9) There were no changes in the balances of special surplus funds.
- (10) The portion of unassigned funds (surplus) represented by net unrealized gains and losses (cumulative, net of deferred tax) was \$10,141,194,299 as of December 31, 2018 and \$8,637,673,433 as of December 31, 2017.

NOTES TO FINANCIAL STATEMENTS

- (11) The Company executed a tender offer in March 2017 for \$440,000,000 par value of surplus notes maturing in 2039. The Company paid \$711,000,000 of cash to settle the tender offer which resulted in a pre-tax loss of \$271,000,000. This loss is included in net realized gains (losses) within the Statutory Statements of Operations and is net of a tax benefit of \$95,000,000.

Issue Date	Interest Rate	Par Value (Face Amount of Notes)	Carrying Value of Note*	Interest and/or Principal Paid Current Year	Total Interest and/or Principal Paid	Unapproved Interest and/or Principal	Date of Maturity
11/15/1993	7.625%	\$ 250,000,000	\$ 250,000,000	\$ 19,062,500	\$ 476,562,500	\$ 2,382,813	11/15/2023
03/01/1994	7.500%	100,000,000	100,000,000	7,500,000	183,750,000	2,500,000	03/01/2024
05/12/2003	5.625%	250,000,000	249,447,926	14,062,500	218,085,938	1,757,813	05/15/2033
06/01/2009	8.875%	310,000,000	307,278,458	27,512,500	566,501,111	2,292,708	06/01/2039
01/17/2012	5.375%	400,000,000	398,978,800	21,500,000	147,752,778	1,791,667	12/01/2041
04/15/2015	4.500%	500,000,000	491,555,600	22,500,000	78,750,000	4,687,500	04/15/2065
03/20/2017	4.900%	475,000,000	470,835,427	23,275,000	35,429,722	5,818,750	04/01/2077
Total		\$ 2,285,000,000	\$ 2,268,096,211	\$ 135,412,500	\$ 1,706,832,049	\$ 21,231,251	

These notes are unsecured and subordinate to all present and future indebtedness of the Company, all policy claims and all prior claims against the Company as provided by the Massachusetts General Laws. The surplus notes are all held by bank custodians for unaffiliated investors. All issuances were approved by the Division.

All payments of interest and principal are subject to the prior approval of the Division. Anticipated sinking fund payments are due for the notes issued in 1993 and 1994 as follows: \$62,500,000 in 2021, \$87,500,000 in 2022, \$150,000,000 in 2023 and \$50,000,000 in 2024. There are no sinking fund requirements for the notes issued in 2003, 2009, 2012 or 2015. Scheduled interest on the notes issued in 1993 and 2003 is payable on May 15 and November 15 of each year to holders of record on the preceding May 1 or November 1, respectively. Scheduled interest on the note issued in 1994 is payable on March 1 and September 1 of each year to holders of record on the preceding February 15 or August 15, respectively. Scheduled interest on the notes issued in 2009 and 2012 is payable on June 1 and December 1 of each year to holders of record on the preceding May 15 and November 15, respectively. Scheduled interest on the note issued in 2015 is payable on April 15 and October 15 of each year to holders of record on the preceding April 1 and October 1, respectively. Interest expense is not recorded until approval for payment is received from the Division. As of December 31, 2018, the unapproved interest was \$21,231,250 million. Through December 31, 2018, the Company paid cumulative interest of \$1,707,832,049 billion on surplus notes. Interest of \$135,412,500 million was approved and paid during the twelve months ended December 31, 2018.

- (12) There were no restatements due to prior quasi-reorganizations.

- (13) There were no quasi-reorganizations in the prior ten years.

Note 14 – Liabilities, Contingencies and Assessments

a. Contingent commitments:

- (1) In the normal course of business, the Company provides specified guarantees and funding to MMHLLC and certain of its subsidiaries. The Company had approximately \$386,605,000 of these unsecured funding commitments to its subsidiaries as of December 31, 2018 and \$123,400,000 as of December 31, 2017. The unsecured commitments are included in private placements in the table below. As of December 31, 2018 and 2017, the Company had not funded, nor had an outstanding balance due on these commitments.

In the normal course of business, the Company enters into letter of credit arrangements. The Company had approximately \$174,224,148 of outstanding letter of credit arrangements and \$152,053,320 as of December 31, 2017 of outstanding letter of credit arrangements. As of December 31, 2018 and 2017, the Company did not have a funding request attributable to these letter of credit arrangements.

The Company approved financing of \$4,228,875,000 as of December 31, 2018 and December 31, 2017, for MassMutual Asset Finance LLC that can be used to finance ongoing asset purchases and refinance existing Company provided lines of credit. Borrowings under the facility with the Company were \$3,479,160,057 as of December 31, 2018 and \$3,176,975,517 as of December 31, 2017. Interest expense for these borrowings was \$79,236,953 in 2018 and \$72,903,536 in 2017. The unfunded amount of the facility, totaling \$749,714,943 as of December 31, 2018, is included in private placements in the table below. The interest of this facility adjusts monthly based on the 30-day LIBOR.

The Company approved financing of \$225,000,000 as of December 31, 2018 and December 31, 2017, for Jefferies Finance LLC that can be used to finance ongoing asset purchases and refinance existing Company provided lines of credit. During 2017, Jefferies borrowed \$360,742,500 and repaid \$585,742,500 under this facility. There were no outstanding borrowings under the facility as of December 31, 2018 and all outstanding interest has been paid. The facility was fully funded as of December 31, 2018. The interest of this facility is calculated based on a full pass through of interest accrued on the underlying loans purchased.

In the normal course of business, the Company enters into commitments to purchase certain investments. The majority of these commitments have funding periods that extend between one and five years. The Company is not required to fund commitments once the commitment period expires.

NOTES TO FINANCIAL STATEMENTS

As of December 31, 2018, the Company had the following commitments:

	2019	2020	2021	2022	2023	Thereafter	Total
Private placements	\$ 1,020,343,077	\$ 1,797,204,390	\$ 81,021,404	\$ 67,362,622	\$ 161,887,033	\$ 601,196,605	\$ 3,729,015,131
Mortgage loans	475,563,058	436,514,807	561,159,534	50,204,455	10,355,568	188,914,961	1,722,712,383
Real estate	4,980,384	204,000,000	-	-	-	-	208,980,384
Partnerships and LLC LIHTCs (including equity contributions)	349,597,076	196,091,360	140,846,499	218,334,045	946,978,281	737,554,427	2,589,401,688
	33,568,841	149,054,886	200,963,756	100,000,000	237,142	6,905,221	490,729,846
Total	\$ 1,884,052,436	\$ 2,782,865,443	\$ 983,991,193	\$ 435,901,122	\$ 1,119,458,024	\$ 1,534,571,214	\$ 8,740,839,432

In the normal course of business the Company enters into commitments related to property lease arrangements, certain indemnities, investments and other business obligations. As of December 31, 2018 and 2017, the Company had no outstanding obligations attributable to these commitments.

Certain commitments and guarantees of the Company provide for the maintenance of subsidiary regulatory capital and surplus levels and liquidity sufficient to meet certain obligations. These commitments and guarantees are not limited. As of December 31, 2018 and 2017, the Company had no outstanding obligations attributable to these commitments and guarantees.

NOTES TO FINANCIAL STATEMENTS

- (2) The following details contingent guarantees that are made on behalf of the Company's subsidiaries and affiliates as of December 31, 2018:

(1)	(2)	(3)	(4)	(5)
Nature and circumstances of guarantee and key attributes, including date and duration of agreement	Liability recognition of guarantee. (Include amount recognized at inception. If no initial recognition, document exception allowed under SSAP No. 5R.)	Ultimate financial statement impact if action under the guarantee is required	Maximum potential amount of future payments (undiscounted) the guarantor could be required to make under the guarantee. If unable to develop an estimate, this should be specifically noted.	Current status of payment or performance risk of guarantee. Also provide additional discussion as warranted
The Company guarantees the payment of certain employee and retirement benefits for specific wholly-owned subsidiaries (BREA and Barings), if the subsidiary is unable to pay.	-	If the Company were to recognize a liability, the financial statement impact would be to recognize either an expense or an investment in a SCA.	The liabilities for these plans of \$217,256,829 have been recorded on the subsidiaries' books and represent the Company's maximum obligation.	-
Certain guarantees of the Company provide for the maintenance of a subsidiary's regulatory capital, surplus levels and liquidity sufficient to meet certain obligations. These unlimited guarantees are made on behalf of certain wholly-owned subsidiaries. (C.M. Life, MML Bay State and Oppenheimer Acquisition Corp.).	-	If the Company were to recognize a liability, the financial statement impact would be to recognize either an expense or an investment in a SCA.	These guarantees are not limited and cannot be estimated.	-
The Company guarantees the payment of various lease obligations on behalf of its subsidiaries and affiliates originating in 2004, 2007 and 2012 and some are in effect until 2023.	-	If the Company were to recognize a liability, the financial statement impact would be to recognize either an expense or an investment in a SCA.	The future maximum potential obligations are immaterial to the Company.	-
The Company issued a construction loan for a real estate development project. The land on which the property is to be built is subject to a ground lease. In conjunction with issuing this construction loan, the Company has also issued a completion guarantee to the land owner that pays only in the event the project is not completed. The project is expected to be completed by June 2019.	-	If the Company were to recognize a liability, the financial statement impact would be to recognize an expense.	\$350,000,000	-
The Company guarantees the capital contributions required to be made by a variable annuity separate account contract holder in the event the contract holder fails to payoff a subscription line utilized to deploy capital for the separate account.	-	If the Company were to recognize a liability, the financial statement impact would be to recognize an expense.	\$45,000,000 with the right to increase the line to \$220,000,000.	-
Total	-	-	\$612,256,829	-

NOTES TO FINANCIAL STATEMENTS

(3)

Year Ended December 31, 2018

a.	Aggregate maximum potential of future payments of all guarantees (undiscounted) the guarantor could be required to make under guarantees:	\$ 612,256,829
b.	Current liability recognized in the financial statements:	
	1. Noncontingent liabilities	-
	2. Contingent liabilities	-
c.	Ultimate financial statement impact if action under the guarantee is required:	
	1. Investments in SCA	\$ 217,256,829
	2. Joint venture	-
	3. Dividends to stockholders	-
	4. Expense	395,000,000
	5. Other	-
	6. Total	\$ 612,256,829

b. Assessments:

The Company is subject to insurance guaranty fund laws in the states in which it does business. These laws assess insurance companies' amounts to be used to pay benefits to policyholders and policy claimants of insolvent insurance companies. Many states allow these assessments to be credited against future premium taxes. The Company believes such assessments in excess of amounts accrued will not materially impact its financial position, results of operations or liquidity.

c. Gain contingencies:

No material gain contingencies were realized subsequent to December 31, 2018 through the filing date.

d. The Company did not have any claims related to extra contractual obligations in 2018.

e. Joint and several liabilities: The Company has no joint and several liabilities.

f. All other contingencies:

In the normal course of business, the Company is involved in disputes, litigation and governmental or regulatory inquiries, administrative proceedings, examinations and investigations, both pending and threatened. These matters, if resolved adversely against the Company or settled, may result in monetary damages, fines and penalties or require changes in the Company's business practices. The resolution or settlement of these matters is inherently difficult to predict. Based upon the Company's assessment of these pending matters, the Company does not believe that the amount of any judgment, settlement or other action arising from any pending matter is likely to have a material adverse effect on the statement of financial position. However, an adverse outcome in certain matters could have a material adverse effect on the results of operations for the period in which such matter is resolved, or an accrual is determined to be required, on the financial statement financial position, or on our reputation.

The Company evaluates the need for accruals of loss contingencies for each matter. When a liability for a matter is probable and can be estimated, the Company accrues an estimate of the loss and any related insurance recoveries, if any. An accrual is subject to subsequent adjustment as a result of additional information and other developments. The resolution of matters are inherently difficult to predict, especially in the early stages of matter. Even if a loss is probable, due to many complex factors, such as speed of discovery and the timing of court decisions or rulings, a loss or range of loss may not be reasonably estimated until the later stages of the matter. For matters where a loss is material and it is either probable or reasonably possible then it is disclosed. For matters where a loss may be reasonably possible, but not probable, or is probable but not reasonably estimated, no accrual is established, but the matter, if material, is disclosed.

Note 15 – Leases

a.

(1) The Company leases office space and equipment in the normal course of business under various noncancelable operating lease agreements. Additionally, the Company, as lessee, has entered various sublease agreements with affiliates for office space, such as OFI and Barings. Total rental expense on net operating leases, recorded in general insurance expenses, was \$163,943,366 for the year ended December 31, 2018 and \$159,787,850 for the year ended December 31, 2017. Net operating leases are net of sublease receipts of \$11,391,018 for the year ended December 31, 2018 and \$10,313,014 for the year ended December 31, 2017.

(2) At December 31, 2018, the minimum aggregate rental commitments are as follows:

	Years Ended December 31,	Operating Leases
1.	2019	\$ 133,910,433
2.	2020	120,578,948
3.	2021	81,763,197
4.	2022	52,389,527
5.	2023	36,763,984
6.	Total	\$ 475,837,067

(3) The Company has entered into sale-leaseback transactions with unrelated parties to sell and leaseback certain fixed assets with book value of \$110,003,096 and \$99,796,951 which resulted in no gain or loss. The leases have five year terms which expire in 2020 and 2021 with annual lease payments of \$22,000,619 and \$19,959,390. At the end of the leases, the Company has the option to purchase the underlying assets at fair value

b. Leasing is not a significant part of the Company's business activities.

NOTES TO FINANCIAL STATEMENTS**Note 16 – Information About Financial Instruments With Off-Balance Sheet Risk and Financial Instruments With Concentrations of Credit Risk**

(1) The notional amounts of the company's financial instruments with off-balance sheet risk are as follows:

	December 31,			
	2018	2017	2018	2017
	Assets		Liabilities	
a. Swaps	\$ 104,966,501,139	\$ 84,388,372,188	\$ 93,855,256,896	\$ 99,946,877,040
b. Futures	3,036,124,950	3,287,586,850	-	-
c. Options	19,656,687,400	10,562,674,200	3,248,300	420,086,000
d. Total	<u>\$ 127,659,313,489</u>	<u>\$ 98,238,633,238</u>	<u>\$ 93,858,505,196</u>	<u>\$ 100,366,963,040</u>

See Schedule DB of the Company's Annual Statement for additional detail.

- (2) See Note 8 "Derivative Instruments" for a discussion of the credit and market risk of derivative financial instruments, and the cash requirements and accounting policies related to those instruments.
- (3) See Note 8 "Derivative Instruments" for a discussion of the amount of accounting losses the Company would incur if any party to the financial instrument failed completely to perform according to terms of the contract and the collateral due proved to be of no value to the Company.
- (4) See Note 8 "Derivative Instruments" for a discussion of the Company's policy of requiring collateral to support financial instruments subject to credit risk, information about the Company's access to that collateral and the nature and description of the collateral supporting those financial instruments.

Note 17 – Sale, Transfer and Servicing of Financial Assets and Extinguishments of Liabilities

- a. During 2018 and 2017, the Company did not transfer any receivables that were reported as sales.
- b. Transfer and Servicing of Financial Assets:
- (1) The Company did not participate in securities lending as of December 31, 2018 or 2017.
 - (2) The Company did not have any servicing assets or liabilities in 2018 or 2017.
 - (3) The Company did not have any servicing assets or liabilities in 2018 or 2017.
 - (4) The Company did not have interests that continue to be held by a transferor in securitized financial assets in 2018 or 2017.
 - (5) The Company did not have any transfers of financial assets accounted for as secured borrowing in 2018 or 2017.
 - (6) The Company did not have any transfers of receivables with recourse in 2018 or 2017.
 - (7) See Note 5e1 "Repurchase Agreements".
- c. Wash sales:
- (1) In the course of the Company's investment management activities, securities may be sold and reacquired within 30 days of the sale date to enhance the Company's yield on its investment portfolio.
 - (2) The Company did not sell any securities with the NAIC Designation 3 or below, or unrated, for the year ended December 31, 2018 or 2017, that were reacquired within 30 days of the sale date.

Note 18 – Gain or Loss to the Reporting Entity from Uninsured Plans and the Uninsured Portion of Partially Insured Plans

The Company did not write any accident and health plans. Therefore, the Company did not have any uninsured accident and health plans.

Note 19 – Direct Premium Written/Produced By Managing General Agents/Third Party Administrators

The Company writes its remaining group life, accident and health business through a third party administrator. Pursuant to a 1994 reinsurance agreement, the Company cedes 100% of this business. Premium ceded was \$100,197 in 2018 and \$133,556 in 2017.

Note 20 – Fair Value Measurements

- a. Fair value is defined as the price that would be received from selling an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The authoritative guidance around fair value establishes a measurement framework that includes a hierarchy used to classify the inputs used in measuring fair value. The hierarchy prioritizes the inputs to valuation techniques into three levels. Each level reflects a unique description of the inputs that are significant to the fair value measurements. The levels of the fair value hierarchy are as follows:

Level 1 – Observable inputs in the form of quoted prices for identical instruments in active markets.

Level 2 – Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active or other inputs that are observable or can be derived from observable market data for substantially the full term of the assets or liabilities.

Level 3 – One or more unobservable inputs that are supported by little or no market activity and are significant to the fair value of the assets or liabilities. Level 3 assets and liabilities include financial instruments whose value is determined using internal models, as well as instruments for which the determination of fair value requires significant management judgment or estimation.

When available, the Company generally uses unadjusted quoted market prices from independent sources to determine the fair value of investments, and classifies such items within Level 1 of the fair value hierarchy. If quoted prices are not available, prices are derived from observable market data for similar assets in an active market or obtained directly from brokers for identical assets traded in inactive markets. Investments that are priced using these inputs are classified within Level 2 of the fair value hierarchy. When some of the necessary observable inputs are unavailable, fair value is based upon internally developed models. These models use inputs not directly observable or correlated with observable market data. Typical inputs, which are integrated in the Company's internal discounted cash flow models and discounted earnings models include, but are not limited to, issuer spreads derived from internal credit ratings and

NOTES TO FINANCIAL STATEMENTS

benchmark yields such as the LIBOR, cash flow estimates and earnings before interest, taxes, depreciation and amortization estimates. Investments that are priced with such unobservable inputs are classified within Level 3 of the fair value hierarchy.

The Company has established and maintains policies and guidelines that govern its valuation methodologies and their consistent application. These policies and guidelines address the use of inputs, price source hierarchies and provide controls around the valuation processes. These controls include appropriate review and analysis of prices against market activity or indicators for reasonableness, approval of price source changes, price overrides, methodology changes and classification of fair value hierarchy levels. The valuation policies and guidelines are reviewed and updated as appropriate.

Annually, the Company reviews the primary pricing vendor to validate that the inputs used in that vendor's pricing process are deemed to be market observable as defined above. While the Company was not provided access to proprietary models of the vendor, the reviews have included on-site walk-throughs of the pricing process, methodologies and control procedures for each asset class and level for which prices are provided. The review also included an examination of the underlying inputs and assumptions for a sample of individual securities across asset classes. In addition, the Company and its pricing vendors have an established challenge process in place for all security valuations, which facilitates identification and resolution of prices that fall outside expected ranges. The Company believes that the prices received from the pricing vendors are representative of prices that would be received to sell the assets at the applicable measurement date (exit prices) and are classified appropriately in the hierarchy.

The fair value of group annuity contracts and other deposits is determined by multiplying the book value of the contract by an average market value adjustment factor. The market value adjustment factor is directly related to the difference between the book value of client liabilities and the present value of installment payments discounted at current market value yields. The market value yield is measured by the Bloomberg Barclays Global-Aggregate Total Return Index, subject to certain adjustments, and the installment period is equivalent to the duration of the Company's invested asset portfolio.

The fair value of individual annuity and supplementary contracts is determined using one of several methods based on the specific contract type. For short-term contracts, generally less than 30 days, the fair value is assumed to be the book value. For contracts with longer durations, guaranteed interest contracts and investment-type contracts, the fair value is determined by calculating the present value of future cash flows discounted at current market interest rates, the risk-free rate or a current pricing yield curve based on pricing assumptions using assets of a comparable corporate bond quality. Annuities receiving dividends are accumulated at the average minimum guaranteed rate and discounted at the risk-free rate. All others are valued using cash flow projections from the Company's asset-liability management analysis.

(1) The following presents the Company's fair value hierarchy for assets and liabilities that are carried at fair value:

	December 31, 2018				
	Level 1	Level 2	Level 3	Net Asset Value (NAV)	Total
Financial assets:					
Bonds:					
Special revenue	-	50,382	-	-	50,382
Industrial and miscellaneous	\$ 10,043,280	\$ 29,538,778	\$ 63,859,896	\$ -	\$ 103,441,954
Parent, subsidiaries and affiliates	-	81,533,868	65,576,875	-	147,110,743
Preferred stocks	-	-	287,758	-	287,758
Common stock - subsidiaries and affiliates	233,070,805	-	164,920,846	-	397,991,651
Common stock - unaffiliated	194,455,569	-	305,537,860	-	499,993,429
Derivatives:					
Interest rate swaps	-	6,629,062,841	-	-	6,629,062,841
Options	-	910,876,374	-	-	910,876,374
Currency swaps	-	843,350,847	-	-	843,350,847
Forward contracts	-	106,021,420	-	-	106,021,420
Interest rate caps and floors	-	18,142,286	-	-	18,142,286
Financial futures	-	215,810,517	-	-	215,810,517
Separate account assets	41,358,963,395	22,568,484,678	550,652,512	-	64,478,100,585
Total financial assets carried at fair value	\$ 41,796,533,048	\$ 31,402,871,990	\$ 1,150,835,747	\$ -	\$ 74,350,240,785
Interest rate swaps	\$ -	\$ 4,646,939,586	\$ -	\$ -	\$ 4,646,939,586
Options	-	4,556,715	-	-	4,556,715
Currency swaps	-	231,601,523	-	-	231,601,523
Forward contracts	-	12,189,652	-	-	12,189,652
Credit default swaps	-	117,646	-	-	117,646
Financial futures	-	15,090,134	-	-	15,090,134
Total financial liabilities carried at fair value	\$ -	\$ 4,910,495,256	\$ -	\$ -	\$ 4,910,495,256

The Company reviews the fair value hierarchy classifications each reporting period. Changes in the observability of the valuation attributes and the level of market activity may result in a reclassification of certain financial assets or liabilities between fair value hierarchy classifications. Such reclassifications are reported as transfers between levels at the beginning fair value for the reporting period in which the changes occur. For the period ended December 31, 2018, there were no significant transfers between Level 1 and Level 2 and the Company does not have any financial instruments that were carried at NAV as a practical expedient.

NOTES TO FINANCIAL STATEMENTS

		December 31, 2017				
		Level 1	Level 2	Level 3	Net Asset Value (NAV)	Total
Financial assets:						
Bonds:						
Special revenue	\$	-	\$ 5,949,787	\$	-	\$ 5,949,787
Industrial and miscellaneous		-	10,743,493	55,266,237	-	66,009,730
Parent, subsidiaries and affiliates		-	17,535,946	60,662,659	-	78,198,605
Preferred stocks		2,635,664	-	1,510,480	-	4,146,144
Common stock - subsidiaries and affiliates		344,139,041	-	109,665,674	-	453,804,715
Common stock - unaffiliated		901,122,199	-	310,576,050	-	1,211,698,249
Derivatives:						
Interest rate swaps		-	7,684,332,071	-	-	7,684,332,071
Options		-	744,440,948	-	-	744,440,948
Currency swaps		-	385,416,622	1,255,252	-	386,671,874
Forward contracts		-	13,178,525	-	-	13,178,525
Credit default swaps		-	481,454	-	-	481,454
Separate account assets		46,005,788,808	22,446,976,398	709,516,352	-	69,162,281,558
Total financial assets carried						
at fair value						
	\$	47,253,685,712	\$ 31,309,055,244	\$ 1,248,452,704	\$	- \$ 79,811,193,660

Financial liabilities:

Derivatives:

Interest rate swaps	\$	-	\$ 5,314,810,301	\$	193,806	\$	-	\$ 5,315,004,107
Options		-	6,319,708		-		-	6,319,708
Currency swaps		-	560,167,926	8,432,028			-	568,599,954
Forward contracts		-	88,671,592		-		-	88,671,592
Credit default swaps		-	251,192		-		-	251,192
Total financial liabilities carried								
at fair value								
	\$	-	\$ 5,970,220,719	\$	8,625,834	\$	-	\$ 5,978,846,553

For the year ended December 31, 2017, \$298,342,115 of unaffiliated common stock were transferred from Level 2 to Level 1.

(2) The following presents changes in the Company's Level 3 financial instruments that are carried at fair value:

	Balance as of 01/01/2018	Transfers ⁽¹⁾		Gains (Losses) in Net Income	Gains (Losses) in Surplus	Purchases	Issuances	Sales	Settlements	Balance as of 12/31/2018
		In	Out							
Financial assets:										
Bonds:										
Industrial and miscellaneous	\$ 55,266,237	\$ 26,264,839	\$ -	\$ (4,286,686)	\$ (5,094,597)	\$ 28,095	\$ 1,149,829	\$ -	\$ (9,467,821)	\$ 63,859,896
Parent, subsidiaries and affiliates	60,662,659	-	-	4,095,453	(7,905,019)	9,443,000	-	-	(5,542,537)	60,753,556
Preferred stock	1,510,480	-	(1,510,480)	-	(258,495)	-	546,253	-	-	287,758
Common stock - subsidiaries and affiliates	109,665,674	13,222,371	-	493,096	1,536,804,113	15,219,962	6,360,136	-	(2,069,225,573)	(387,460,221)
Common stock - unaffiliated	310,576,050	8	-	5,907,774	13,633,102	16,475,759	2,685,166	(133,809)	(43,606,190)	305,537,860
Derivatives:										
Currency swaps	1,255,252	-	(1,255,252)	-	-	-	-	-	-	-
Separate account assets	709,516,352	-	-	7,025,543	-	112,288,189	-	(277,950,548)	(227,024)	550,652,512
Total financial assets	\$ 1,248,452,704	\$ 39,487,218	\$ (2,765,732)	\$ 13,235,180	\$ 1,537,179,104	\$ 153,455,005	\$ 10,741,384	\$ (278,084,357)	\$ (2,128,069,145)	\$ 593,631,361
Financial liabilities:										
Derivatives:										
Interest rate swaps	\$ 193,806	\$ -	\$ (193,806)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Currency swaps	8,432,028	-	(8,432,028)	-	-	-	-	-	-	-
Total financial liabilities	\$ 8,625,834	\$ -	\$ (8,625,834)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

⁽¹⁾Level 3 transfers include assets that are consistently carried at fair value but have had a level change, are no longer carried at fair value, or have just begun to be carried at fair value, such as assets with no level changes but a change in the lower of cost or market carrying basis. Industrial and miscellaneous bonds in other transfers are assets that are no longer carried at fair value.

NOTES TO FINANCIAL STATEMENTS

	Balance	Transfers ⁽¹⁾		Gains	Gains	Purchases	Issuances	Sales	Settlements	Balance
	as of 01/01/2017	In	Out	(Losses) in Net Income	(Losses) in Surplus					as of 12/31/2017
Financial assets:										
Bonds:										
Industrial and miscellaneous	\$ 56,833,539	\$ 12,571,531	\$ (8,096,010)	\$ 684,574	\$ (2,546,245)	\$ 14,384	\$ 67,649	\$ -	\$ (4,263,185)	\$ 55,266,237
Parent, subsidiaries, and affiliates	51,963,109	-	-	-	8,699,550	-	-	-	-	60,662,659
Preferred Stock	2,734,341	-	(1,798,373)	-	(57,988)	632,500	-	-	-	1,510,480
Common stock - subsidiaries and affiliates	63,196,191	-	(956,129)	9,563	13,230,098	-	45,517,058	(318,912)	(11,012,195)	109,665,674
Common stock - unaffiliated	188,576,330	76,437,829	(5,838,443)	(5,959,511)	29,469,544	38,162,139	288,144	(7,700,000)	(2,859,982)	310,576,050
Derivatives:										
Currency swaps	-	6,109,957	-	(4,854,705)	-	-	-	-	-	1,255,252
Separate account assets	737,948,300	-	(5,069,821)	55,437,401	-	72,084,571	-	(149,919,175)	(964,924)	709,516,352
Total financial assets	\$ 1,101,251,810	\$ 95,119,317	\$ (21,758,776)	\$ 45,317,322	\$ 48,794,959	\$ 110,893,594	\$ 45,872,851	\$ (157,938,087)	\$ (19,100,286)	\$ 1,248,452,704
Financial liabilities:										
Derivatives:										
Interest rate swaps	\$ -	\$ -	\$ -	\$ -	\$ 193,806	\$ -	\$ -	\$ -	\$ -	\$ 193,806
Currency swaps	-	3,884,788	-	-	4,547,240	-	-	-	-	8,432,028
Total financial liabilities	\$ -	\$ 3,884,788	\$ -	\$ -	\$ 4,741,046	\$ -	\$ -	\$ -	\$ -	\$ 8,625,834

⁽¹⁾Level 3 transfers include assets that are consistently carried at fair value but have had a level change, are no longer carried at fair value, or have just begun to be carried at fair value, such as assets with no level changes but a change in the lower of cost or market carrying basis. The common stock unaffiliated assets were transferred from Level 2 to Level 3 due to a change in the observability of pricing inputs.

(3) The Company reviews the fair value hierarchy classifications at each reporting period. Overall, reclassifications between levels occur when there are changes in the observability of inputs and market activity used in the valuation of a financial asset or liability. Such reclassifications are reported as transfers between levels at the beginning fair value for the reporting period in which the changes occur. Given the types of assets classified as Level 1 (primarily equity securities and mutual fund investments), transfers between Level 1 and Level 2 measurement categories are expected to be infrequent. Transfers into and out of Level 3 are summarized in the schedule of changes in Level 3 assets and liabilities.

(4) *Valuation Techniques and Inputs*

The Company determines the fair value of its investments using primarily the market approach or the income approach. The use of quoted prices for identical assets and matrix pricing or other similar techniques are examples of market approaches, while the use of discounted cash flow methodologies is an example of the income approach. The Company attempts to maximize the use of observable inputs and minimize the use of unobservable inputs in selecting whether the market or the income approach is used.

A description of the significant valuation techniques and inputs to the determination of estimated fair value for the more significant asset and liability classes measured at fair value on a recurring basis and categorized within Level 2 and Level 3 of the fair value hierarchy is as follows:

Separate account assets - These assets primarily include bonds (industrial and miscellaneous; U.S. government and agencies) and derivatives. Their fair values are determined as follows:

Bonds (Industrial and miscellaneous) - These securities are principally valued using the market or the income approaches. Level 2 valuations are based primarily on quoted prices in markets that are not active, broker quotes, matrix pricing or other similar techniques that use standard market observable inputs such as benchmark yields, spreads versus benchmark yields, new issuances, issuer ratings, duration, and trades of identical or comparable securities. Privately placed securities are valued using discounted cash flow models using standard market observable inputs, and inputs derived from, or corroborated by, market observable data including market yield curve, duration, call provisions, observable prices and spreads for similar publicly traded or privately traded issuances that incorporate the credit quality and industry sector of the issuer. This level also includes securities priced by independent pricing services that use observable inputs. Valuations based on matrix pricing or other similar techniques that utilize significant unobservable inputs or inputs that cannot be derived principally from, or corroborated by, observable market data, including adjustments for illiquidity, delta spread adjustments or spreads to reflect industry trends or specific credit-related issues are classified as Level 3. In addition, inputs including quoted prices for identical or similar securities that are less liquid and based on lower levels of trading activity than securities classified in Level 2 are classified as Level 3.

Bonds (U.S. government and agencies) - These securities are principally valued using the market approach. Level 2 valuations are based primarily on quoted prices in markets that are not active, or using matrix pricing or other similar techniques using standard market observable inputs such as the benchmark U.S. Treasury yield curve, the spreads versus the U.S. Treasury yield curve for the identical security and comparable securities that are actively traded.

Derivative assets and liabilities - These financial instruments are primarily valued using the market approach. The estimated fair value of derivatives is based primarily on quotations obtained from counterparties and independent sources, such as quoted market values received from brokers. These quotations are compared to internally derived prices and a price challenge is lodged with the counterparties and an independent source when a significant difference cannot be explained by appropriate adjustments to the internal model. When quoted market values are not reliable or available, the value is based upon an internal valuation process using market observable inputs that other market participants would use. Significant inputs to the valuation of derivative financial instruments include overnight index swaps and LIBOR basis curves, interest rate volatility, swap yield curve, currency spot rates, cross currency basis curves and dividend yields. Due to the observability of the significant inputs to these fair value measurements, they are classified as Level 2.

The use of different assumptions or valuation methodologies may have a material impact on the estimated fair value amounts. For the periods presented, there were no significant changes to the Company's valuation techniques.

(5) Derivative assets and liabilities fair value disclosures on a gross basis are included in paragraph 1 above. Since there are no derivative assets or liabilities classified in Level 3, the reconciliation disclosures required under paragraphs 2 through 4 are not applicable.

b. The Company provides additional fair value information in Note 21. "Other Items".

NOTES TO FINANCIAL STATEMENTS

c. The following presents a summary of the carrying values and fair values of the Company's financial instruments:

	December 31, 2018					Net	Not
	Aggregate	Admitted				Asset	Practicable
	Fair Value	Assets	Level 1	Level 2	Level 3	Value (NAV)	(Carrying Value)
Financial assets:							
Bonds:							
U. S. government and agencies	\$ 6,193,428,890	\$ 5,854,233,622	\$ -	\$ 6,192,947,715	\$ 481,174	\$ -	\$ -
All other governments	1,480,982,279	1,486,656,955	-	1,414,689,011	66,293,268	-	-
States, territories and possessions	646,576,736	613,530,541	-	646,576,736	-	-	-
Political subdivisions	571,557,366	547,158,039	-	571,557,366	-	-	-
Special revenue	6,420,868,430	5,927,223,715	-	6,411,389,089	9,479,341	-	-
Industrial and miscellaneous	74,537,526,494	75,124,303,136	10,043,280	42,694,321,928	31,833,161,285	-	-
Parent, subsidiaries and affiliates	7,570,106,836	7,526,017,122	-	1,171,337,829	6,398,769,007	-	-
Preferred stocks	733,775,843	744,092,065	11,668,660	-	722,107,184	-	-
Common stocks - subsidiaries and affiliates ⁽¹⁾	397,991,651	397,991,651	233,070,805	-	164,920,846	-	-
Common stocks - unaffiliated	499,993,428	499,993,428	194,455,569	-	305,537,860	-	-
Mortgage loans - commercial	22,793,945,324	22,357,118,876	-	-	22,793,945,324	-	-
Mortgage loans - residential	1,210,675,405	1,266,688,652	-	-	1,210,675,405	-	-
Cash, cash equivalents and short-term investments	4,318,003,746	4,318,003,746	175,136,350	4,142,867,396	-	-	-
Derivatives:							
Interest rate swaps	6,858,304,938	6,629,062,841	-	6,858,304,938	-	-	-
Options	910,876,374	910,876,374	-	910,876,374	-	-	-
Currency swaps	843,350,847	843,350,847	-	843,350,848	-	-	-
Forward contracts	113,066,759	106,021,420	-	113,066,759	-	-	-
Credit default swaps	6,238,219	18,044,346	-	6,238,219	-	-	-
Financial futures	215,810,517	215,810,517	-	215,810,517	-	-	-
Separate account assets	64,478,100,585	64,478,100,585	41,358,963,394	22,568,484,678	550,652,512	-	-
Financial liabilities:							
Repurchase agreements	4,768,493,900	4,768,493,900	-	4,768,493,900	-	-	-
Commercial paper	249,786,188	249,786,188	-	249,786,188	-	-	-
Guaranteed interest contracts	8,728,933,859	8,824,880,908	-	-	8,728,933,859	-	-
Group annuity contracts and other deposits	17,950,757,186	17,863,326,686	-	-	17,950,757,186	-	-
Individual annuity contracts	8,925,311,575	8,130,925,014	-	-	8,925,311,575	-	-
Supplementary contracts	1,179,488,114	1,178,326,789	-	-	1,179,486,114	-	-
Derivatives:							
Interest rate swaps	5,111,389,729	4,646,939,586	-	5,111,389,729	-	-	-
Options	4,556,715	4,556,715	-	4,556,715	-	-	-
Currency swaps	231,601,523	231,601,523	-	231,601,523	-	-	-
Forward contracts	27,811,672	12,189,652	-	27,811,672	-	-	-
Credit default swaps	1,957,447	1,605,508	-	1,957,447	-	-	-
Financial futures	15,090,134	15,090,134	-	15,090,134	-	-	-

⁽¹⁾Common stocks - subsidiaries and affiliates do not include unconsolidated subsidiaries, which had a statutory carrying value of \$11,929,390,074.

NOTES TO FINANCIAL STATEMENTS

December 31, 2017

	Aggregate	Admitted				Net	Not
	Fair Value	Assets	Level 1	Level 2	Level 3	Asset	Practicable
						Value	(Carrying
						(NAV)	Value)
Financial assets:							
Bonds:							
U. S. government and agencies	\$ 7,697,358,100	\$ 7,148,646,302	\$ -	\$ 7,696,140,916	\$ 1,217,184	\$ -	\$ -
All other governments	1,269,456,629	1,180,636,469	-	1,199,532,954	69,923,675	-	-
States, territories and possessions	650,787,369	595,739,067	-	650,787,369	-	-	-
Political subdivisions	576,491,812	531,896,852	-	576,491,812	-	-	-
Special revenue	6,517,741,346	5,813,925,043	-	6,507,057,309	10,684,037	-	-
Industrial and miscellaneous	71,341,958,072	68,140,550,670	-	41,332,593,290	30,009,364,782	-	-
Parent, subsidiaries and affiliates	7,133,043,119	7,023,370,215	-	1,074,523,550	6,058,519,569	-	-
Preferred stocks	786,017,714	767,807,089	35,764,970	-	750,252,744	-	-
Common stock - subsidiaries and affiliates ⁽¹⁾	453,804,715	453,804,715	344,139,041	-	109,665,674	-	-
Common stock - unaffiliated	1,211,698,249	1,211,698,249	901,122,199	-	310,576,050	-	-
Mortgage loans - commercial	21,300,839,874	20,776,516,041	-	-	21,300,839,874	-	-
Mortgage loans - residential	1,760,314,846	1,803,330,578	-	-	1,760,314,846	-	-
Cash, cash equivalents and short-term investments	3,579,565,622	3,579,565,622	218,304,101	3,361,261,521	-	-	-
Derivatives:							
Interest rate swaps	8,269,196,318	7,684,332,071	-	8,269,196,318	-	-	-
Options	744,440,948	744,440,948	-	744,440,948	-	-	-
Currency swaps	386,671,874	386,671,874	-	385,416,622	1,255,252	-	-
Forward contracts	22,365,809	13,178,525	-	22,365,809	-	-	-
Credit default swaps	35,727,719	28,657,163	-	35,727,719	-	-	-
Separate account assets	69,162,281,558	69,162,281,558	46,005,788,808	22,446,976,398	709,516,352	-	-
Financial liabilities:							
Repurchase agreements	4,203,824,405	4,203,824,405	-	4,203,824,405	-	-	-
Commercial paper	249,867,743	249,867,743	-	249,867,743	-	-	-
Guaranteed investment contracts	8,549,379,509	8,834,233,416	-	-	8,549,379,509	-	-
Group annuity contracts and other deposits	18,505,272,005	18,132,442,262	-	-	18,505,272,005	-	-
Individual annuity contracts	8,009,431,860	6,570,314,507	-	-	8,009,431,860	-	-
Supplementary contracts	1,167,981,644	1,166,805,456	-	-	1,167,981,644	-	-
Derivatives:							
Interest rate swaps	5,373,255,255	5,315,004,107	-	5,373,061,449	193,806	-	-
Options	6,319,708	6,319,708	-	6,319,708	-	-	-
Currency swaps	568,599,954	568,599,954	-	560,167,926	8,432,028	-	-
Forward contracts	88,806,435	88,671,592	-	88,806,435	-	-	-
Credit default swaps	414,480	663,996	-	414,480	-	-	-

⁽¹⁾Common stocks - subsidiaries and affiliates do not include unconsolidated subsidiaries, which had statutory carrying values of \$13,969,762,575.

d. As of December 31, 2018 and December 31, 2017, the Company had no investments where it was not practicable to estimate fair value.

Note 21 – Other Items

a. There were no unusual or infrequent items requiring disclosure.

b. There were no troubled debt restructurings that occurred during the period for which the financial statements are presented.

c. Other disclosures:

The Company had assets on deposit with government authorities or trustees, as required by law, in the amount of \$8,784,415 as of December 31, 2018 and \$8,804,085 as of December 31, 2017.

NOTES TO FINANCIAL STATEMENTS

The Company holds corporate-owned life insurance (COLI) issued by unaffiliated third party insurers to cover the life of certain qualified senior employees. The primary purpose of the program is to offset future employee benefit expenses. The Company pays all premiums and is the beneficiary of these policies. The Company had recorded cash surrender values of these policies of \$2,115,001,572 as of December 31, 2018 and \$2,104,402,544 as of December 31, 2017. The cash surrender value is allocated 19% cash and short-term investments, 34% other invested assets, 17% stocks, 28% bonds and 2% real estate as of December 31, 2018 and 17% cash and short-term investments, 28% other invested assets, 19% stocks, 35% bonds and 1% real estate as of December 31, 2017.

Business risks

The Company operates in a business environment subject to various risks and uncertainties. The principal risks include insurance and underwriting risks, investment and interest rate risks, currency exchange risk and credit risk.

Insurance and underwriting risks

The Company prices its products based on estimated benefit payments reflecting assumptions with respect to mortality, morbidity, longevity, persistency, interest rates and other factors. If actual policy experience emerges that is significantly and adversely different from assumptions used in product pricing, the effect could be material to the profitability of the Company. For participating whole life products, the Company's dividends to policyholders primarily reflect the difference between actual investment, mortality, expense and persistency experience and the experience embedded in the whole life premiums and guaranteed elements. The Company also reinsures certain life insurance and other long-term care insurance policies to mitigate the impact of its underwriting risk.

Investment and interest rate risks

The fair value, cash flows and earnings of investments can be influenced by a variety of factors including changes in interest rates, credit spreads, equity markets, portfolio asset allocation and general economic conditions. The Company employs a rigorous asset/liability management process to help mitigate the economic impacts of various investment risks, in particular interest rate risk. By effectively matching the market sensitivity of assets with the liabilities they support, the impact of interest rate changes is addressed, on an economic basis, as the change in the value of the asset is offset by a corresponding change in the value of the supported liability. The Company uses derivatives, such as interest rate swaps and swaptions, as well as synthetic assets to reduce interest rate and duration imbalances determined in asset/liability analyses.

The levels of U.S. interest rates are influenced by U.S. monetary policies and by the relative attractiveness of U.S. markets to investors versus other global markets. As interest rates increase, certain debt securities may experience amortization or prepayment speeds that are slower than those assumed at purchase, impacting the expected maturity of these securities and the ability to reinvest the proceeds at the higher yields. Rising interest rates may also result in a decrease in the fair value of the investment portfolio. As interest rates decline, certain debt securities may experience accelerated amortization and prepayment speeds than what was assumed at purchase. During such periods, the Company is at risk of lower net investment income as it may not be able to reinvest the proceeds at comparable yields. Declining interest rates may also increase the fair value of the investment portfolio.

Interest rates also have an impact on the Company's products with guaranteed minimum payouts and on interest credited to account holders. As interest rates decrease, investment spreads may contract as crediting rates approach minimum guarantees, resulting in an increased liability.

In periods of increasing interest rates, policy loans, surrenders and withdrawals may increase as policyholders seek investments with higher perceived returns. This could result in cash outflows requiring the Company to sell invested assets at a time when the prices of those assets are adversely affected by the increase in market interest rates, which could cause the Company to realize investment losses.

Currency exchange risk

The Company has currency risk due to its non-U.S. dollar investments and medium-term notes along with its indirect international operations. The Company mitigates currency risk through the use of cross-currency swaps and forward contracts. Cross-currency swaps are used to minimize currency risk for certain non-U.S. dollar assets and liabilities through a pre-specified exchange of interest and principal. Forward contracts are used to hedge movements in exchange rates.

Credit and other market risks

The Company manages its investments to limit credit and other market risks by diversifying its portfolio among various security types and industry sectors as well as purchasing credit default swaps to transfer some of the risk.

Stressed conditions, volatility and disruptions in global capital markets or in particular markets or financial asset classes can have an adverse effect on the Company, in part because the Company has a large investment portfolio and assets supporting the Company's insurance liabilities are sensitive to changing market factors. Global market factors, including interest rates, credit spread quality, equity prices, real estate markets, foreign currency exchange rates, consumer spending, business investment, government spending, the volatility and strength of the capital markets, deflation and inflation, all affect the business and economic environment and, ultimately, the profitability of the Company's business. Disruptions in one market or asset class can also spread to other markets or asset classes. Upheavals in the financial markets can also affect the Company's business through their effects on general levels of economic activity, employment and customer behavior.

Real estate markets are monitored continuously with attention on regional differences in price performance, absorption trends and supply and demand fundamentals that can impact the rate of foreclosures and delinquencies. Public sector strengths and weaknesses, job growth and macro-economic issues are factors that are closely monitored to identify any impact on the Company's real estate related investments.

The CMBS, RMBS and leveraged loan sectors are sensitive to evolving conditions that can impair the cash flows realized by investors and is subject to uncertainty. Management's judgment regarding OTTI and estimated fair value depends upon the evolving investment sector and economic conditions. It can also be affected by the market liquidity, a lack of which can make it difficult to obtain accurate market prices for RMBS and other investments, including CMBS and leveraged loans. Any deterioration in economic fundamentals, especially related to the housing sector could affect management's judgment regarding OTTI.

The Company has investments in structured products exposed primarily to the credit risk of corporate bank loans, corporate bonds or credit default swap contracts referencing corporate credit risk. Most of these structured investments are backed by corporate loans and are commonly known as collateralized loan obligations that are classified as CDOs. The portfolios backing these investments are actively managed and diversified by industry and individual issuer concentrations. Due to the complex nature of CDOs and the reduced level of transparency to the underlying collateral pools for many market participants, the recovery in CDO valuations generally lags the overall recovery in the underlying assets. Management believes its scenario analysis approach, based primarily on actual collateral data and forward looking assumptions, does capture the credit and most other risks in each pool. However, in a rapidly changing economic environment, the credit and other risks in each collateral pool will be more volatile and actual credit performance of CDOs may differ from the Company's assumptions.

NOTES TO FINANCIAL STATEMENTS

The Company continuously monitors its investments and assesses their liquidity and financial viability; however, the existence of the factors described above, as well as other market factors, could negatively impact the market value of the Company's investments. If the Company sells its investments prior to maturity or market recovery, these investments may yield a return that is less than the Company otherwise would have been able to realize.

Asset-based fees calculated as a percentage of the separate account assets are a source of revenue to the Company. Gains and losses in the investment markets may result in corresponding increases and decreases in the Company's separate account assets and related revenue.

Market risk arises within the Company's employee benefit plans to the extent that the obligations of the plans are not fully matched by assets with determinable cash flows. Pension and postretirement obligations are subject to change due to fluctuations in the discount rates used to measure the liabilities as well as factors such as changes in inflation, salary increases and participants living longer. The risks are that such fluctuations could result in assets that are insufficient over time to cover the level of projected benefit obligations. In addition, increases in inflation and members living longer could increase the pension and postretirement obligations. Management determines the level of this risk using reports prepared by independent actuaries and takes action, where appropriate, in terms of setting investment strategy and determining contribution levels. In the event that the pension obligations arising under the Company's employee benefit plans exceed the assets set aside to meet the obligations, the Company may be required to make additional contributions or increase its level of contributions to these plans.

Political Uncertainties

Political events, such as the ongoing volatility with respect to the European Union, may trigger or exacerbate the risk factors described above. Whether those underlying risk factors are driven by politics or not, the Company's dynamic approach to managing risks enables us to utilize the mitigating actions described above to attempt to reduce the potential impact of each underlying risk factor on the Company.

- d. The Company did not receive any business interruption recoveries in 2018.
- e. The Company did not have unused transferable or non-transferable state tax credits as of December 31, 2018.
- f. Subprime mortgage related risk exposure:
As of December 31, 2018 and 2017, the Company did not have any direct exposure through investments in subprime mortgage loans.

(1) Direct exposure through other investments

RMBS risk exposure:

Portfolios of ABS, including RMBS and CMBS, are evaluated on a periodic basis using scenarios customized by collateral type. The Company performs sensitivity analysis on defaults as loan-to-values change, and on defaults as prepayments change using default curves under various scenarios. The Company combines scenario analysis with a monthly surveillance process in which it compares actual delinquencies and defaults to expectations established at the time securities are acquired as well as expectations considering current market conditions, and performs a statistical review to determine potential losses relative to credit support of troubled loan exposures on a transaction-by-transaction basis.

Management used a combination of external vendor prices, broker quotations and internal models for purposes of deriving fair value. Internal inputs used in the determination of fair value included estimates of prepayment speeds, default rates, discount rates and collateral values, among others. Structure characteristics and results of cash flow priority are also considered. Fair values resulting from internal models are those expected to be received in an orderly transaction between willing market participants at the financial statement date.

The Company holds certain investments backed by pools of residential mortgages. The majority of these investments are included in bonds. The mortgages in these pools have varying risk characteristics and are commonly categorized as being of U.S. government agency, non-agency prime, Alt-A and subprime borrower quality. The Alt-A category includes option adjustable rate mortgages and the subprime category includes 'scratch and dent' or reperforming pools, high loan-to-value pools, and pools where the borrowers have very impaired credit but the average loan-to-value is low, typically 70% or below at origination. In identifying Alt-A and subprime exposure, management used a combination of qualitative and quantitative factors, including FICO scores and loan-to-value ratios.

Residential mortgage loan pools are homogeneous residential mortgage loans substantially backed by FHA and VA guarantees. The Company purchases seasoned loan pools, most of which are FHA insured or VA guaranteed. The Company does not originate any residential mortgages but invests in residential mortgage loan pools which may contain mortgages of subprime credit quality. As of December 31, 2018 and 2017, the Company did not have any direct subprime exposure through purchases of unsecuritized whole-loan pools.

(2) Direct exposure through other investments.

	December 31, 2018			Year Ended December 31, 2018
	Actual Cost	Carrying Value	Fair Value	OTTI
Alt-A:				
a. Residential mortgage-backed securities	\$ 219,822,592	\$ 256,906,006	\$ 296,513,786	\$ 800,251
b. Commercial mortgage-backed securities	-	-	-	-
c. Collateralized debt obligations	-	-	-	-
d. Structured securities	-	-	-	-
e. Equity investments in SCAs *	16,095,268	18,430,722	20,861,741	76,979
f. Other assets	-	-	-	-
g. Total	<u>\$ 235,917,860</u>	<u>\$ 275,336,728</u>	<u>\$ 317,375,527</u>	<u>\$ 877,230</u>

*The Company's SCA, C.M. Life, has investments in Alt-A and subprime mortgages, as does C.M. Life's SCA, MML Bay State. These investments comprise less than 1% of the Company's invested assets.

NOTES TO FINANCIAL STATEMENTS

Alt-A:	December 31, 2017			Year Ended December 31, 2017
	Actual	Carrying	Fair	OTTI
	Cost	Value	Value	
a. Residential mortgage-backed securities	\$ 269,619,940	\$ 298,759,915	\$ 362,060,389	\$ 48,142
b. Commercial mortgage-backed securities	-	-	-	-
c. Collateralized debt obligations	-	-	-	-
d. Structured securities	-	-	-	-
e. Equity investments in SCAs *	19,891,348	21,721,100	25,686,913	14,692
f. Other assets	-	-	-	-
g. Total	<u>\$ 289,511,288</u>	<u>\$ 320,481,015</u>	<u>\$ 387,747,302</u>	<u>\$ 62,834</u>

*The Company's SCA, C.M. Life, has investments in Alt-A and subprime mortgages, as does C.M. Life's SCA, MML Bay State. These investments comprise less than 1% of the Company's invested assets.

(3) The Company has no exposure to subprime mortgage risk through other investments.

(4) The Company has no underwriting exposure to subprime mortgage risk through Mortgage Guaranty or Financial Guaranty insurance coverage.

g. Retained asset accounts:

(1) The Company offers the use of retained asset accounts as one of the options available to beneficiaries. This option must be affirmatively elected and is not treated as a default. An unaffiliated third party provider services certain aspects of the retained asset accounts. Beneficiaries draw funds from retained asset accounts utilizing drafts. The Company funds those drafts through an unaffiliated bank. During the reporting year, the interest earned by beneficiaries ranged from 0.53% to 2.20%. There is no fee charged to the beneficiary to establish this account. There are no maintenance or service fees. A \$12 stop payment fee, a \$10 insufficient funds fee and a \$2 duplicate draft fee will apply. Assets and liabilities relating to retained asset accounts remain with the Company and are reported within the Company's financial statements as assets and supplemental contracts without life contingencies. The assets and liabilities reported relating to retained asset accounts also include amounts attributable to C.M. Life Retained Assets contracts issued prior to March 2011.

(2)

	Retained Asset Accounts In Force December 31,			
	2018		2017	
	Number	Balance	Number	Balance
<u>Account aging categories:</u>				
a. Up to and including 12 months	128	\$ 20,386,882	112	\$ 14,248,567
b. 13 to 24 months	78	4,864,195	60	3,939,870
c. 25 to 36 months	48	2,587,404	78	7,094,759
d. 37 to 48 months	60	4,252,084	82	5,145,934
e. 49 to 60 months	67	3,890,086	63	3,072,703
f. Over 60 months	753	25,073,240	801	25,990,753
g. Total	<u>1,134</u>	<u>\$ 61,053,891</u>	<u>1,196</u>	<u>\$ 59,492,586</u>

(3)

	Individual		Group	
	Number	Balance	Number	Balance
a. Retained asset accounts as of January 1, 2018	1,196	\$ 59,492,586	-	-
b. Retained asset accounts issued	180	51,024,464	-	\$ -
c. Investment earnings credited to retained asset accounts	N/A	785,429	N/A	-
d. Fees and other charges assessed to retained asset accounts	N/A	(92)	N/A	-
e. Retained asset accounts transferred to state unclaimed property funds	(38)	(17,615)	-	-
f. Retained asset accounts closed/withdrawn	(204)	(50,230,881)	-	-
g. Retained asset accounts as of December 31, 2018	<u>1,134</u>	<u>\$ 61,053,891</u>	<u>-</u>	<u>\$ -</u>

h. Insurance-linked securities:

The Company has not received any proceeds as the issuer, ceding insurer or counterparty of insurance-linked securities.

Note 22 – Events Subsequent

Management of the Company has evaluated subsequent events through February 22, 2019, the date the financial statements were available to be issued. No events have occurred subsequent to the date of the statement of financial position and before the date of evaluation that would require disclosure.

Note 23 – Reinsurance

a. Ceded Reinsurance Report:

Section 1 - General Interrogatories:

(1) The Company and its officers and directors do not own any portion of a nonaffiliated reinsurer.

(2) The Company did not reinsure any policies with a company chartered in a country other than the U.S., excluding U.S. branches of these companies, which was owned in excess of 10% or controlled directly or indirectly by an insured, a beneficiary, a creditor or any other person not primarily engaged in the insurance business.

Section 2 - Ceded Reinsurance Report - Part A:

(1) There are no reinsurance agreements in effect under which the reinsurer may unilaterally cancel any reinsurance for reasons other than for nonpayment of premium or other similar credits.

NOTES TO FINANCIAL STATEMENTS

- (2) The Company has no reinsurance agreements in effect such that the amount of losses paid or accrued through the statement date may result in a payment to the reinsurer of amounts which, in aggregate and allowing for offset of mutual credits from other reinsurance agreements with the same reinsurer, exceed the total direct premium collected under the reinsured policies.

Section 3 - Ceded Reinsurance Report - Part B:

- (1) If all reinsurance agreements were terminated by either party as of December 31, 2018, the resulting reduction in surplus due to loss of reinsurance reserve credits net of unearned premium would be \$4,241,427,011, assuming no return of the assets (excluding assets in trust) backing these reserves from the reinsurer to the Company.

- (2) Effective December 31, 2017, the Company entered into a reinsurance agreement with a third-party, authorized reinsurer to reinsure certain inforce universal life policies. The agreement is structured as a combination of 90% coinsurance funds withheld on certain universal life policies and 40% yearly renewable term on certain other universal life policies. The Company maintains responsibility for servicing the policies and managing the assets. Under the terms of the agreement, at December 31, 2017, the Company ceded policyholder reserves of \$4,000,939,904 and recorded a liability for funds held under coinsurance of \$4,000,939,904 on the Statutory Statement of Financial Position and ceded premium of \$4,000,939,904 and reduced changes in policyholder reserves of \$4,000,939,904 in the Statutory Statements of Operations.

- b. The Company did not write off any reinsurance balances.
- c. The Company did not commute any ceded reinsurance.
- d. The Company did not reinsure any policies with a certified reinsurer whose rating was downgraded or status subject to revocation.
- e. The Company does not have reinsurance of variable annuity contracts with an affiliated captive reinsurer.
- f. The Company does not have reinsurance of variable annuity contracts with an affiliated captive reinsurer.
- g. Ceding entities that utilize captive reinsurers to assume reserves subject to the XXX/AXXX captive framework.
- (1) Ceding reinsurers in which a risk-based capital shortfall exists per the risk-based capital XXX/AXXX captive reinsurance consolidated exhibit:
- a. Captives with risk-based capital shortfall

Cession ID	NAIC Company Code	ID Number	Name of Captive Insurer	Amount of risk-based capital shortfall
			None	\$ -
			None	\$ -
			None	\$ -
Total				-

- b. Effect of risk-based capital shortfall on total adjusted capital (TAC)

1. Total adjusted capital (TAC) (Five-Year Historical Line 30)	\$ -
2. Risk-based capital shortfall (Sum of g(1)a1 Column 5)	\$ -
3. Total adjusted capital (TAC) before risk-based capital shortfall (g(1)b1 + g(1)b2))	\$ -

- (2) Captive reinsurers for which a non-zero primary security shortfall is shown on the risk-based capital XXX/AXXX reinsurance primary security shortfall by cession exhibit:

Cession ID	NAIC Company Code	ID Number	Name of Captive Insurer	Amount of primary security shortfall
			None	\$ -
			None	\$ -
			None	\$ -
Total				-

Note 24 – Retrospectively Rated Contracts and Contracts Subject to Redetermination

The Company does not issue group health insurance and therefore did not issue retrospectively rated contracts or contracts subject to redetermination.

Note 25 – Change in Incurred Losses and Loss Adjustment Expenses

There was no increase to reserves in 2018 for incurred losses and loss adjustment expenses attributable to insured events of prior years, which considered corrections of prior year errors.

Note 26 – Intercompany Pooling Arrangements

The Company did not have any intercompany pooling arrangements.

Note 27 – Structured Settlements

The Company did not enter into structured settlement agreements with other life insurers to resolve claims.

Note 28 – Health Care Receivables

The Company did not issue any business that would give rise to pharmaceutical rebates or risk sharing receivables.

NOTES TO FINANCIAL STATEMENTS

Note 29 – Participating Policies

Participating policies issued by the Company represented 56% of the Company's policyholders' reserves and liabilities for deposit-type contracts as of December 31, 2018.

The allocation of these dividends to policyholders reflects the relative contribution of each group of participating policies to surplus and considers, among other factors, investment returns, mortality and morbidity experience, expenses and taxes. The Company reported dividends in the amount of \$1,695,253,440 for 2018 and did not allocate any additional income to such policyholders.

Note 30 – Premium Deficiency Reserves

The Company did not have any liability for premium deficiency on accident and health contracts or property/casualty contracts.

Note 31 – Reserves for Life Contracts and Annuity Contracts

- (1) The Company waives deduction of deferred fractional premium at death and returns any portion of the final premium beyond the date of death. Reserves are computed using continuous functions to reflect these practices. Surrender values were not promised in excess of the legally computed reserves.
- (2) The Company charges a higher premium on certain contracts that cover substandard mortality risk. For these policies, the reserve calculations are based on a substandard mortality rate, which is a multiple of the standard mortality tables.
- (3) The Company had \$33,798,284,349 of insurance in force as of December 31, 2018, for which the gross premium was less than the net premium according to the standard valuation set by the Division. Deficiency reserves to cover this insurance totaled \$456,140,291 as of December 31, 2018 and are reported in Exhibit 5.
- (4) Tabular interest, tabular reserves less actual reserves released, and tabular cost for all life and annuity contracts and supplementary contracts involving life contingencies are determined in accordance with NAIC Annual Statement instructions. For tabular interest, whole life and term products use a formula that applies a weighted average interest rate determined from a seriatim valuation file to the mean average reserves. Universal life, variable life, group life, annuity and supplemental contracts use a formula that applies a weighted average credited rate to the mean account value. For contracts without an account value (e.g., a Single Premium Immediate Annuity), a weighted average statutory valuation rate is applied to the mean statutory reserve or accepted actuarial methods using applicable interest rates are applied.
- (5) Liabilities for funding agreements, dividend accumulations, premium deposit funds, investment-type contracts such as supplementary contracts not involving life contingencies and certain structured settlement annuities are based on account value or accepted actuarial methods using applicable interest rates. Refer to Note 20 a. "Fair Value Measurements" for information on the Company's policy for determining fair value.
- (6) The details for other changes:

ITEM	Total	Industrial Life	Ordinary			Credit Life Group and Individual	Group	
			Life Ins.	Individual Annuities	Supplementary Contracts		Life Ins.	Annuities
None	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Note 32 – Analysis of Annuity Actuarial Reserves and Deposit Type Liabilities by Withdrawal Characteristics

The withdrawal characteristics of the Company's annuity actuarial reserves and deposit-type contracts as of December 31, 2018 are illustrated below:

	General Account	Separate Account w/ Guarantees	Separate Account Nonguaranteed	Total	% of Total
A. Subject to discretionary withdrawal:					
(1) With market value adjustment	\$ 14,196,049,443	\$ -	\$ -	\$ 14,196,049,443	12 %
(2) At book value less current surrender charge of 5% or more	4,311,364,802	-	-	4,311,364,802	4
(3) At fair value	-	17,814,836,046	42,428,250,311	60,243,086,357	52
(4) Total with market value adjustment or at fair value (total of 1 through 3)	18,507,414,245	17,814,836,046	42,428,250,311	78,750,500,602	68
(5) At book value without adjustment (minimal or no charge or adjustment)	9,832,101,973	605,474,694	-	10,437,576,667	9
B. Not subject to discretionary withdrawal provision	26,004,666,897	-	-	26,004,666,897	23
C. Total (gross)	54,344,183,115	18,420,310,740	42,428,250,311	115,192,744,166	100 %
D. Reinsurance ceded	696,408,817	-	-	696,408,817	
E. Total (net)* (C)-(D)	\$ 53,647,774,298	\$ 18,420,310,740	\$ 42,428,250,311	\$ 114,496,335,349	

* Reconciliation of total annuity actuarial reserves and deposit-type fund liabilities.

NOTES TO FINANCIAL STATEMENTS

F.	Amount
Life and Accident and Health Annual Statement:	
(1) Exhibit 5, annuities section, total (net)	\$ 39,138,897,644
(2) Exhibit 5, supplementary contracts with life contingencies section, total (net)	138,969,367
(3) Exhibit 7, deposit-type contracts Column 1, Line 14	14,369,907,287
(4) Subtotal	53,647,774,298
Separate Accounts Annual Statement:	
(5) Exhibit 3, Line 0299999, Column 2	52,661,663,445
(6) Exhibit 3, Line 0399999, Column 2	-
(7) Policyholders dividend and coupon accumulations	-
(8) Policyholder premiums	-
(9) Guaranteed interest contracts	-
(10) Other contract deposit funds	8,186,897,606
(11) Subtotal	60,848,561,051
(12) Combined total	\$ 114,496,335,349

Note 33 – Premium and Annuity Considerations Deferred and Uncollected

a. Deferred and uncollected life insurance premiums and annuity considerations as of December 31, 2018, were as follows:

	Type	Gross	Net of Loading
(1) Industrial	\$	-	\$ -
(2) Ordinary new business		151,337,413	48,340,880
(3) Ordinary renewal		809,656,753	883,092,189
(4) Credit life		-	-
(5) Group life		10,624,013	10,605,750
(6) Group annuity		-	-
(7) Totals		\$ 971,618,179	\$ 942,038,819

Note 34 – Separate Accounts

a. Separate account activity:

(1) Separate accounts and sub-accounts are segregated funds administered and invested by the Company, the performance of which primarily benefits the policyholders/contract holders with an interest in the separate accounts. Group and individual variable annuity, variable life and other insurance policyholders/contract holders select from among the separate accounts and sub-accounts made available by the Company. The separate accounts and sub-accounts are offered as investment options under certain insurance contracts or policies. The returns produced by separate account assets increase or decrease separate account reserves. Separate account assets consist principally of marketable securities reported at fair value. Except for the Company's seed money, supplemental accounts and certain guaranteed separate accounts issued in Minnesota, separate account assets can only be used to satisfy separate account liabilities and are not available to satisfy the general obligations of the Company. Separate account administrative and investment advisory fees are included in miscellaneous income.

The separate account classification of all separate account products for the Company is supported by the following state statutes, by product identifier:

	State Statute Reference / Commissioner Approval / Guidance
Product/Transaction:	
Corporate-Owned Life Insurance	Massachusetts General Laws Annotated Chapter 175, Section 132H
Group Variable Universal Life	Massachusetts General Laws Annotated Chapter 175, Section 132G
Individual Immediate Variable Annuity	Massachusetts General Laws Annotated Chapter 175, Section 132G
Individual Variable Annuity	Massachusetts General Laws Annotated Chapter 175, Section 132G
Individual Variable Universal Life	Massachusetts General Laws Annotated Chapter 175, Section 132G
Nonguaranteed Retirement Services Separate Accounts	Massachusetts General Laws Annotated Chapter 175, Section 132F
Separate Account Guaranteed Interest Contract	Massachusetts General Laws Annotated Chapter 175, Section 132F
Synthetic Guaranteed Interest Contract	Massachusetts General Laws Annotated Chapter 175, Section 132F
Stable Value Bank-Owned Life Insurance	Massachusetts General Laws Annotated Chapter 175, Section 132H
Supplemental Account	Massachusetts General Laws Annotated Chapter 175, Section 132F

(2) In accordance with the products recorded within the separate accounts, some are considered legally insulated whereas others are not legally insulated from the general account. The legal insulation of the separate account products prevents assets other than seed money or amounts in a supplemental account from being generally available to satisfy claims resulting from the general account.

The Company's NAIC Separate Account Annual Statement included Separate Accounts with legally insulated products of \$64,263,974,558 as of December 31, 2018 and \$68,950,434,861 as of December 31, 2017. Assets backing products which are not legally insulated are available to satisfy general obligations of the Company. The assets backing legally insulated products from the general account as of December 31, 2018 are attributed to the following:

NOTES TO FINANCIAL STATEMENTS

	Separate Account Assets	
	Legally	Not Legally
	Insulated	Insulated*
Product/Transaction:		
Nonguaranteed Retirement Services Separate Accounts	\$ 32,211,996,651	\$ -
Separate Account Guaranteed Interest Contract	18,905,602,670	211,516,490
Individual Variable Annuity	10,300,622,502	-
Stable Value Bank-Owned Life Insurance	1,688,969,678	-
Individual Variable Universal Life	959,296,107	-
Corporate-Owned Life Insurance	87,078,951	-
Group Variable Universal Life	58,987,539	-
Individual Immediate Variable Annuity	51,420,460	-
Supplemental Account	-	2,609,537
Total	<u>\$ 64,263,974,558</u>	<u>\$ 214,126,027</u>

* Exclusive of seed money and unsettled fees and expenses, there are 23 contracts totaling \$211,516,490 that are included as non-insulated. Total separate account assets of the Company are \$64,478,100,585 at December 31, 2018. These 23 non-insulated contracts represent 0.33% of the Company's separate account balance at December 31, 2018. Given the immateriality of the balances, we are disclosing the existence of these 23 non-insulated contracts, but are not preparing a separate green book blank.

- (3) In accordance with the products/transactions recorded within the separate accounts, some separate account liabilities are guaranteed by the general account. Reserves for guarantees covering death benefits or minimum rates of return are held in the general account. If the investment proceeds are insufficient to cover the rate of return guaranteed for the product or the guaranteed death benefit, the policyholder proceeds will be remitted by the general account.

To compensate the general account for the risk taken, the separate accounts have paid risk charges as follows for the past five years:

2018	\$ 97,690,286
2017	91,538,349
2016	88,772,303
2015	89,035,421
2014	84,791,816

For the year ended December 31, 2018, the general account of the Company had paid \$6,161,058 toward separate account guarantees. The total separate account guarantees paid by the general account for the preceding years ending December 31, 2017, 2016, 2015, and 2014 was \$7,568,186, \$4,619,165, \$2,543,318 and \$2,099,135, respectively.

The following separate account products would be classified differently under GAAP than under statutory accounting principles:

Product Identifier:	Same as GAAP/Condition that Requires GAAP General Account Reporting
Separate Account Guaranteed Interest Contract	GAAP GIA classification/Investment Performance
Stable Value Bank-owned Life Insurance	GAAP GIA classification/Investment Performance
Supplemental Account	GAAP GIA classification/Investment Performance
Synthetic Guaranteed Interest Contract	GAAP GIA classification/Investment Performance

- (4) The Company does not engage in securities lending transactions within the separate accounts.

- b. General nature and characteristics of separate account business:

The Company has guaranteed separate accounts classified as the following: nonindexed, which have reserve interest rates at no greater than 4% and/or to fund a long-term interest guarantee in excess of a year that does not exceed 4%. The Company has nonguaranteed separate accounts that are variable accounts where the benefit is determined by the performance and/or market value of the investments held in the separate account with incidental risk, notional expense and minimum death benefit guarantees.

NOTES TO FINANCIAL STATEMENTS

Information regarding the separate accounts of the Company as of and for the year ended December 31, 2018 is as follows:

	Indexed	Nonindexed Guarantee Less than/ Equal to 4%	Nonindexed Guarantee More than 4%	Nonguaranteed Separate Accounts	Total
(1) Premiums, considerations or deposits for the year ended December 31, 2018	\$ -	\$ -	\$ -	\$ 10,533,931,715	\$ 10,533,931,715
Reserves at December 31, 2018:					
(2) For accounts with assets at:					
a. Fair value	\$ -	\$ 18,420,310,740	\$ -	\$ 45,073,255,132	\$ 63,493,565,872
b. Amortized cost	-	-	-	-	-
c. Total Reserves*	\$ -	\$ 18,420,310,740	\$ -	\$ 45,073,255,132	\$ 63,493,565,872
(3) By withdrawal characteristics:					
a. Subject to discretionary withdrawal:	\$ -	\$ -	\$ -	\$ -	\$ -
1. With market value adjustment	-	-	-	-	-
2. At book value without market value adjustment and with current surrender charge of 5% or more	-	-	-	-	-
3. At fair value	-	17,814,836,046	-	45,073,255,132	62,888,091,178
4. At book value, without market value adjustment and with current surrender charge of less than 5%	-	605,474,694	-	-	605,474,694
5. Subtotal	\$ -	\$ 18,420,310,740	\$ -	\$ 45,073,255,132	\$ 63,493,565,872
b. Not subject to discretionary withdrawal	-	-	-	-	-
c. Total	\$ -	\$ 18,420,310,740	\$ -	\$ 45,073,255,132	\$ 63,493,565,872
(4) Reserves for Assets Default Risk in Lieu of AVR	\$ -	\$ -	\$ -	\$ -	\$ -

*Line 2(c) should equal Line 3(h)

c. Reconciliation of net transfers (from) to separate accounts is as follows:

	December 31, 2018
(1) Transfers as reported in the Summary of Operations of the Separate Account Statement:	
(a) Transfers to separate accounts (Page 4, Line 1.4 and 2)	\$ 8,325,974,825
(b) Transfers from separate accounts (Page 4, Line 10)	(9,846,204,514)
(c) Net transfers to (from) separate accounts (a) - (b)	(1,520,229,689)
(2) Reconciling adjustments:	
(a) Net deposits on deposit-type liabilities	(1,488,199,265)
(3) Transfers as reported in the Summary of Operations of the Life, Accident & Health Annual Statement	
(1c) + (2) = (Page 4, Line 26)	\$ (3,008,428,954)

Note 35 – Loss/Claim Adjustment Expenses

The balance in the liability for unpaid accident and health claim adjustment expenses was \$24,782,552 as of December 31, 2018 and \$27,482,600 as of December 31, 2017. The Company incurred \$343,877,556 and paid \$346,712,342 of claim and claim adjustment expenses in the current year, of which \$333,478,626 of the paid amount was attributable to insured or covered events of prior years. The Company increased the provision for insured events of prior years by \$21,628,486. There is no salvage and subrogation associated with the Company's disability and long-term care businesses.

GENERAL INTERROGATORIES

PART 1 - COMMON INTERROGATORIES GENERAL

- 1.1 Is the reporting entity a member of an Insurance Holding Company System consisting of two or more affiliated persons, one or more of which is an insurer? Yes [X] No []
If yes, complete Schedule Y, Parts 1, 1A and 2
- 1.2 If yes, did the reporting entity register and file with its domiciliary State Insurance Commissioner, Director or Superintendent, or with such regulatory official of the state of domicile of the principal insurer in the Holding Company System, a registration statement providing disclosure substantially similar to the standards adopted by the National Association of Insurance Commissioners (NAIC) in its Model Insurance Holding Company System Regulatory Act and model regulations pertaining thereto, or is the reporting entity subject to standards and disclosure requirements substantially similar to those required by such Act and regulations? Yes [X] No [] N/A []
- 1.3 State Regulating? Massachusetts
- 1.4 Is the reporting entity publicly traded or a member of a publicly traded group? Yes [] No [X]
- 1.5 If the response to 1.4 is yes, provide the CIK (Central Index Key) code issued by the SEC for the entity/group.
- 2.1 Has any change been made during the year of this statement in the charter, by-laws, articles of incorporation, or deed of settlement of the reporting entity? Yes [] No [X]
- 2.2 If yes, date of change:
- 3.1 State as of what date the latest financial examination of the reporting entity was made or is being made. 12/31/2014
- 3.2 State the as of date that the latest financial examination report became available from either the state of domicile or the reporting entity. This date should be the date of the examined balance sheet and not the date the report was completed or released. 12/31/2014
- 3.3 State as of what date the latest financial examination report became available to other states or the public from either the state of domicile or the reporting entity. This is the release date or completion date of the examination report and not the date of the examination (balance sheet date). 06/30/2016
- 3.4 By what department or departments?
Commonwealth of Massachusetts Division of Insurance
- 3.5 Have all financial statement adjustments within the latest financial examination report been accounted for in a subsequent financial statement filed with Departments? Yes [] No [] N/A [X]
- 3.6 Have all of the recommendations within the latest financial examination report been complied with? Yes [X] No [] N/A []
- 4.1 During the period covered by this statement, did any agent, broker, sales representative, non-affiliated sales/service organization or any combination thereof under common control (other than salaried employees of the reporting entity), receive credit or commissions for or control a substantial part (more than 20 percent of any major line of business measured on direct premiums) of:
4.11 sales of new business? Yes [] No [X]
4.12 renewals? Yes [] No [X]
- 4.2 During the period covered by this statement, did any sales/service organization owned in whole or in part by the reporting entity or an affiliate, receive credit or commissions for or control a substantial part (more than 20 percent of any major line of business measured on direct premiums) of:
4.21 sales of new business? Yes [] No [X]
4.22 renewals? Yes [] No [X]
- 5.1 Has the reporting entity been a party to a merger or consolidation during the period covered by this statement? Yes [] No [X]
If yes, complete and file the merger history data file with the NAIC.
- 5.2 If yes, provide the name of the entity, NAIC Company Code, and state of domicile (use two letter state abbreviation) for any entity that has ceased to exist as a result of the merger or consolidation.

1 Name of Entity	2 NAIC Company Code	3 State of Domicile

- 6.1 Has the reporting entity had any Certificates of Authority, licenses or registrations (including corporate registration, if applicable) suspended or revoked by any governmental entity during the reporting period? Yes [] No [X]
- 6.2 If yes, give full information:
- 7.1 Does any foreign (non-United States) person or entity directly or indirectly control 10% or more of the reporting entity? Yes [] No [X]
- 7.2 If yes,
7.21 State the percentage of foreign control; %
7.22 State the nationality(s) of the foreign person(s) or entity(s) or if the entity is a mutual or reciprocal, the nationality of its manager or attorney-in-fact; and identify the type of entity(s) (e.g., individual, corporation or government, manager or attorney in fact).

1 Nationality	2 Type of Entity

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

- 8.1 Is the company a subsidiary of a bank holding company regulated by the Federal Reserve Board? Yes [] No [X]
- 8.2 If response to 8.1 is yes, please identify the name of the bank holding company.
.....
- 8.3 Is the company affiliated with one or more banks, thrifts or securities firms? Yes [X] No []
- 8.4 If response to 8.3 is yes, please provide below the names and location (city and state of the main office) of any affiliates regulated by a federal regulatory services agency [i.e. the Federal Reserve Board (FRB), the Office of the Comptroller of the Currency (OCC), the Federal Deposit Insurance Corporation (FDIC) and the Securities Exchange Commission (SEC)] and identify the affiliate's primary federal regulator.

1 Affiliate Name	2 Location (City, State)	3 FRB	4 OCC	5 FDIC	6 SEC
Baring International Investment Limited	London, UK				YES
Barings Global Advisers Limited	London, UK				YES
Barings Securities, LLC	Boston, MA				YES
HarbourView Asset Management Corporation	New York, NY				YES
MML Distributors, LLC	Enfield, CT				YES
MML Investment Advisers, LLC	Enfield, CT				YES
MML Investors Services, LLC	Springfield, MA				YES
MML Strategic Distributors, LLC	Springfield, MA				YES
MMLISI Financial Alliances, LLC	Springfield, MA				YES
OC Private Capital, LLC	New York, NY				YES
OFI Advisors, Inc.	New York, NY				YES
OFI Global Asset Management, Inc.	New York, NY				YES
OFI Global Institutional, Inc.	New York, NY				YES
OFI Private Investments, Inc.	New York, NY				YES
OFI SteelPath, Inc.	Dallas, TX				YES
OppenheimerFunds Distributor, Inc.	New York, NY				YES
OppenheimerFunds Inc.	New York, NY				YES
The MassMutual Trust Company, FSB	Enfield, CT		YES		

- 9. What is the name and address of the independent certified public accountant or accounting firm retained to conduct the annual audit?
KPMG, LLP, One Financial Plaza, Hartford, CT 06103
- 10.1 Has the insurer been granted any exemptions to the prohibited non-audit services provided by the certified independent public accountant requirements as allowed in Section 7H of the Annual Financial Reporting Model Regulation (Model Audit Rule), or substantially similar state law or regulation? Yes [] No [X]
- 10.2 If the response to 10.1 is yes, provide information related to this exemption:
.....
- 10.3 Has the insurer been granted any exemptions related to the other requirements of the Annual Financial Reporting Model Regulation as allowed for in Section 18A of the Model Regulation, or substantially similar state law or regulation? Yes [] No [X]
- 10.4 If the response to 10.3 is yes, provide information related to this exemption:
.....
- 10.5 Has the reporting entity established an Audit Committee in compliance with the domiciliary state insurance laws? Yes [X] No [] N/A []
- 10.6 If the response to 10.5 is no or n/a, please explain
.....
- 11. What is the name, address and affiliation (officer/employee of the reporting entity or actuary/consultant associated with an actuarial consulting firm) of the individual providing the statement of actuarial opinion/certification?
Douglas W Taylor, FSA, MAAA, Vice President and Appointed Actuary, 1295 State Street, Springfield, MA 01111
- 12.1 Does the reporting entity own any securities of a real estate holding company or otherwise hold real estate indirectly? Yes [X] No []
 - 12.11 Name of real estate holding company See 12.2
 - 12.12 Number of parcels involved 189
 - 12.13 Total book/adjusted carrying value \$ 4,506,196,077
- 12.2 If, yes provide explanation:
The Company held investments in debt and equity securities in 118 parcels, which own or hold real estate indirectly. The statement value at December 31, 2018 of debt and equity was \$4,370,057,523 and \$5,173,481, respectively. The Company also held 71 investments in LP and LLC entities that own real estate. These investments had a statement value of \$1,896,525,691 as of December 31, 2018.
- 13. **FOR UNITED STATES BRANCHES OF ALIEN REPORTING ENTITIES ONLY:**
- 13.1 What changes have been made during the year in the United States manager or the United States trustees of the reporting entity?
.....
- 13.2 Does this statement contain all business transacted for the reporting entity through its United States Branch on risks wherever located? Yes [] No []
- 13.3 Have there been any changes made to any of the trust indentures during the year? Yes [] No []
- 13.4 If answer to (13.3) is yes, has the domiciliary or entry state approved the changes? Yes [] No [] N/A []
- 14.1 Are the senior officers (principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions) of the reporting entity subject to a code of ethics, which includes the following standards? Yes [X] No []
 - (a) Honest and ethical conduct, including the ethical handling of actual or apparent conflicts of interest between personal and professional relationships;
 - (b) Full, fair, accurate, timely and understandable disclosure in the periodic reports required to be filed by the reporting entity;
 - (c) Compliance with applicable governmental laws, rules and regulations;
 - (d) The prompt internal reporting of violations to an appropriate person or persons identified in the code; and
 - (e) Accountability for adherence to the code.
- 14.11 If the response to 14.1 is No, please explain:
.....
- 14.2 Has the code of ethics for senior managers been amended? Yes [X] No []
- 14.21 If the response to 14.2 is yes, provide information related to amendment(s).
The revision to the Code includes incorporating the new MassMutual logo and brand; clarity in how following the Code helps employees avoid unwanted business risk; heightens risk awareness and enhances ethical decision-making; and identifies multiple resources for raising concerns.
- 14.3 Have any provisions of the code of ethics been waived for any of the specified officers? Yes [] No [X]
- 14.31 If the response to 14.3 is yes, provide the nature of any waiver(s).
.....

GENERAL INTERROGATORIES

- 15.1 Is the reporting entity the beneficiary of a Letter of Credit that is unrelated to reinsurance where the issuing or confirming bank is not on the SVO Bank List? Yes No
- 15.2 If the response to 15.1 is yes, indicate the American Bankers Association (ABA) Routing Number and the name of the issuing or confirming bank of the Letter of Credit and describe the circumstances in which the Letter of Credit is triggered.

1 American Bankers Association (ABA) Routing Number	2 Issuing or Confirming Bank Name	3 Circumstances That Can Trigger the Letter of Credit	4 Amount
122240492	Boston Private Bank and Trust Company	Business obligation not fulfilled	128,214
011301798	Eastern Bank	Business obligation not fulfilled	23,839
021201383	Valley National Bank	Business obligation not fulfilled	70,000
600002006	Bank Hapoalim Israel	Business obligation not fulfilled	7,750,000

BOARD OF DIRECTORS

16. Is the purchase or sale of all investments of the reporting entity passed upon either by the board of directors or a subordinate committee thereof? Yes No
17. Does the reporting entity keep a complete permanent record of the proceedings of its board of directors and all subordinate committees thereof? Yes No
18. Has the reporting entity an established procedure for disclosure to its board of directors or trustees of any material interest or affiliation on the part of any of its officers, directors, trustees or responsible employees that is in conflict with the official duties of such person? Yes No

FINANCIAL

19. Has this statement been prepared using a basis of accounting other than Statutory Accounting Principles (e.g., Generally Accepted Accounting Principles)? Yes No
- 20.1 Total amount loaned during the year (inclusive of Separate Accounts, exclusive of policy loans):
- 20.11 To directors or other officers \$
 - 20.12 To stockholders not officers \$
 - 20.13 Trustees, supreme or grand (Fraternal Only) \$
- 20.2 Total amount of loans outstanding at the end of year (inclusive of Separate Accounts, exclusive of policy loans):
- 20.21 To directors or other officers \$
 - 20.22 To stockholders not officers \$
 - 20.23 Trustees, supreme or grand (Fraternal Only) \$
- 21.1 Were any assets reported in this statement subject to a contractual obligation to transfer to another party without the liability for such obligation being reported in the statement? Yes No
- 21.2 If yes, state the amount thereof at December 31 of the current year:
- 21.21 Rented from others \$
 - 21.22 Borrowed from others \$
 - 21.23 Leased from others \$
 - 21.24 Other \$
- 22.1 Does this statement include payments for assessments as described in the Annual Statement Instructions other than guaranty fund or guaranty association assessments? Yes No
- 22.2 If answer is yes:
- 22.21 Amount paid as losses or risk adjustment \$
 - 22.22 Amount paid as expenses \$
 - 22.23 Other amounts paid \$
- 23.1 Does the reporting entity report any amounts due from parent, subsidiaries or affiliates on Page 2 of this statement? Yes No
- 23.2 If yes, indicate any amounts receivable from parent included in the Page 2 amount: \$0

INVESTMENT

- 24.01 Were all the stocks, bonds and other securities owned December 31 of current year, over which the reporting entity has exclusive control, in the actual possession of the reporting entity on said date? (other than securities lending programs addressed in 24.03) Yes No
- 24.02 If no, give full and complete information relating thereto
- 24.03 For security lending programs, provide a description of the program including value for collateral and amount of loaned securities, and whether collateral is carried on or off-balance sheet. (an alternative is to reference Note 17 where this information is also provided)
N/A
- 24.04 Does the Company's security lending program meet the requirements for a conforming program as outlined in the Risk-Based Capital Instructions? Yes No N/A
- 24.05 If answer to 24.04 is yes, report amount of collateral for conforming programs. \$
- 24.06 If answer to 24.04 is no, report amount of collateral for other programs. \$
- 24.07 Does your securities lending program require 102% (domestic securities) and 105% (foreign securities) from the counterparty at the outset of the contract? Yes No N/A
- 24.08 Does the reporting entity non-admit when the collateral received from the counterparty falls below 100%? Yes No N/A
- 24.09 Does the reporting entity or the reporting entity's securities lending agent utilize the Master Securities lending Agreement (MSLA) to conduct securities lending? Yes No N/A

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
GENERAL INTERROGATORIES

24.10 For the reporting entity's security lending program state the amount of the following as December 31 of the current year:

24.101 Total fair value of reinvested collateral assets reported on Schedule DL, Parts 1 and 2 \$
 24.102 Total book adjusted/carrying value of reinvested collateral assets reported on Schedule DL, Parts 1 and 2 \$
 24.103 Total payable for securities lending reported on the liability page \$

25.1 Were any of the stocks, bonds or other assets of the reporting entity owned at December 31 of the current year not exclusively under the control of the reporting entity, or has the reporting entity sold or transferred any assets subject to a put option contract that is currently in force? (Exclude securities subject to Interrogatory 21.1 and 24.03) Yes [X] No []

25.2 If yes, state the amount thereof at December 31 of the current year:

25.21 Subject to repurchase agreements \$ 4,787,600,007
 25.22 Subject to reverse repurchase agreements \$
 25.23 Subject to dollar repurchase agreements \$
 25.24 Subject to reverse dollar repurchase agreements \$
 25.25 Placed under option agreements \$
 25.26 Letter stock or securities restricted as to sale -
 excluding FHLB Capital Stock \$ 789,791,168
 25.27 FHLB Capital Stock \$ 73,700,000
 25.28 On deposit with states \$ 8,784,414
 25.29 On deposit with other regulatory bodies \$
 25.30 Pledged as collateral - excluding collateral pledged to
 an FHLB \$ 1,813,256,287
 25.31 Pledged as collateral to FHLB - including assets
 backing funding agreements \$ 1,509,010,539
 25.32 Other \$

25.3 For category (25.26) provide the following:

1 Nature of Restriction	2 Description	3 Amount
Restricted by contractual agreements	Various	789,791,168

26.1 Does the reporting entity have any hedging transactions reported on Schedule DB? Yes [X] No []

26.2 If yes, has a comprehensive description of the hedging program been made available to the domiciliary state? Yes [X] No [] N/A []
 If no, attach a description with this statement.

27.1 Were any preferred stocks or bonds owned as of December 31 of the current year mandatorily convertible into equity, or, at the option of the issuer, convertible into equity? Yes [X] No []

27.2 If yes, state the amount thereof at December 31 of the current year. \$ 190,504,976

28. Excluding items in Schedule E - Part 3 - Special Deposits, real estate, mortgage loans and investments held physically in the reporting entity's offices, vaults or safety deposit boxes, were all stocks, bonds and other securities, owned throughout the current year held pursuant to a custodial agreement with a qualified bank or trust company in accordance with Section 1, III - General Examination Considerations, F. Outsourcing of Critical Functions, Custodial or Safekeeping Agreements of the NAIC Financial Condition Examiners Handbook?..... Yes [X] No []

28.01 For agreements that comply with the requirements of the NAIC Financial Condition Examiners Handbook, complete the following:

1 Name of Custodian(s)	2 Custodian's Address
Citibank, N.A.	333 West 34th Street, New York, NY 10001
JP Morgan Chase Bank N.A.	1 Chase Manhattan Plaza, 19th Floor, New York, NY 10005
Northern Trust	50 South LaSalle Street, Chicago, IL 60603
State Street Global Services	801 Pennsylvania Avenue, Kansas City, MO 64105

28.02 For all agreements that do not comply with the requirements of the NAIC Financial Condition Examiners Handbook, provide the name, location and a complete explanation:

1 Name(s)	2 Location(s)	3 Complete Explanation(s)
.....

28.03 Have there been any changes, including name changes, in the custodian(s) identified in 28.01 during the current year?..... Yes [] No [X]

28.04 If yes, give full and complete information relating thereto:

1 Old Custodian	2 New Custodian	3 Date of Change	4 Reason
.....

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
GENERAL INTERROGATORIES

28.05 Investment management – Identify all investment advisors, investment managers, broker/dealers, including individuals that have the authority to make investment decisions on behalf of the reporting entity. For assets that are managed internally by employees of the reporting entity, note as such. ["...that have access to the investment accounts"; "...handle securities"]

1 Name of Firm or Individual	2 Affiliation
Apollo Aviation Group Capital Markets LLC	U
OFI Institutional Asset Management, Inc.	A
Barings LLC	A
Franklin Advisers, Inc.	U
Tortoise Capital Advisors, L.L.C.	U
PIMCO- Pacific Investment Management Company LLC	U
Earnest Partners LLC	U
KA Fund Advisors LLC	U
IFM Investors Pty Ltd	U
Ashmore Investment Management Limited	U
Jefferies Finance LLC	A
20 Gates Management, LLC	U

28.0597 For those firms/individuals listed in the table for Question 28.05, do any firms/individuals unaffiliated with the reporting entity (i.e. designated with a "U") manage more than 10% of the reporting entity's assets? Yes [] No [X]

28.0598 For firms/individuals unaffiliated with the reporting entity (i.e. designated with a "U") listed in the table for Question 28.05, does the total assets under management aggregate to more than 50% of the reporting entity's assets? Yes [] No [X]

28.06 For those firms or individuals listed in the table for 28.05 with an affiliation code of "A" (affiliated) or "U" (unaffiliated), provide the information for the table below.

1 Central Registration Depository Number	2 Name of Firm or Individual	3 Legal Entity Identifier (LEI)	4 Registered With	5 Investment Management Agreement (IMA) Filed
168456	Apollo Aviation Group Capital Markets LLC		SEC	NO
110363	OFI Institutional Asset Management, Inc.		SEC	DS
106006	Barings LLC	R6ZXK5P01NP6HXS1S07	SEC	DS
104517	Franklin Advisers, Inc.		SEC	NO
123711	Tortoise Capital Advisors, L.L.C.		SEC	NO
104559	PIMCO- Pacific Investment Management Company LLC		SEC	NO
107926	Earnest Partners LLC		SEC	NO
141037	KA Fund Advisors LLC		SEC	NO
162754	IFM Investors Pty Ltd		SEC	NO
185402	Ashmore Investment Management Limited	R6ZXK5P01NP6HXS1S07	SEC	NO
162264	Jefferies Finance LLC		SEC	DS
155480	20 Gates Management, LLC		SEC	NO

29.1 Does the reporting entity have any diversified mutual funds reported in Schedule D, Part 2 (diversified according to the Securities and Exchange Commission (SEC) in the Investment Company Act of 1940 [Section 5(b)(1)])? Yes [X] No []

29.2 If yes, complete the following schedule:

1 CUSIP #	2 Name of Mutual Fund	3 Book/Adjusted Carrying Value
55312G-63-0	MML Series Investment Fund II	109,436
55312G-64-8	MML Series Investment Fund II	21,980,632
55312G-65-5	MML Series Investment Fund II	134,977
55312G-66-3	MML Series Investment Fund II	27,112,723
55312G-71-3	MML Series Investment Fund II	23,091,473
57630A-15-4	MASSMUTUAL RETIRESMARTSM 2055 FUND	692,486
57630E-22-2	MASSMUTUAL RETIRESMARTSM 2055 FUND	170,892
57629H-42-6	MASSMUTUAL PREMIER STRATEGIC EMERGING MARKETS	85,881
57629H-85-5	MASSMUTUAL PREMIER MAIN STREET FUND	82,834
57629U-34-4	MASSMUTUAL SELECT MID CAP VALUE FUND	75,847
57629U-35-1	MASSMUTUAL SELECT MID CAP VALUE FUND	71,300
57630E-81-8	MASSMUTUAL SELECT DIVERSIFIED VALUE FUND	74,951
57630G-59-9	MASSMUTUAL SELECT T ROWE PRICE RETIREMENT 2005 FUND	94,333
57630E-29-7	MASSMUTUAL RETIRESMART 2045 FUND	79,107
57630E-36-2	MASSMUTUAL RETIRESMART 2035 FUND	80,907
57630E-49-5	MASSMUTUAL RETIRESMART 2015 FUND	88,655
57630E-58-6	MASSMUTUAL SELECT SMALL COMPANY VALUE FUND	55,051
57630E-69-3	MASSMUTUAL SELECT MID CAP VALUE FUND	145,066
57630G-81-3	MASSMUTUAL RETIRESMART 2060 FUND	91,228
57630G-82-1	MASSMUTUAL RETIRESMART 2060 FUND	91,659
57630G-83-9	MASSMUTUAL RETIRESMART 2060 FUND	170,721
57630G-84-7	MASSMUTUAL RETIRESMART 2060 FUND	91,674
57630G-85-4	MASSMUTUAL RETIRESMART 2060 FUND	170,806
57630G-86-2	MASSMUTUAL RETIRESMART 2060 FUND	170,816
57630G-87-0	MASSMUTUAL RETIRESMART 2060 FUND	8,639,193
G069E@-10-1	Barings Global Investment Funds plc	7,950,252
G0756X-MM-5	Babson Capital Global Umbrella Fund PLC	46,403,611
G0R5PL-85-1	Barings Global Investment Funds plc	50,145,791
G0819U-55-2	Barings Umbrella Fund PLC	40,000,000
G67585-68-0	OPPENHEIMERFUNDS ICAV - OPPENHEIMER DEVELOPING MARKETS EQUITY UCITS FUND	85,297,993
29.2999 - Total		313,450,295

29.3 For each mutual fund listed in the table above, complete the following schedule:

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

1	2	3	4
Name of Mutual Fund (from above table)	Name of Significant Holding of the Mutual Fund	Amount of Mutual Fund's Book/Adjusted Carrying Value Attributable to the Holding	Date of Valuation
MML Series Investment Fund II SPECIAL SITUATIONS FD	PAYPAL HOLDINGS INC.	2,943,150	12/31/2018
MML Series Investment Fund II SPECIAL SITUATIONS FD	PAYPAL HOLDINGS INC.	2,943,150	12/31/2018
MML Series Investment Fund II EQUITY ROTATION FD	U.S. FOODS HOLDING CORP.	1,382,668	12/31/2018
MML Series Investment Fund II EQUITY ROTATION FD	U.S. FOODS HOLDING CORP.	1,382,668	12/31/2018
MML Series Investment Fund II ASSET MOMENTUM FD	VANGUARD SHORT TERM BOND ETF	6,442,740	12/31/2018
MASSMUTUAL RETIRESMARTSM 2055 FUND	MM SELECT EQUITY ASSET FD	9,800,000	12/31/2018
MASSMUTUAL RETIRESMARTSM 2055 FUND	MM SELECT EQUITY ASSET FD	9,800,000	12/31/2018
MASSMUTUAL PREMIER STRATEGIC EMERGING MARKETS	JP MORGAN CHASE & CO	14,850,000	12/31/2018
MASSMUTUAL PREMIER MAIN STREET FUND	MICROSOFT CORP	7,720,000	12/31/2018
MASSMUTUAL SELECT MID CAP VALUE FUND	ZIMMER BIOMET HOLDINGS INC	2,860,000	12/31/2018
MASSMUTUAL SELECT MID CAP VALUE FUND	ZIMMER BIOMET HOLDINGS INC	2,860,000	12/31/2018
MASSMUTUAL SELECT DIVERSIFIED VALUE FUND	JP MORGAN CHASE & CO	14,860,000	12/31/2018
MASSMUTUAL SELECT T ROWE PRICE RETIREMENT 2005 FUND	MASSMUTUAL SELECT T ROWE PRICE	5,370,000	12/31/2018
MASSMUTUAL RETIRESMART 2045 FUND	MM SELECT EQUITY ASSET FD	23,500,000	12/31/2018
MASSMUTUAL RETIRESMART 2035 FUND	MM SELECT EQUITY ASSET FD	34,660,000	12/31/2018
MASSMUTUAL RETIRESMART 2015 FUND	MASSMUTUAL PREMIER CORE BOND FD	12,600,000	12/31/2018
MASSMUTUAL SELECT SMALL COMPANY VALUE FUND	FIXED INC CLEARING CORP. REPO	2,590,000	12/31/2018
MASSMUTUAL SELECT MID CAP VALUE FUND	ZIMMER BIOMET HOLDINGS INC	2,860,000	12/31/2018
MASSMUTUAL RETIRESMART 2060 FUND	MM SELECT EQUITY ASSET FD	2,260,000	12/31/2018
MASSMUTUAL RETIRESMART 2060 FUND	MM SELECT EQUITY ASSET FD	2,260,000	12/31/2018
MASSMUTUAL RETIRESMART 2060 FUND	MM SELECT EQUITY ASSET FD	2,260,000	12/31/2018
MASSMUTUAL RETIRESMART 2060 FUND	MM SELECT EQUITY ASSET FD	2,260,000	12/31/2018
MASSMUTUAL RETIRESMART 2060 FUND	MM SELECT EQUITY ASSET FD	2,260,000	12/31/2018
MASSMUTUAL RETIRESMART 2060 FUND	MM SELECT EQUITY ASSET FD	2,260,000	12/31/2018
MASSMUTUAL RETIRESMART 2060 FUND	MM SELECT EQUITY ASSET FD	2,260,000	12/31/2018
MASSMUTUAL RETIRESMART 2060 FUND	MM SELECT EQUITY ASSET FD	2,260,000	12/31/2018
Barings Global Investment Funds plc	MAXEDA	2,106,787	12/31/2018
Babson Capital Global Umbrella Fund PLC	TURKIYE SINAI KALKINMA BANKASI	1,628,000	12/31/2018
Barings Global Investment Funds plc	CHARTER COMMUNICATIONS	4,579,480	12/31/2018
Barings Umbrella Fund PLC	FUTURE LAND HOLDINGS	3,940,000	12/31/2018
OPPENHEIMERFUNDS ICAV - OPPENHEIMER DEVELOPING MARKETS EQUITY UCITS FUND	ALIBABA GROUP HOLDING LTD	6,340,000	12/31/2018

30. Provide the following information for all short-term and long-term bonds and all preferred stocks. Do not substitute amortized value or statement value for fair value.

	1	2	3
	Statement (Admitted) Value	Fair Value	Excess of Statement over Fair Value (-), or Fair Value over Statement (+)
30.1 Bonds	101,221,990,527	101,564,201,906	342,211,379
30.2 Preferred stocks	744,092,065	733,775,845	(10,316,220)
30.3 Totals	101,966,082,592	102,297,977,751	331,895,159

30.4 Describe the sources or methods utilized in determining the fair values:

The Fair Value of securities is obtained using quoted market prices when available. If not available, estimated fair value is based on values provided by other third-party organizations. If values provided by other third-party organizations are unavailable, fair value is estimated using internal models by discounting future cash flows using observable current market rates applicable to yield, credit quality and maturity of the investment or using quoted market values for comparable investments. Internal inputs used in the determination of fair value include estimated prepayment speeds, default rates, discount rates and collateral values, among others. Structure Characteristics and results of cash flow priority are also considered.

31.1 Was the rate used to calculate fair value determined by a broker or custodian for any of the securities in Schedule D? Yes [X] No []

31.2 If the answer to 31.1 is yes, does the reporting entity have a copy of the broker's or custodian's pricing policy (hard copy or electronic copy) for all brokers or custodians used as a pricing source? Yes [X] No []

31.3 If the answer to 31.2 is no, describe the reporting entity's process for determining a reliable pricing source for purposes of disclosure of fair value for Schedule D:

32.1 Have all the filing requirements of the Purposes and Procedures Manual of the NAIC Investment Analysis Office been followed? Yes [] No [X]

32.2 If no, list exceptions:
At 12/31/2018, 51 issues for 38 issuers did not meet the filing requirements of the Purposes and Procedures Manual. The majority of these issues currently lack one or more of the following: Valid cusip/PPN, audited financials and/or executed legal documentation.

Exceptions totaled \$781,701,465 or 0.70% of all assets.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
GENERAL INTERROGATORIES

33. By self-designating 5GI securities, the reporting entity is certifying the following elements of each self-designated 5GI security:
 a. Documentation necessary to permit a full credit analysis of the security does not exist or an NAIC CRP credit rating for an FE or PL security is not available.
 b. Issuer or obligor is current on all contracted interest and principal payments.
 c. The insurer has an actual expectation of ultimate payment of all contracted interest and principal.
 Has the reporting entity self-designated 5GI securities? Yes [] No []

34. By self-designating PLGI securities, the reporting entity is certifying the following elements of each self-designated PLGI security:
 a. The security was purchased prior to January 1, 2018.
 b. The reporting entity is holding capital commensurate with the NAIC Designation reported for the security.
 c. The NAIC Designation was derived from the credit rating assigned by an NAIC CRP in its legal capacity as a NRSRO which is shown on a current private letter rating held by the insurer and available for examination by state insurance regulators.
 d. The reporting entity is not permitted to share this credit rating of the PL security with the SVO.
 Has the reporting entity self-designated PLGI securities? Yes [] No []

OTHER

35.1 Amount of payments to trade associations, service organizations and statistical or rating bureaus, if any?\$5,342,164

35.2 List the name of the organization and the amount paid if any such payment represented 25% or more of the total payments to trade associations, service organizations and statistical or rating bureaus during the period covered by this statement.

1 Name	2 Amount Paid
American Council of Life Insurers (ACLI)	1,527,040
US Chamber of Commerce	1,336,160

36.1 Amount of payments for legal expenses, if any?\$5,074,739

36.2 List the name of the firm and the amount paid if any such payment represented 25% or more of the total payments for legal expenses during the period covered by this statement.

1 Name	2 Amount Paid
Sutherland Asbill & Brennan LLP	12,772,489

37.1 Amount of payments for expenditures in connection with matters before legislative bodies, officers or departments of government, if any?\$2,370,231

37.2 List the name of the firm and the amount paid if any such payment represented 25% or more of the total payment expenditures in connection with matters before legislative bodies, officers or departments of government during the period covered by this statement.

1 Name	2 Amount Paid
.....	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #1

(1) Dates of Transactions:	start date:	9/6/2018
	maturity date:	12/5/2018
(2) Description of securities/collateral involved:		
	carry value:	\$477,843,971
	accrued interest:	725,221
	maturity interest rates:	2.28%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$477,118,750
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$477,365,419
(7) Form of collateral:	US Treasury #912828C65	
(8) Collateral held by:	HSBC Securities, Inc.	
(9) Names and addresses of all other persons involved in transaction:	HSBC Securities, Inc. 452 5th Avenue New York, NY 10018	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #2

(1) Dates of Transactions:	start date:	9/5/2018
	maturity date:	10/5/2018
(2) Description of securities/collateral involved:		
	carry value:	\$77,080,582
	accrued interest:	117,582
	maturity interest rates:	2.20%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$76,963,000
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$76,114,678
(7) Form of collateral:	US Treasury #912803BJ1	
(8) Collateral held by:	JP Morgan Chase	
(9) Names and addresses of all other persons involved in transaction:	JP Morgan Chase 50 Rowes Wharf, 4th Floor Boston, MA 02110	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #3

(1) Dates of Transactions:	start date:	9/7/2018
	maturity date:	10/5/2018
 (2) Description of securities/collateral involved:		
	carry value:	\$192,773,029
	accrued interest:	273,029
	maturity interest rates:	2.22%
	weighted average interest rates:	N/A
 (3) Number of shares or amount of bond or other security:		
		\$192,500,000
 (4) Market value on date securities were delivered:		
		N/A Rolling Transaction
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
		N/A not returned yet
 (6) Collateral value held/Underlying asset value		
		\$190,286,695
 (7) Form of collateral:		
		US Treasury #912803BJ1
 (8) Collateral held by:		
		JP Morgan Chase
 (9) Names and addresses of all other persons involved in transaction:		
		JP Morgan Chase 50 Rowes Wharf, 4th Floor Boston, MA 02110

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #4

(1) Dates of Transactions:	start date:	9/6/2018
	maturity date:	12/5/2018
(2) Description of securities/collateral involved:		
	carry value:	\$247,657,118
	accrued interest:	375,868
	maturity interest rates:	2.28%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$247,281,250
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$242,834,512
(7) Form of collateral:	US Treasury #912810QQ4	
(8) Collateral held by:	HSBC Securities, Inc.	
(9) Names and addresses of all other persons involved in transaction:	HSBC Securities, Inc. 452 5th Avenue New York, NY 10018	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #5

(1) Dates of Transactions:	start date:	7/11/2018
	maturity date:	10/10/2018
(2) Description of securities/collateral involved:		
	carry value:	\$227,784,101
	accrued interest:	1,096,601
	maturity interest rates:	2.15%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$226,687,500
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$223,362,775
(7) Form of collateral:	US Treasury # 912828LJ7	
(8) Collateral held by:	HSBC Securities, Inc.	
(9) Names and addresses of all other persons involved in transaction:	HSBC Securities, Inc. 452 5th Avenue New York, NY 10018	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #6

(1) Dates of Transactions:	start date:	7/10/2018
	maturity date:	10/10/2018
(2) Description of securities/collateral involved:		
	carry value:	\$30,338,773
	accrued interest:	151,273
	maturity interest rates:	2.20%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$30,187,500
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$30,115,926
(7) Form of collateral:	US Treasury #912833LL2	
(8) Collateral held by:	Daiwa Securities America Inc.	
(9) Names and addresses of all other persons involved in transaction:	Daiwa Securities America Inc. Financial Square 32 Old Slip, 14th Floor New York, NY 10005-3538	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #7

(1) Dates of Transactions:	start date:	9/18/2018
	maturity date:	11/20/2018
(2) Description of securities/collateral involved:		
	carry value:	\$152,818,088
	accrued interest:	118,088
	maturity interest rates:	2.32%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$152,700,000
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$152,419,922
(7) Form of collateral:	US Treasury #912828MP2	
(8) Collateral held by:	Bank of Montreal	
(9) Names and addresses of all other persons involved in transaction:	Bank of Montreal 115 South LaSalle Street Chicago, IL 60603	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #8

(1) Dates of Transactions:	start date:	7/11/2018
	maturity date:	10/10/2018
(2) Description of securities/collateral involved:		
	carry value:	\$44,373,122
	accrued interest:	213,622
	maturity interest rates:	2.15%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$44,159,500
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$43,458,014
(7) Form of collateral:	US Treasury #912828PX2	
(8) Collateral held by:	HSBC Securities, Inc.	
(9) Names and addresses of all other persons involved in transaction:	HSBC Securities, Inc. 452 5th Avenue New York, NY 10018	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #9

(1) Dates of Transactions:	start date:	9/5/2018
	maturity date:	10/5/2018
 (2) Description of securities/collateral involved:		
carry value:		\$53,306,316
accrued interest:		81,316
maturity interest rates:		2.20%
weighted average interest rates:		N/A
 (3) Number of shares or amount of bond or other security:		
		\$53,225,000
 (4) Market value on date securities were delivered:		
	N/A Rolling Transaction	
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
	N/A not returned yet	
 (6) Collateral value held/Underlying asset value		
		\$53,092,270
 (7) Form of collateral:		
	US Treasury #912803AY9	
 (8) Collateral held by:		
	JP Morgan Chase	
 (9) Names and addresses of all other persons involved in transaction:		
	JP Morgan Chase 50 Rowes Wharf, 4th Floor Boston, MA 02110	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #10

(1) Dates of Transactions:	start date:	9/5/2018
	maturity date:	11/2/2018
 (2) Description of securities/collateral involved:		
	carry value:	\$179,439,914
	accrued interest:	283,664
	maturity interest rates:	2.28%
	weighted average interest rates:	N/A
 (3) Number of shares or amount of bond or other security:		
		\$179,156,250
 (4) Market value on date securities were delivered:		
		N/A Rolling Transaction
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
		N/A not returned yet
 (6) Collateral value held/Underlying asset value		
		\$178,793,946
 (7) Form of collateral:		
		US Treasury #912828PX2
 (8) Collateral held by:		
		MUFG Securities Americas, Inc.
 (9) Names and addresses of all other persons involved in transaction:		
		MUFG Securities Americas, Inc. 1221 6th Ave New York, NY 10020

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #11

(1) Dates of Transactions:	start date:	7/6/2018
	maturity date:	10/3/2018
(2) Description of securities/collateral involved:		
	carry value:	\$154,288,393
	accrued interest:	788,393
	maturity interest rates:	2.15%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$153,500,000
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$151,793,628
(7) Form of collateral:	US Treasury #912803BM4	
(8) Collateral held by:	Mizuho Securities USA LLC	
(9) Names and addresses of all other persons involved in transaction:	Mizuho Securities USA LLC 125 High Street, 21st Floor Boston, MA 02110	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #12

(1) Dates of Transactions:	start date:	7/11/2018
	maturity date:	10/10/2018
 (2) Description of securities/collateral involved:		
carry value:		\$234,748,127
accrued interest:		1,130,127
maturity interest rates:		2.15%
weighted average interest rates:		N/A
 (3) Number of shares or amount of bond or other security:		
		\$233,618,000
 (4) Market value on date securities were delivered:		
	N/A Rolling Transaction	
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
	N/A not returned yet	
 (6) Collateral value held/Underlying asset value		
		\$229,906,911
 (7) Form of collateral:		
	US Treasury #912828PX2	
 (8) Collateral held by:		
	HSBC Securities, Inc.	
 (9) Names and addresses of all other persons involved in transaction:		
	HSBC Securities, Inc. 452 5th Avenue New York, NY 10018	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #13

(1) Dates of Transactions:	start date:	7/11/2018
	maturity date:	10/10/2018
(2) Description of securities/collateral involved:		
	carry value:	\$263,217,183
	accrued interest:	1,267,183
	maturity interest rates:	2.15%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$261,950,000
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$258,108,095
(7) Form of collateral:	US Treasury #912828LJ7	
(8) Collateral held by:	HSBC Securities, Inc.	
(9) Names and addresses of all other persons involved in transaction:	HSBC Securities, Inc. 452 5th Avenue New York, NY 10018	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #14

(1) Dates of Transactions:	start date:	7/10/2018
	maturity date:	10/10/2018
 (2) Description of securities/collateral involved:		
	carry value:	\$60,149,915
	accrued interest:	299,915
	maturity interest rates:	2.20%
	weighted average interest rates:	N/A
 (3) Number of shares or amount of bond or other security:		
		\$59,850,000
 (4) Market value on date securities were delivered:		
		N/A Rolling Transaction
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
		N/A not returned yet
 (6) Collateral value held/Underlying asset value		
		\$59,755,630
 (7) Form of collateral:		
		US Treasury #912833LN8
 (8) Collateral held by:		
		Daiwa Securities America Inc.
 (9) Names and addresses of all other persons involved in transaction:		
		Daiwa Securities America Inc. Financial Square 32 Old Slip, 14th Floor New York, NY 10005-3538

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #15

(1) Dates of Transactions:	start date:	9/5/2018
	maturity date:	11/2/2018
 (2) Description of securities/collateral involved:		
carry value:		\$223,381,220
accrued interest:		356,220
maturity interest rates:		2.30%
weighted average interest rates:		N/A
 (3) Number of shares or amount of bond or other security:		
		\$223,025,000
 (4) Market value on date securities were delivered:		
	N/A Rolling Transaction	
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
	N/A not returned yet	
 (6) Collateral value held/Underlying asset value		
		\$218,399,157
 (7) Form of collateral:		
	US Treasury #912828LJ7	
 (8) Collateral held by:		
	Morgan Stanley & Co. Inc.	
 (9) Names and addresses of all other persons involved in transaction:		
	Morgan Stanley & Co. Inc. 1 International Place Suite 1300 Boston, MA 02110	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #16

(1) Dates of Transactions:	start date:	7/10/2018
	maturity date:	10/10/2018
(2) Description of securities/collateral involved:		
carry value:		\$101,254,869
accrued interest:		504,869
maturity interest rates:		2.20%
weighted average interest rates:		N/A
(3) Number of shares or amount of bond or other security:		\$100,750,000
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$99,272,344
(7) Form of collateral:	US Treasury #912828LJ7	
(8) Collateral held by:	Daiwa Securities America Inc.	
(9) Names and addresses of all other persons involved in transaction:	Daiwa Securities America Inc. Financial Square 32 Old Slip, 14th Floor New York, NY 10005-3538	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #17

(1) Dates of Transactions:	start date:	8/7/2018
	maturity date:	11/2/2018
(2) Description of securities/collateral involved:		
	carry value:	\$93,133,268
	accrued interest:	313,268
	maturity interest rates:	2.25%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$92,820,000
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$91,184,912
(7) Form of collateral:	US Treasury # 912828PX2	
(8) Collateral held by:	RBC Capital Markets	
(9) Names and addresses of all other persons involved in transaction:	RBC Capital Markets 3 World Financial Ctr 200 Vesey Street New York, NY 10281	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #18

(1) Dates of Transactions:	start date:	9/18/2018
	maturity date:	11/20/2018
 (2) Description of securities/collateral involved:		
carry value:		\$419,536,691
accrued interest:		324,191
maturity interest rates:		2.32%
weighted average interest rates:		N/A
 (3) Number of shares or amount of bond or other security:		
		\$419,212,500
 (4) Market value on date securities were delivered:		
		N/A Rolling Transaction
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
		N/A not returned yet
 (6) Collateral value held/Underlying asset value		
		\$418,168,946
 (7) Form of collateral:		
		US Treasury # 912810QK7
 (8) Collateral held by:		
		Bank of Montreal
 (9) Names and addresses of all other persons involved in transaction:		
		Bank of Montreal 115 South LaSalle Street Chicago, IL 60603

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #19

(1) Dates of Transactions:	start date:	7/10/2018
	maturity date:	10/10/2018
(2) Description of securities/collateral involved:		
carry value:		\$84,958,413
accrued interest:		423,613
maturity interest rates:		2.20%
weighted average interest rates:		N/A
(3) Number of shares or amount of bond or other security:		\$84,534,800
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$83,262,669
(7) Form of collateral:	US Treasury # 912833KV1	
(8) Collateral held by:	Daiwa Securities America Inc.	
(9) Names and addresses of all other persons involved in transaction:	Daiwa Securities America Inc. Financial Square 32 Old Slip, 14th Floor New York, NY 10005-3538	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #20

(1) Dates of Transactions:	start date:	9/5/2018
	maturity date:	11/2/2018
 (2) Description of securities/collateral involved:		
	carry value:	\$200,296,909
	accrued interest:	319,409
	maturity interest rates:	2.30%
	weighted average interest rates:	N/A
 (3) Number of shares or amount of bond or other security:		
		\$199,977,500
 (4) Market value on date securities were delivered:		
		N/A Rolling Transaction
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
		N/A not returned yet
 (6) Collateral value held/Underlying asset value		
		\$195,360,794
 (7) Form of collateral:		
		US Treasury # 912828PX2
 (8) Collateral held by:		
		Morgan Stanley & Co. Inc.
 (9) Names and addresses of all other persons involved in transaction:		
		Morgan Stanley & Co. Inc. 1 International Place Suite 1300 Boston, MA 02110

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #21

(1) Dates of Transactions:	start date:	9/18/2018
	maturity date:	11/20/2018
(2) Description of securities/collateral involved:		
	carry value:	\$24,931,766
	accrued interest:	19,266
	maturity interest rates:	2.32%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$24,912,500
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$25,120,117
(7) Form of collateral:	US Treasury #912828KD1	
(8) Collateral held by:	Bank of Montreal	
(9) Names and addresses of all other persons involved in transaction:	Bank of Montreal 115 South LaSalle Street Chicago, IL 60603	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #22

(1) Dates of Transactions:	start date:	9/7/2018
	maturity date:	10/5/2018
 (2) Description of securities/collateral involved:		
	carry value:	\$233,205,294
	accrued interest:	330,294
	maturity interest rates:	2.22%
	weighted average interest rates:	N/A
 (3) Number of shares or amount of bond or other security:		
		\$232,875,000
 (4) Market value on date securities were delivered:		
		N/A Rolling Transaction
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
		N/A not returned yet
 (6) Collateral value held/Underlying asset value		
		\$230,083,949
 (7) Form of collateral:		
		US Treasury # 912803BH5
 (8) Collateral held by:		
		JP Morgan Chase
 (9) Names and addresses of all other persons involved in transaction:		
		JP Morgan Chase 50 Rowes Wharf, 4th Floor Boston, MA 02110

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #23

(1) Dates of Transactions:	start date:	9/5/2018
	maturity date:	10/5/2018
 (2) Description of securities/collateral involved:		
	carry value:	\$231,240,747
	accrued interest:	352,746
	maturity interest rates:	2.20%
	weighted average interest rates:	N/A
 (3) Number of shares or amount of bond or other security:		
		\$230,888,001
 (4) Market value on date securities were delivered:		
		N/A Rolling Transaction
 (5) Market value on date securities were returned/Payback amount (Due at maturity)		
		N/A not returned yet
 (6) Collateral value held/Underlying asset value		
		\$228,344,033
 (7) Form of collateral:		
		US Treasury # 912803BJ1
 (8) Collateral held by:		
		JP Morgan Chase
 (9) Names and addresses of all other persons involved in transaction:		
		JP Morgan Chase 50 Rowes Wharf, 4th Floor Boston, MA 02110

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #24

(1) Dates of Transactions:	start date:	7/10/2018
	maturity date:	10/10/2018
(2) Description of securities/collateral involved:		
	carry value:	\$99,496,100
	accrued interest:	496,100
	maturity interest rates:	2.20%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$99,000,000
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$99,547,015
(7) Form of collateral:	US Treasury # 912828KQ2	
(8) Collateral held by:	Daiwa Securities America Inc.	
(9) Names and addresses of all other persons involved in transaction:	Daiwa Securities America Inc. Financial Square 32 Old Slip, 14th Floor New York, NY 10005-3538	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #25

(1) Dates of Transactions:	start date:	9/27/2018
	maturity date:	10/26/2018
(2) Description of securities/collateral involved:		
	carry value:	\$307,999,088
	accrued interest:	61,588
	maturity interest rates:	2.40%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$307,937,500
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$309,156,250
(7) Form of collateral:	US Treasury # 912810RU4	
(8) Collateral held by:	Mizuho Securities USA LLC	
(9) Names and addresses of all other persons involved in transaction:	Mizuho Securities USA LLC 125 High Street, 21st Floor Boston, MA 02110	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #26

(1) Dates of Transactions:	start date:	9/14/2018
	maturity date:	11/2/2018
(2) Description of securities/collateral involved:		
	carry value:	\$261,294,146
	accrued interest:	269,146
	maturity interest rates:	2.32%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$261,025,000
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$256,377,149
(7) Form of collateral:	US Treasury # 912810RV2	
(8) Collateral held by:	MUFG Securities Americas, Inc.	
(9) Names and addresses of all other persons involved in transaction:	MUFG Securities Americas, Inc. 1221 6th Ave New York, NY 10020	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #27

(1) Dates of Transactions:	start date:	8/16/2018
	maturity date:	11/15/2018
(2) Description of securities/collateral involved:		
	carry value:	\$94,320,906
	accrued interest:	264,534
	maturity interest rates:	2.25%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$94,056,373
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$92,973,597
(7) Form of collateral:	US Treasury # 912803BM4	
(8) Collateral held by:	HSBC Securities, Inc.	
(9) Names and addresses of all other persons involved in transaction:	HSBC Securities, Inc. 452 5th Avenue New York, NY 10018	

Repurchase Agreements

****Schedule for Q3 2018 General Interrogatory**

Transaction #28

(1) Dates of Transactions:	start date:	9/14/2018
	maturity date:	11/2/2018
(2) Description of securities/collateral involved:		
	carry value:	\$71,561,212
	accrued interest:	73,712
	maturity interest rates:	2.32%
	weighted average interest rates:	N/A
(3) Number of shares or amount of bond or other security:		\$71,487,500
(4) Market value on date securities were delivered:	N/A Rolling Transaction	
(5) Market value on date securities were returned/Payback amount (Due at maturity)	N/A not returned yet	
(6) Collateral value held/Underlying asset value		\$71,517,578
(7) Form of collateral:	US Treasury # 912828PX2	
(8) Collateral held by:	MUFG Securities Americas, Inc.	
(9) Names and addresses of all other persons involved in transaction:	MUFG Securities Americas, Inc. 1221 6th Ave New York, NY 10020	

GENERAL INTERROGATORIES

PART 2 - LIFE INTERROGATORIES

1.1 Does the reporting entity have any direct Medicare Supplement Insurance in force? Yes [X] No []

1.2 If yes, indicate premium earned on U.S. business only \$ 939,763

1.3 What portion of Item (1.2) is not reported on the Medicare Supplement Insurance Experience Exhibit? \$

1.31 Reason for excluding:
.....

1.4 Indicate amount of earned premium attributable to Canadian and/or Other Alien not included in Item (1.2) above. \$

1.5 Indicate total incurred claims on all Medicare Supplement insurance. \$ 859,323

1.6 Individual policies:

Most current three years:

1.61 Total premium earned \$ 1,009,041

1.62 Total incurred claims \$ 907,996

1.63 Number of covered lives 840

All years prior to most current three years

1.64 Total premium earned \$

1.65 Total incurred claims \$

1.66 Number of covered lives

1.7 Group policies:

Most current three years:

1.71 Total premium earned \$

1.72 Total incurred claims \$

1.73 Number of covered lives

All years prior to most current three years

1.74 Total premium earned \$

1.75 Total incurred claims \$

1.76 Number of covered lives

2. Health Test:

	1 Current Year	2 Prior Year
2.1 Premium Numerator	160,815	66,935
2.2 Premium Denominator	22,905,684,993	17,461,646,567
2.3 Premium Ratio (2.1/2.2)	0.000	0.000
2.4 Reserve Numerator	109,895,312	106,391,806
2.5 Reserve Denominator	119,786,001,396	114,317,100,759
2.6 Reserve Ratio (2.4/2.5)	0.001	0.001

3.1 Does this reporting entity have Separate Accounts? Yes [X] No []

3.2 If yes, has a Separate Accounts Statement been filed with this Department? Yes [X] No [] N/A []

3.3 What portion of capital and surplus funds of the reporting entity covered by assets in the Separate Accounts statement, is not currently distributable from the Separate Accounts to the general account for use by the general account? \$ 127,460,644

3.4 State the authority under which Separate Accounts are maintained:
Massachusetts General Law, C175 Section 132F & 132 G

3.5 Was any of the reporting entity's Separate Accounts business reinsured as of December 31? Yes [] No [X]

3.6 Has the reporting entity assumed by reinsurance any Separate Accounts business as of December 31? Yes [X] No []

3.7 If the reporting entity has assumed Separate Accounts business, how much, if any, reinsurance assumed receivable for reinsurance of Separate Accounts reserve expense allowances is included as a negative amount in the liability for "Transfers to Separate Accounts due or accrued (net)"? \$ 0

4.1 Are personnel or facilities of this reporting entity used by another entity or entities or are personnel or facilities of another entity or entities used by this reporting entity (except for activities such as administration of jointly underwritten group contracts and joint mortality or morbidity studies)? Yes [X] No []

4.2 Net reimbursement of such expenses between reporting entities:

4.21 Paid \$ 0

4.22 Received \$ 129,378,575

5.1 Does the reporting entity write any guaranteed interest contracts? Yes [X] No []

5.2 If yes, what amount pertaining to these lines is included in:

5.21 Page 3, Line 1 \$ 0

5.22 Page 4, Line 1 \$ 0

6. FOR STOCK REPORTING ENTITIES ONLY:

6.1 Total amount paid in by stockholders as surplus funds since organization of the reporting entity: \$

7. Total dividends paid stockholders since organization of the reporting entity:

7.11 Cash \$

7.12 Stock \$ 0

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
GENERAL INTERROGATORIES

8.1 Does the company reinsure any Workers' Compensation Carve-Out business defined as: Yes [] No [X]
 Reinsurance (including retrocessional reinsurance) assumed by life and health insurers of medical, wage loss and death benefits of the occupational illness and accident exposures, but not the employers liability exposures, of business originally written as workers' compensation insurance.

8.2 If yes, has the reporting entity completed the Workers' Compensation Carve-Out Supplement to the Annual Statement? Yes [] No []

8.3 If 8.1 is yes, the amounts of earned premiums and claims incurred in this statement are:

	1 Reinsurance Assumed	2 Reinsurance Ceded	3 Net Retained
8.31 Earned premium
8.32 Paid claims
8.33 Claim liability and reserve (beginning of year)
8.34 Claim liability and reserve (end of year)
8.35 Incurred claims0	.....

8.4 If reinsurance assumed included amounts with attachment points below \$1,000,000, the distribution of the amounts reported in Lines 8.31 and 8.34 for Column (1) are:

	Attachment Point	1 Earned Premium	2 Claim Liability and Reserve
8.41	<\$25,000	.....	.....
8.42	\$25,000 - 99,999	.....	.....
8.43	\$100,000 - 249,999	.....	.....
8.44	\$250,000 - 999,999	.....	.....
8.45	\$1,000,000 or more	.....	.....

8.5 What portion of earned premium reported in 8.31, Column 1 was assumed from pools?\$

9. For reporting entities having sold annuities to another insurer where the insurer purchasing the annuities has obtained a release of liability from the claimant (payee) as the result of the purchase of an annuity from the reporting entity only:

9.1 Amount of loss reserves established by these annuities during the current year:\$

9.2 List the name and location of the insurance company purchasing the annuities and the statement value on the purchase date of the annuities.

1	2 Statement Value on Purchase Date of Annuities (i.e., Present Value)
P&C Insurance Company And Location	

10.1 Do you act as a custodian for health savings accounts? Yes [] No [X]

10.2 If yes, please provide the amount of custodial funds held as of the reporting date.\$

10.3 Do you act as an administrator for health savings accounts? Yes [] No [X]

10.4 If yes, please provide the balance of funds administered as of the reporting date.\$

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
GENERAL INTERROGATORIES

11.1 Are any of the captive affiliates reported on Schedule S, Part 3, authorized reinsurers? Yes [] No [] N/A [X]
 11.2 If the answer to 11.1 is yes, please provide the following:

1 Company Name	2 NAIC Company Code	3 Domiciliary Jurisdiction	4 Reserve Credit	Assets Supporting Reserve Credit		
				5 Letters of Credit	6 Trust Agreements	7 Other

12. Provide the following for individual ordinary life insurance* policies (U.S. business only) for the current year (prior to reinsurance assumed or ceded):

12.1 Direct Premium Written\$5,960,660,168
 12.2 Total Incurred Claims\$2,052,420,280
 12.3 Number of Covered Lives1,688,331

*Ordinary Life Insurance Includes
Term (whether full underwriting,limited underwriting,jet issue,"short form app")
Whole Life (whether full underwriting,limited underwriting,jet issue,"short form app")
Variable Life (with or without secondary gurarantee)
Universal Life (with or without secondary gurarantee)
Variable Universal Life (with or without secondary gurarantee)

13. Is the reporting entity licensed or chartered, registered, qualified, eligible or writing business in at least two states? Yes [X] No []

13.1 If no, does the reporting entity assume reinsurance business that covers risks residing in at least one state other than the state of domicile of the reporting entity? Yes [] No []

FIVE-YEAR HISTORICAL DATA

Show amounts in whole dollars only, no cents; show percentages to one decimal place, i.e. 17.6.

\$000 omitted for amounts of life insurance

	1 2018	2 2017	3 2016	4 2015	5 2014
Life Insurance in Force (Exhibit of Life Insurance)					
1. Ordinary - whole life and endowment (Line 34, Col. 4)	300,479,113	278,784,267	256,056,164	237,304,751	222,715,389
2. Ordinary - term (Line 21, Col. 4, less Line 34, Col. 4)	318,185,389	286,269,389	253,041,259	231,263,192	213,592,180
3. Credit life (Line 21, Col. 6)					
4. Group, excluding FEGLI/SGLI (Line 21, Col. 9 less Lines 43 & 44, Col. 4)	65,940,688	64,964,787	60,320,208	55,273,484	51,810,319
5. Industrial (Line 21, Col. 2)					
6. FEGLI/SGLI (Lines 43 & 44, Col. 4)					
7. Total (Line 21, Col. 10)	684,605,190	630,018,443	569,417,631	523,841,427	488,117,888
7.1 Total in force for which VM-20 deterministic/stochastic reserves are calculated			XXX	XXX	XXX
New Business Issued (Exhibit of Life Insurance)					
8. Ordinary - whole life and endowment (Line 34, Col. 2)	32,343,359	32,750,498	28,150,352	24,506,721	22,507,671
9. Ordinary - term (Line 2, Col. 4, less Line 34, Col. 2)	48,992,057	48,258,016	34,383,023	29,662,683	28,083,518
10. Credit life (Line 2, Col. 6)					
11. Group (Line 2, Col. 9)	4,264,882	6,352,081	5,979,182	5,035,633	4,444,460
12. Industrial (Line 2, Col. 2)					
13. Total (Line 2, Col. 10)	85,600,298	87,360,595	68,512,557	59,205,037	55,035,649
Premium Income - Lines of Business (Exhibit 1 - Part 1)					
14. Industrial life (Line 20.4, Col. 2)					
15.1 Ordinary-life insurance (Line 20.4, Col. 3)	6,510,171,725	6,201,581,128	5,310,388,997	5,277,080,473	4,859,801,424
15.2 Ordinary-individual annuities (Line 20.4, Col. 4)	2,598,978,399	2,227,107,174	2,428,308,628	2,236,745,879	2,511,819,475
16. Credit life (group and individual) (Line 20.4, Col. 5)					
17.1 Group life insurance (Line 20.4, Col. 6)	646,047,476	(2,616,625,570)	1,428,629,720	1,356,040,660	1,182,721,337
17.2 Group annuities (Line 20.4, Col. 7)	12,392,277,530	11,064,787,204	11,655,352,698	12,094,590,573	9,278,793,497
18.1 A & H-group (Line 20.4, Col. 8)	169,605	63,374			
18.2 A & H-credit (group and individual) (Line 20.4, Col. 9)					
18.3 A & H-other (Line 20.4, Col. 10)	756,741,821	611,172,889	586,947,018	565,759,442	543,909,490
19. Aggregate of all other lines of business (Line 20.4, Col. 11)					
20. Total	22,904,386,556	17,488,086,199	21,409,627,061	21,530,217,027	18,377,045,223
Balance Sheet (Pages 2 & 3)					
21. Total admitted assets excluding Separate Accounts business (Page 2, Line 26, Col. 3)	179,168,746,235	170,900,940,563	161,466,469,743	149,973,161,492	136,804,647,038
22. Total liabilities excluding Separate Accounts business (Page 3, Line 26)	163,558,959,566	155,195,727,040	146,052,119,164	134,999,742,976	122,583,280,790
23. Aggregate life reserves (Page 3, Line 1)	119,010,301,284	112,904,106,756	109,391,085,184	99,942,257,473	90,679,671,843
23.1 Excess VM-20 deterministic/stochastic reserve over NPR related to Line 7.1			XXX	XXX	XXX
24. Aggregate A & H reserves (Page 3, Line 2)	2,967,573,431	2,859,824,790	2,794,862,457	2,683,981,025	2,610,834,429
25. Deposit-type contract funds (Page 3, Line 3)	14,369,907,287	13,014,264,844	11,574,147,866	10,491,117,975	9,044,956,553
26. Asset valuation reserve (Page 3, Line 24.01)	3,306,820,067	3,207,069,587	3,178,008,369	2,817,138,360	2,620,278,026
27. Capital (Page 3, Lines 29 and 30)					
28. Surplus (Page 3, Line 37)	15,609,786,669	15,705,216,653	15,423,489,956	14,982,532,137	14,231,326,051
Cash Flow (Page 5)					
29. Net Cash from Operations (Line 11)	6,432,561,571	8,311,620,508	9,338,557,644	7,800,197,774	6,998,820,442
Risk-Based Capital Analysis					
30. Total adjusted capital	19,875,551,909	17,427,690,776	17,276,323,340	17,340,787,408	16,353,434,004
31. Authorized control level risk - based capital	2,223,863,534	1,934,732,292	1,882,163,260	1,732,441,607	1,646,252,886
Percentage Distribution of Cash, Cash Equivalents and Invested Assets (Page 2, Col. 3) (Line No. /Page 2, Line 12, Col. 3) x 100.0					
32. Bonds (Line 1)	56.7	55.2	54.1	55.3	56.2
33. Stocks (Lines 2.1 and 2.2)	7.9	10.0	10.2	6.7	7.3
34. Mortgage loans on real estate(Lines 3.1 and 3.2)	13.8	13.8	13.5	15.3	14.5
35. Real estate (Lines 4.1, 4.2 and 4.3)	0.3	0.5	0.6	0.6	0.6
36. Cash, cash equivalents and short-term investments (Line 5)	2.5	2.2	2.4	2.1	1.4
37. Contract loans (Line 6)	8.1	8.1	8.0	8.2	8.4
38. Derivatives (Page 2, Line 7)	5.1	5.4	6.3	6.4	6.4
39. Other invested assets (Line 8)	5.0	4.7	4.6	5.2	5.2
40. Receivables for securities (Line 9)	0.5	0.1	0.1	0.0	0.0
41. Securities lending reinvested collateral assets (Line 10)					
42. Aggregate write-ins for invested assets (Line 11)					
43. Cash, cash equivalents and invested assets (Line 12)	100.0	100.0	100.0	100.0	100.0

FIVE-YEAR HISTORICAL DATA

(Continued)

	1 2018	2 2017	3 2016	4 2015	5 2014
Investments in Parent, Subsidiaries and Affiliates					
44. Affiliated bonds (Schedule D Summary, Line 12, Col. 1)	7,526,017,124	7,024,093,120	6,508,255,596	6,176,512,151	5,525,755,051
45. Affiliated preferred stocks (Schedule D Summary, Line 18, Col. 1)					
46. Affiliated common stocks (Schedule D Summary Line 24, Col. 1),	12,013,931,427	14,002,443,719	13,670,494,513	7,503,525,833	7,243,083,433
47. Affiliated short-term investments (subtotal included in Schedule DA Verification, Col. 5, Line 10)					
48. Affiliated mortgage loans on real estate					
49. All other affiliated	5,685,872,120	4,536,580,572	3,484,857,931	4,213,299,770	4,192,597,007
50. Total of above Lines 44 to 49	25,225,820,671	25,563,117,411	23,663,608,040	17,893,337,754	16,961,435,491
51. Total Investment in Parent included in Lines 44 to 49 above					
Total Nonadmitted and Admitted Assets					
52. Total nonadmitted assets (Page 2, Line 28, Col. 2)	2,222,797,167	1,506,487,870	1,630,741,548	1,304,547,618	1,288,654,690
53. Total admitted assets (Page 2, Line 28, Col. 3)	243,646,846,820	240,063,222,121	223,670,465,625	210,358,711,235	197,189,089,372
Investment Data					
54. Net investment income (Exhibit of Net Investment Income)	7,709,838,336	6,427,963,676	6,198,498,168	6,246,441,543	6,140,050,815
55. Realized capital gains (losses) (Page 4, Line 34, Column 1)	(1,044,256,266)	(422,051,259)	(208,411,773)	58,635,533	166,082,947
56. Unrealized capital gains (losses) (Page 4, Line 38, Column 1)	1,778,861,989	367,766,370	1,104,826,359	194,731,062	2,021,875,603
57. Total of above Lines 54, 55 and 56	8,444,444,059	6,373,678,787	7,094,912,754	6,499,808,138	8,328,009,365
Benefits and Reserve Increases (Page 6)					
58. Total contract benefits - life (Lines 10, 11, 12, 13, 14 and 15 Col. 1, minus Lines 10, 11, 12, 13, 14 and 15 Cols. 9, 10 and 11)	22,062,690,112	19,313,047,113	17,460,110,130	15,643,535,253	15,902,284,606
59. Total contract benefits - A & H (Lines 13 & 14, Cols. 9, 10 & 11)	342,151,000	342,997,017	338,035,628	338,979,632	329,147,017
60. Increase in life reserves - other than group and annuities (Line 19, Cols. 2 and 3)	4,170,004,180	3,842,206,597	3,271,691,628	3,197,567,991	3,016,850,274
61. Increase in A & H reserves (Line 19, Cols. 9, 10 & 11)	107,748,641	64,962,333	110,881,432	73,146,596	62,001,122
62. Dividends to policyholders (Line 30, Col. 1)	1,695,253,440	1,569,130,529	1,565,630,560	1,727,593,543	1,553,324,172
Operating Percentages					
63. Insurance expense percent (Page 6, Col. 1, Lines 21, 22 & 23, less Line 6)/(Page 6, Col. 1, Line 1 plus Exhibit 7, Col. 2, Line 2) x 100.0	13.5	17.7	12.0	10.7	12.9
64. Lapse percent (ordinary only) [(Exhibit of Life Insurance, Col. 4, Lines 14 & 15) / 1/2 (Exhibit of Life Insurance, Col. 4, Lines 1 & 21)] x 100.0	4.2	4.1	4.1	4.0	4.2
65. A & H loss percent (Schedule H, Part 1, Lines 5 and 6, Col. 2)	60.5	67.7	77.6	74.0	73.5
66. A & H cost containment percent (Schedule H, Pt. 1, Line 4, Col. 2)	1.0	1.0	1.2	1.3	1.6
67. A & H expense percent excluding cost containment expenses (Schedule H, Pt. 1, Line 10, Col. 2)	39.1	42.4	41.0	40.9	42.8
A & H Claim Reserve Adequacy					
68. Incurred losses on prior years' claims - group health (Schedule H, Part 3, Line 3.1 Col. 2)					
69. Prior years' claim liability and reserve - group health (Schedule H, Part 3, Line 3.2 Col. 2)					
70. Incurred losses on prior years' claims-health other than group (Schedule H, Part 3, Line 3.1 Col. 1 less Col. 2)	1,974,533,835	1,994,460,505	2,023,132,666	2,013,155,304	1,992,051,459
71. Prior years' claim liability and reserve-health other than group (Schedule H, Part 3, Line 3.2 Col. 1 less Col. 2)	1,877,320,923	1,918,454,996	1,900,378,992	1,900,423,384	1,897,074,726
Net Gains From Operations After Federal Income Taxes by Lines of Business (Page 6, Line 33)					
72. Industrial life (Col. 2)					
73. Ordinary - life (Col. 3)	(414,680,265)	(195,046,499)	(452,874,059)	(273,993,807)	(8,277,135)
74. Ordinary - individual annuities (Col. 4)	(155,641,446)	229,760,994	105,282,875	32,895,738	(24,879,662)
75. Ordinary-supplementary contracts (Col. 5)	73,580,641	30,733,793	41,806,527	44,096,574	33,453,815
76. Credit life (Col. 6)					
77. Group life (Col. 7)	235,476,177	116,383,212	117,350,263	66,510,596	175,484,510
78. Group annuities (Col. 8)	409,759,021	203,701,817	339,521,949	415,593,989	203,257,125
79. A & H-group (Col. 9)	1,528,002	762,561	800,122	833,228	406,735
80. A & H-credit (Col. 10)					
81. A & H-other (Col. 11)	72,886,996	87,831,777	42,641,185	67,608,742	77,596,369
82. Aggregate of all other lines of business (Col. 12)					
83. Total (Col. 1)	222,909,126	474,127,656	194,528,862	353,545,060	457,041,757

NOTE: If a party to a merger, have the two most recent years of this exhibit been restated due to a merger in compliance with the disclosure requirements of SSAP No. 3, Accounting Changes and Correction of Errors? Yes [] No []
 If no, please explain:



ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

DIRECT BUSINESS IN THE STATE OF Grand Total

DURING THE YEAR 2018

NAIC Group Code 0435

LIFE INSURANCE

NAIC Company Code 65935

DIRECT PREMIUMS AND ANNUITY CONSIDERATIONS	1	2	3	4	5
	Ordinary	Credit Life (Group and Individual)	Group	Industrial	Total
1. Life insurance	5,932,429,645		703,549,462		6,635,979,107
2. Annuity considerations	3,301,295,024		2,515,587,326		5,816,882,350
3. Deposit-type contract funds	550,038,494	XXX	3,935,999,194	XXX	4,486,037,688
4. Other considerations			8,595,655,283		8,595,655,283
5. Totals (Sum of Lines 1 to 4)	9,783,763,163		15,750,791,265		25,534,554,428
DIRECT DIVIDENDS TO POLICYHOLDERS					
Life insurance:					
6.1 Paid in cash or left on deposit	116,870,938				116,870,938
6.2 Applied to pay renewal premiums	347,341,990				347,341,990
6.3 Applied to provide paid-up additions or shorten the endowment or premium-paying period	1,318,055,750				1,318,055,750
6.4 Other					
6.5 Totals (Sum of Lines 6.1 to 6.4)	1,782,268,678				1,782,268,678
Annuities:					
7.1 Paid in cash or left on deposit	16,629				16,629
7.2 Applied to provide paid-up annuities	2,037,881				2,037,881
7.3 Other					
7.4 Totals (Sum of Lines 7.1 to 7.3)	2,054,510				2,054,510
8. Grand Totals (Lines 6.5 plus 7.4)	1,784,323,188				1,784,323,188
DIRECT CLAIMS AND BENEFITS PAID					
9. Death benefits	2,104,913,412		294,503,045		2,399,416,457
10. Matured endowments	14,867,829				14,867,829
11. Annuity benefits	637,001,627		1,301,850,882		1,938,852,509
12. Surrender values and withdrawals for life contracts	4,143,298,017		11,490,742,456		15,634,040,473
13. Aggregate write-ins for miscellaneous direct claims and benefits paid					
14. All other benefits, except accident and health	26,034,107		162,124		26,196,231
15. Totals	6,926,114,992		13,087,258,507		20,013,373,499
DETAILS OF WRITE-INS					
1301.					
1302.					
1303.					
1398. Summary of Line 13 from overflow page					
1399. Totals (Lines 1301 thru 1303 plus 1398) (Line 13 above)					

DIRECT DEATH BENEFITS AND MATURED ENDOWMENTS INCURRED	Ordinary		Credit Life (Group and Individual)		Group		Industrial		Total	
	1	2	3	4	5	6	7	8	9	10
	No.	Amount	No. of Ind.Pols. & Gr. Certifs.	Amount	No. of Certifs.	Amount	No.	Amount	No.	Amount
16. Unpaid December 31, prior year	3,756	423,677,538			104	70,739,234			3,860	494,416,772
17. Incurred during current year	30,607	2,088,678,299			558	313,518,134			31,165	2,402,196,433
Settled during current year:										
18.1 By payment in full	30,616	2,145,587,598			563	294,665,167			31,179	2,440,252,765
18.2 By payment on compromised claims	3	386,000							3	386,000
18.3 Totals paid	30,619	2,145,973,598			563	294,665,167			31,182	2,440,638,765
18.4 Reduction by compromise	(4)	(2,115,500)							(4)	(2,115,500)
18.5 Amount rejected	4	2,115,500							4	2,115,500
18.6 Total settlements	30,619	2,145,973,598			563	294,665,167			31,182	2,440,638,765
19. Unpaid Dec. 31, current year (16+17-18.6)	3,744	366,382,239			99	89,592,201			3,843	455,974,441
POLICY EXHIBIT						No. of Policies				
20. In force December 31, prior year	1,641,200	559,052,723,476	(a)		6,451	62,709,757,893			1,647,651	621,762,481,369
21. Issued during year	128,571	81,335,416,006			755	4,264,882,183			129,326	85,600,298,189
22. Other changes to in force (Net)	(78,040)	(27,275,222,132)			(130)	(3,274,514,726)			(78,170)	(30,549,736,858)
23. In force December 31 of current year	1,691,731	613,112,917,349	(a)		7,076	63,700,125,350			1,698,807	676,813,042,700

(a) Includes Individual Credit Life Insurance prior year \$ _____, current year \$ _____
Includes Group Credit Life Insurance Loans less than or equal to 60 months at issue, prior year \$ _____, current year \$ _____
Loans greater than 60 months at issue BUT NOT GREATER THAN 120 MONTHS, prior year \$ _____, current year \$ _____

ACCIDENT AND HEALTH INSURANCE

	1	2	3	4	5
	Direct Premiums	Direct Premiums Earned	Dividends Paid Or Credited On Direct Business	Direct Losses Paid	Direct Losses Incurred
24. Group Policies (b)	271,407	271,407		332,854	89,787
24.1 Federal Employees Health Benefits Plan premium (b)					
24.2 Credit (Group and Individual)					
24.3 Collectively renewable policies (b)					
24.4 Medicare Title XVIII exempt from state taxes or fees Other Individual Policies:					
25.1 Non-cancelable (b)	489,037,364	498,810,406	26,595,478	342,431,719	336,788,947
25.2 Guaranteed renewable (b)	236,670,282	236,955,985		46,798,004	85,423,511
25.3 Non-renewable for stated reasons only (b)	11,123,382	11,345,723	601,213	508,194	859,687
25.4 Other accident only					
25.5 All other (b)					
25.6 Totals (sum of Lines 25.1 to 25.5)	736,831,028	747,112,114	27,196,691	389,737,917	423,072,145
26. Totals (Lines 24 + 24.1 + 24.2 + 24.3 + 24.4 + 25.6)	737,102,435	747,383,521	27,196,691	390,070,771	423,161,932

(b) For health business on indicated lines report: Number of persons insured under PPO managed care products0 and number of persons
insured under indemnity only products0

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT OF LIFE INSURANCE

(\$000 Omitted for Amounts of Life Insurance)

	Industrial		Ordinary		Credit Life (Group and Individual)		Group			10 Total Amount of Insurance
	1	2	3	4	5	6	8		9	
	Number of Policies	Amount of Insurance	Number of Policies	Amount of Insurance	Number of Individual Policies and Group Certificates	Amount of Insurance	Number of Policies	Certificates	Amount of Insurance	
1. In force end of prior year			1,657,665	565,053,656			6,451	116,712	64,964,787	630,018,443
2. Issued during year			128,571	81,335,416			755	30,790	4,264,882	85,600,298
3. Reinsurance assumed										
4. Revived during year			18	4,120				50	27,308	31,428
5. Increased during year (net)			113	213,040			37	78	706,665	919,705
6. Subtotals, Lines 2 to 5			128,702	81,552,576			792	30,918	4,998,855	86,551,431
7. Additions by dividends during year	XXX		XXX	2,499,644	XXX		XXX	XXX	252	2,499,896
8. Aggregate write-ins for increases										
9. Totals (Lines 1 and 6 to 8)			1,786,367	649,105,876			7,243	147,630	69,963,894	719,069,770
Deductions during year:										
10. Death			19,228	2,021,545			XXX	481	303,798	2,325,343
11. Maturity			516	17,382			XXX			17,382
12. Disability							XXX			
13. Expiry			5,394	1,014,351						1,014,351
14. Surrender			29,680	9,028,513			41	1,478	1,035,579	10,064,092
15. Lapse			21,385	15,648,458			12	14,098	2,623,427	18,271,885
16. Conversion			1,889	1,395,562			XXX	XXX	XXX	1,395,562
17. Decreased (net)			79	866,215			114	64	45,936	912,151
18. Reinsurance			1,021	449,348				12	14,466	463,814
19. Aggregate write-ins for decreases										
20. Totals (Lines 10 to 19)			79,192	30,441,374			167	16,133	4,023,206	34,464,580
21. In force end of year (Line 9 minus Line 20)			1,707,175	618,664,502			7,076	131,497	65,940,688	684,605,190
22. Reinsurance ceded end of year	XXX		XXX	448,932,859	XXX		XXX	XXX	25,982,265	474,915,124
23. Line 21 minus Line 22	XXX		XXX	169,731,643	XXX	(a)	XXX	XXX	39,958,423	209,690,066
DETAILS OF WRITE-INS										
0801.										
0802.										
0803.										
0898. Summary of remaining write-ins for Line 8 from overflow page										
0899. TOTALS (Lines 0801 thru 0803 plus 0898) (Line 8 above)										
1901.										
1902.										
1903.										
1998. Summary of remaining write-ins for Line 19 from overflow page										
1999. TOTALS (Lines 1901 thru 1903 plus 1998) (Line 19 above)										

(a) Group \$; Individual \$

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT OF LIFE INSURANCE

(\$000 Omitted for Amounts of Life Insurance) (Continued)
ADDITIONAL INFORMATION ON INSURANCE IN FORCE END OF YEAR

	Industrial		Ordinary	
	1 Number of Policies	2 Amount of Insurance	3 Number of Policies	4 Amount of Insurance
24. Additions by dividends	XXX		XXX	25,453,366
25. Other paid-up insurance			125,953	15,619,834
26. Debit ordinary insurance	XXX	XXX		

ADDITIONAL INFORMATION ON ORDINARY INSURANCE

Term Insurance Excluding Extended Term Insurance	Issued During Year (Included in Line 2)		In Force End of Year (Included in Line 21)	
	1 Number of Policies	2 Amount of Insurance	3 Number of Policies	4 Amount of Insurance
27. Term policies - decreasing				
28. Term policies - other	52,927	46,498,031	403,059	292,947,086
29. Other term insurance - decreasing	XXX		XXX	
30. Other term insurance	XXX	1,310,588	XXX	12,548,642
31. Totals (Lines 27 to 30)	52,927	47,808,619	403,059	305,495,728
Reconciliation to Lines 2 and 21:				
32. Term additions	XXX	1,183,438	XXX	12,020,145
33. Totals, extended term insurance	XXX	XXX	5,206	669,516
34. Totals, whole life and endowment	75,644	32,343,359	1,298,910	300,479,113
35. Totals (Lines 31 to 34)	128,571	81,335,416	1,707,175	618,664,502

CLASSIFICATION OF AMOUNT OF INSURANCE BY PARTICIPATING STATUS

	Issued During Year (Included in Line 2)		In Force End of Year (Included in Line 21)	
	1 Non-Participating	2 Participating	3 Non-Participating	4 Participating
36. Industrial				
37. Ordinary	3,913,405	77,422,011	12,100,012	606,564,489
38. Credit Life (Group and Individual)				
39. Group	27,308	4,237,574	2,240,563	63,700,125
40. Totals (Lines 36 to 39)	3,940,713	81,659,585	14,340,575	670,264,614

ADDITIONAL INFORMATION ON CREDIT LIFE AND GROUP INSURANCE

	Credit Life		Group	
	1 Number of Individual Policies and Group Certificates	2 Amount of Insurance	3 Number of Certificates	4 Amount of Insurance
41. Amount of insurance included in Line 2 ceded to other companies	XXX		XXX	1,048,214
42. Number in force end of year if the number under shared groups is counted on a pro-rata basis		XXX		XXX
43. Federal Employees' Group Life Insurance included in Line 21				
44. Servicemen's Group Life Insurance included in Line 21				
45. Group Permanent Insurance included in Line 21				

ADDITIONAL ACCIDENTAL DEATH BENEFITS

46. Amount of additional accidental death benefits in force end of year under ordinary policies	1,451,034
---	-----------

BASIS OF CALCULATION OF ORDINARY TERM INSURANCE

47. State basis of calculation of (47.1) decreasing term insurance contracts containing Family Income, Mortgage Repayment, etc., policies and riders and of (47.2) term insurance on wife and children under Family, Parent and Child, etc., policies and riders, including above.	
47.1	
47.2	

NONE

POLICIES WITH DISABILITY PROVISIONS

Disability Provisions	Industrial		Ordinary		Credit		Group	
	1 Number of Policies	2 Amount of Insurance	3 Number of Policies	4 Amount of Insurance	5 Number of Policies	6 Amount of Insurance	7 Number of Certificates	8 Amount of Insurance
48. Waiver of Premium			673,610	235,139,987			21,021	4,503,885
49. Disability Income								
50. Extended Benefits			XXX	XXX				
51. Other								
52. Total		(a)	673,610	(a) 235,139,987		(a)	21,021	(a) 4,503,885

(a) See the Annual Audited Financial Reports section of the annual statement instructions

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
EXHIBIT OF NUMBER OF POLICIES, CONTRACTS, CERTIFICATES, INCOME PAYABLE AND ACCOUNT VALUES IN FORCE FOR SUPPLEMENTARY CONTRACTS, ANNUITIES, ACCIDENT & HEALTH AND OTHER POLICIES

SUPPLEMENTARY CONTRACTS

	Ordinary		Group	
	1 Involving Life Contingencies	2 Not Involving Life Contingencies	3 Involving Life Contingencies	4 Not Involving Life Contingencies
1. In force end of prior year	4,685	8,733	1	
2. Issued during year	405	912		
3. Reinsurance assumed				
4. Increased during year (net)				
5. Total (Lines 1 to 4)	5,090	9,645	1	
Deductions during year:				
6. Decreased (net)	323	1,139		
7. Reinsurance ceded				
8. Totals (Lines 6 and 7)	323	1,139		
9. In force end of year	4,767	8,506	1	
10. Amount on deposit	194,309,889	(a) 639,182,631	352	(a)
11. Income now payable	4,767	1,302		
12. Amount of income payable	(a) 21,149,909	(a) 14,939,482	(a) 142	(a)

ANNUITIES

	Ordinary		Group	
	1 Immediate	2 Deferred	3 Contracts	4 Certificates
1. In force end of prior year	41,335	192,569	14,262	2,331,963
2. Issued during year	5,556	14,046	455	247,531
3. Reinsurance assumed				
4. Increased during year (net)				
5. Totals (Lines 1 to 4)	46,891	206,615	14,717	2,579,494
Deductions during year:				
6. Decreased (net)	1,685	19,553	1,190	193,642
7. Reinsurance ceded				
8. Totals (Lines 6 and 7)	1,685	19,553	1,190	193,642
9. In force end of year	45,206	187,062	13,527	2,385,852
Income now payable:				
10. Amount of income payable	(a) 696,139,150	XXX	XXX	(a) 937,086,682
Deferred fully paid:				
11. Account balance	XXX	(a) 5,174,394,531	XXX	(a) 10,970,454,985
Deferred not fully paid:				
12. Account balance	XXX	(a) 14,233,169,216	XXX	(a) 70,001,089,726

ACCIDENT AND HEALTH INSURANCE

	Group		Credit		Other	
	1 Certificates	2 Premiums in Force	3 Policies	4 Premiums in Force	5 Policies	6 Premiums in Force
1. In force end of prior year	528	168,252			341,557	731,567,493
2. Issued during year	900	241,313			21,278	47,441,408
3. Reinsurance assumed						
4. Increased during year (net)		XXX		XXX		XXX
5. Totals (Lines 1 to 4)	1,428	XXX		XXX	362,835	XXX
Deductions during year:						
6. Conversions		XXX	XXX	XXX	XXX	XXX
7. Decreased (net)	248	XXX		XXX	21,790	XXX
8. Reinsurance ceded		XXX		XXX		XXX
9. Totals (Lines 6 to 8)	248	XXX		XXX	21,790	XXX
10. In force end of year	1,180	(a) 329,169		(a)	341,045	(a) 753,959,769

DEPOSIT FUNDS AND DIVIDEND ACCUMULATIONS

	1	2
	Deposit Funds Contracts	Dividend Accumulations Contracts
1. In force end of prior year	44,685	92,135
2. Issued during year	1,148	489
3. Reinsurance assumed		
4. Increased during year (net)	904	1,817
5. Totals (Lines 1 to 4)	46,737	94,441
Deductions During Year:		
6. Decreased (net)	1,455	6,983
7. Reinsurance ceded		
8. Totals (Lines 6 and 7)	1,455	6,983
9. In force end of year	45,282	87,458
10. Amount of account balance	(a) 3,478,178,412	(a) 509,062,363

(a) See the Annual Audited Financial Reports section of the annual statement instructions.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
FORM FOR CALCULATING THE INTEREST MAINTENANCE RESERVE

INTEREST MAINTENANCE RESERVE

	1 Amount
1. Reserve as of December 31, Prior Year	(110,848,566)
2. Current year's realized pre-tax capital gains/(losses) of \$(403,597,152) transferred into the reserve net of taxes of \$(18,652,600)	(384,944,552)
3. Adjustment for current year's liability gains/(losses) released from the reserve	(2,947,226)
4. Balance before reduction for amount transferred to Summary of Operations (Line 1 + Line 2 + Line 3)	(498,740,344)
5. Current year's amortization released to Summary of Operations (Amortization, Line 1, Column 4)	63,947,853
6. Reserve as of December 31, current year (Line 4 minus Line 5)	(562,688,197)

AMORTIZATION

Year of Amortization	1 Reserve as of December 31, Prior Year	2 Current Year's Realized Capital Gains/(Losses) Transferred into the Reserve Net of Taxes	3 Adjustment for Current Year's Liability Gains/(Losses) Released From the Reserve	4 Balance Before Reduction for Current Year's Amortization (Cols. 1 + 2 + 3)
1. 2018	22,062,921	41,959,658	(74,726)	63,947,853
2. 2019	8,904,341	(30,365,354)	(151,258)	(21,612,271)
3. 2020	(3,311,599)	(22,091,875)	(158,958)	(25,562,432)
4. 2021	(13,033,568)	(21,931,252)	(167,230)	(35,132,050)
5. 2022	(19,701,651)	(21,956,942)	(171,412)	(41,830,005)
6. 2023	(19,869,041)	(21,787,537)	(178,543)	(41,835,121)
7. 2024	(18,151,497)	(20,771,629)	(195,371)	(39,118,497)
8. 2025	(15,095,768)	(18,947,878)	(219,615)	(34,263,261)
9. 2026	(11,862,147)	(17,048,460)	(245,000)	(29,155,607)
10. 2027	(8,196,060)	(14,771,505)	(270,956)	(23,238,521)
11. 2028	(4,582,726)	(12,786,196)	(301,570)	(17,670,492)
12. 2029	(2,459,111)	(11,995,374)	(284,933)	(14,739,418)
13. 2030	(28,207)	(12,152,495)	(228,650)	(12,409,352)
14. 2031	1,283,661	(12,677,761)	(165,332)	(11,559,432)
15. 2032	2,212,751	(12,877,990)	(98,495)	(10,763,734)
16. 2033	1,790,404	(13,360,980)	(35,177)	(11,605,753)
17. 2034	2,498,335	(13,717,851)		(11,219,516)
18. 2035	4,067,423	(14,015,585)		(9,948,162)
19. 2036	5,576,714	(14,610,450)		(9,033,736)
20. 2037	5,305,603	(15,067,318)		(9,761,715)
21. 2038	1,978,242	(15,354,483)		(13,376,241)
22. 2039	(1,461,472)	(14,993,341)		(16,454,813)
23. 2040	(8,033,101)	(14,079,610)		(22,112,711)
24. 2041	(9,105,979)	(12,603,325)		(21,709,304)
25. 2042	(10,922,887)	(11,615,012)		(22,537,899)
26. 2043	(8,331,505)	(10,266,154)		(18,597,659)
27. 2044	(6,171,146)	(8,833,344)		(15,004,490)
28. 2045	(4,110,773)	(7,030,621)		(11,141,394)
29. 2046	(1,718,486)	(5,047,625)		(6,766,111)
30. 2047	(382,236)	(3,064,630)		(3,446,866)
31. 2048 and Later		(1,081,633)		(1,081,633)
32. Total (Lines 1 to 31)	(110,848,566)	(384,944,552)	(2,947,226)	(498,740,344)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE

	Default Component			Equity Component			7 Total Amount (Cols. 3 + 6)
	1 Other Than Mortgage Loans	2 Mortgage Loans	3 Total (Cols. 1 + 2)	4 Common Stock	5 Real Estate and Other Invested Assets	6 Total (Cols. 4 + 5)	
1. Reserve as of December 31, prior year	667,378,152	215,167,307	882,545,460	1,270,596,759	1,053,927,369	2,324,524,127	3,207,069,587
2. Realized capital gains/(losses) net of taxes - General Account	127,558,257	(959,110)	126,599,147	(908,685,744)	87,266,800	(821,418,944)	(694,819,797)
3. Realized capital gains/(losses) net of taxes - Separate Accounts							
4. Unrealized capital gains/(losses) net of deferred taxes - General Account	307,627,222	(99,393,281)	208,233,941	1,102,924,940	(310,938,828)	791,986,112	1,000,220,053
5. Unrealized capital gains/(losses) net of deferred taxes - Separate Accounts							
6. Capital gains credited/(losses charged) to contract benefits, payments or reserves	(3,078,909)	(780,426)	(3,859,335)	581,945	(111,727)	470,218	(3,389,117)
7. Basic contribution	229,056,101	54,525,463	283,581,564	7,174,585	10,801,032	17,975,617	301,557,181
8. Accumulated balances (Lines 1 through 5 - 6 + 7)	1,334,698,641	170,120,806	1,504,819,447	1,471,428,595	841,168,100	2,312,596,694	3,817,416,141
9. Maximum reserve	1,079,967,840	230,882,648	1,310,850,488	821,702,600	1,174,266,978	1,995,969,578	3,306,820,067
10. Reserve objective	753,932,345	177,545,839	931,478,184	810,313,771	1,160,392,256	1,970,706,027	2,902,184,211
11. 20% of (Line 10 - Line 8)	(116,153,259)	1,485,007	(114,668,253)	(132,222,965)	63,844,831	(68,378,133)	(183,046,386)
12. Balance before transfers (Lines 8 + 11)	1,218,545,382	171,605,812	1,390,151,194	1,339,205,630	905,012,931	2,244,218,561	3,634,369,755
13. Transfers	(59,276,836)	59,276,836		(269,254,048)	269,254,048		
14. Voluntary contribution							
15. Adjustment down to maximum/up to zero	(79,300,705)		(79,300,705)	(248,248,982)		(248,248,982)	(327,549,687)
16. Reserve as of December 31, current year (Lines 12 + 13 + 14 + 15)	1,079,967,841	230,882,648	1,310,850,489	821,702,600	1,174,266,979	1,995,969,579	3,306,820,068

ASSET VALUATION RESERVE
BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS
DEFAULT COMPONENT

Line Number	NAIC Designation	Description	1 Book/Adjusted Carrying Value	2 Reclassify Related Party Encumbrances	3 Add Third Party Encumbrances	4 Balance for AVR Reserve Calculations (Cols. 1 + 2 + 3)	Basic Contribution		Reserve Objective		Maximum Reserve	
							5 Factor	6 Amount (Cols. 4 x 5)	7 Factor	8 Amount (Cols. 4 x 7)	9 Factor	10 Amount (Cols. 4 x 9)
LONG-TERM BONDS												
1.		Exempt Obligations	5,815,025,822	XXX	XXX	5,815,025,822	0.0000		0.0000		0.0000	
2.	1	Highest Quality	47,771,685,726	XXX	XXX	47,771,685,726	0.0004	19,108,674	0.0023	109,874,877	0.0030	143,315,057
3.	2	High Quality	36,789,427,834	XXX	XXX	36,789,427,834	0.0019	69,899,913	0.0058	213,378,681	0.0090	331,104,851
4.	3	Medium Quality	2,851,626,810	XXX	XXX	2,851,626,810	0.0093	26,520,129	0.0230	65,587,417	0.0340	96,955,312
5.	4	Low Quality	2,004,562,945	XXX	XXX	2,004,562,945	0.0213	42,697,191	0.0530	106,241,836	0.0750	150,342,221
6.	5	Lower Quality	1,496,213,345	XXX	XXX	1,496,213,345	0.0432	64,636,417	0.1100	164,583,468	0.1700	254,356,269
7.	6	In or Near Default	350,580,649	XXX	XXX	350,580,649	0.0000		0.2000	70,116,130	0.2000	70,116,130
8.		Total Unrated Multi-class Securities Acquired by Conversion		XXX	XXX		XXX		XXX		XXX	
9.		Total Long-Term Bonds (Sum of Lines 1 through 8)	97,079,123,131	XXX	XXX	97,079,123,131	XXX	222,862,324	XXX	729,782,409	XXX	1,046,189,839
PREFERRED STOCK												
10.	1	Highest Quality	443,850,000	XXX	XXX	443,850,000	0.0004	177,540	0.0023	1,020,855	0.0030	1,331,550
11.	2	High Quality	125,632,088	XXX	XXX	125,632,088	0.0019	238,701	0.0058	728,666	0.0090	1,130,689
12.	3	Medium Quality	140,943,708	XXX	XXX	140,943,708	0.0093	1,310,776	0.0230	3,241,705	0.0340	4,792,086
13.	4	Low Quality	669,179	XXX	XXX	669,179	0.0213	14,254	0.0530	35,466	0.0750	50,188
14.	5	Lower Quality	16,697,090	XXX	XXX	16,697,090	0.0432	721,314	0.1100	1,836,680	0.1700	2,838,505
15.	6	In or Near Default	16,300,001	XXX	XXX	16,300,001	0.0000		0.2000	3,260,000	0.2000	3,260,000
16.		Affiliated Life with AVR		XXX	XXX		0.0000		0.0000		0.0000	
17.		Total Preferred Stocks (Sum of Lines 10 through 16)	744,092,066	XXX	XXX	744,092,066	XXX	2,462,585	XXX	10,123,373	XXX	13,403,019
SHORT - TERM BONDS												
18.		Exempt Obligations		XXX	XXX		0.0000		0.0000		0.0000	
19.	1	Highest Quality	226,394,528	XXX	XXX	226,394,528	0.0004	90,558	0.0023	520,707	0.0030	679,184
20.	2	High Quality	221,339,924	XXX	XXX	221,339,924	0.0019	420,546	0.0058	1,283,772	0.0090	1,992,059
21.	3	Medium Quality		XXX	XXX		0.0093		0.0230		0.0340	
22.	4	Low Quality		XXX	XXX		0.0213		0.0530		0.0750	
23.	5	Lower Quality		XXX	XXX		0.0432		0.1100		0.1700	
24.	6	In or Near Default		XXX	XXX		0.0000		0.2000		0.2000	
25.		Total Short - Term Bonds (Sum of Lines 18 through 24)	447,734,452	XXX	XXX	447,734,452	XXX	511,104	XXX	1,804,479	XXX	2,671,243
DERIVATIVE INSTRUMENTS												
26.		Exchange Traded		XXX	XXX		0.0004		0.0023		0.0030	
27.	1	Highest Quality	659,510,386	XXX	XXX	659,510,386	0.0004	263,804	0.0023	1,516,874	0.0030	1,978,531
28.	2	High Quality	74,955,926	XXX	XXX	74,955,926	0.0019	142,416	0.0058	434,744	0.0090	674,603
29.	3	Medium Quality		XXX	XXX		0.0093		0.0230		0.0340	
30.	4	Low Quality		XXX	XXX		0.0213		0.0530		0.0750	
31.	5	Lower Quality		XXX	XXX		0.0432		0.1100		0.1700	
32.	6	In or Near Default		XXX	XXX		0.0000		0.2000		0.2000	
33.		Total Derivative Instruments	734,466,312	XXX	XXX	734,466,312	XXX	406,220	XXX	1,951,618	XXX	2,653,134
34.		Total (Lines 9 + 17 + 25 + 33)	99,005,415,961	XXX	XXX	99,005,415,961	XXX	226,242,233	XXX	743,661,879	XXX	1,064,917,235

ASSET VALUATION RESERVE (Continued)
BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS
DEFAULT COMPONENT

Line Number	NAIC Designation	Description	1 Book/Adjusted Carrying Value	2 Reclassify Related Party Encumbrances	3 Add Third Party Encumbrances	4 Balance for AVR Reserve Calculations (Cols. 1 + 2 + 3)	Basic Contribution		Reserve Objective		Maximum Reserve	
							5 Factor	6 Amount (Cols. 4 x 5)	7 Factor	8 Amount (Cols. 4 x 7)	9 Factor	10 Amount (Cols. 4 x 9)
MORTGAGE LOANS												
In Good Standing:												
35.		Farm Mortgages - CM1 - Highest Quality			XXX		0.0010		0.0050		0.0065	
36.		Farm Mortgages - CM2 - High Quality			XXX		0.0035		0.0100		0.0130	
37.		Farm Mortgages - CM3 - Medium Quality			XXX		0.0060		0.0175		0.0225	
38.		Farm Mortgages - CM4 - Low Medium Quality			XXX		0.0105		0.0300		0.0375	
39.		Farm Mortgages - CM5 - Low Quality			XXX		0.0160		0.0425		0.0550	
40.		Residential Mortgages - Insured or Guaranteed	1,263,118,491		XXX	1,263,118,491	0.0003	378,936	0.0006	757,871	0.0010	1,263,118
41.		Residential Mortgages - All Other	3,570,161		XXX	3,570,161	0.0013	4,641	0.0030	10,710	0.0040	14,281
42.		Commercial Mortgages - Insured or Guaranteed			XXX		0.0003		0.0006		0.0010	
43.		Commercial Mortgages - All Other - CM1 - Highest Quality	10,240,050,209		XXX	10,240,050,209	0.0010	10,240,050	0.0050	51,200,251	0.0065	66,560,326
44.		Commercial Mortgages - All Other - CM2 - High Quality	11,646,175,077		XXX	11,646,175,077	0.0035	40,761,613	0.0100	116,461,751	0.0130	151,400,276
45.		Commercial Mortgages - All Other - CM3 - Medium Quality	400,924,190		XXX	400,924,190	0.0060	2,405,545	0.0175	7,016,173	0.0225	9,020,794
46.		Commercial Mortgages - All Other - CM4 - Low Medium Quality	69,969,401		XXX	69,969,401	0.0105	734,679	0.0300	2,099,082	0.0375	2,623,853
47.		Commercial Mortgages - All Other - CM5 - Low Quality			XXX		0.0160		0.0425		0.0550	
Overdue, Not in Process:												
48.		Farm Mortgages			XXX		0.0420		0.0760		0.1200	
49.		Residential Mortgages - Insured or Guaranteed			XXX		0.0005		0.0012		0.0020	
50.		Residential Mortgages - All Other			XXX		0.0025		0.0058		0.0090	
51.		Commercial Mortgages - Insured or Guaranteed			XXX		0.0005		0.0012		0.0020	
52.		Commercial Mortgages - All Other			XXX		0.0420		0.0760		0.1200	
In Process of Foreclosure:												
53.		Farm Mortgages			XXX		0.0000		0.1700		0.1700	
54.		Residential Mortgages - Insured or Guaranteed			XXX		0.0000		0.0040		0.0040	
55.		Residential Mortgages - All Other			XXX		0.0000		0.0130		0.0130	
56.		Commercial Mortgages - Insured or Guaranteed			XXX		0.0000		0.0040		0.0040	
57.		Commercial Mortgages - All Other			XXX		0.0000		0.1700		0.1700	
58.		Total Schedule B Mortgages (Sum of Lines 35 through 57)	23,623,807,529		XXX	23,623,807,529	XXX	54,525,464	XXX	177,545,839	XXX	230,882,648
59.		Schedule DA Mortgages			XXX		0.0030		0.0100		0.0130	
60.		Total Mortgage Loans on Real Estate (Lines 58 + 59)	23,623,807,529		XXX	23,623,807,529	XXX	54,525,464	XXX	177,545,839	XXX	230,882,648

ASSET VALUATION RESERVE
BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS
EQUITY AND OTHER INVESTED ASSET COMPONENT

Line Number	NAIC Designation	Description	1 Book/Adjusted Carrying Value	2 Reclassify Related Party Encumbrances	3 Add Third Party Encumbrances	4 Balance for AVR Reserve Calculations (Cols. 1 + 2 + 3)	Basic Contribution		Reserve Objective		Maximum Reserve	
							5 Factor	6 Amount (Cols. 4 x 5)	7 Factor	8 Amount (Cols. 4 x 7)	9 Factor	10 Amount (Cols. 4 x 9)
COMMON STOCK												
1.		Unaffiliated - Public	188,777,947	XXX	XXX	188,777,947	0.0000		0.1630 (a)	30,770,805	0.1630 (a)	30,770,805
2.		Unaffiliated - Private	237,515,482	XXX	XXX	237,515,482	0.0000		0.1600	38,002,477	0.1600	38,002,477
3.		Federal Home Loan Bank	73,700,000	XXX	XXX	73,700,000	0.0000		0.0050	368,500	0.0080	589,600
4.		Affiliated - Life with AVR	1,637,317,539	XXX	XXX	1,637,317,539	0.0000		0.0000		0.0000	
Affiliated - Investment Subsidiary:												
5.		Fixed Income - Exempt Obligations	367,578,660			367,578,660	XXX		XXX		XXX	
6.		Fixed Income - Highest Quality	2,433,745,795			2,433,745,795	XXX	973,498	XXX	5,597,615	XXX	7,301,237
7.		Fixed Income - High Quality	2,304,636,906			2,304,636,906	XXX	4,378,810	XXX	13,366,894	XXX	20,741,732
8.		Fixed Income - Medium Quality	107,746,975			107,746,975	XXX	1,002,047	XXX	2,478,180	XXX	3,663,397
9.		Fixed Income - Low Quality	31,009,632			31,009,632	XXX	660,505	XXX	1,643,510	XXX	2,325,722
10.		Fixed Income - Lower Quality	3,697,336			3,697,336	XXX	159,725	XXX	406,707	XXX	628,547
11.		Fixed Income - In/Near Default	12,303,110			12,303,110	XXX		XXX	2,460,622	XXX	2,460,622
12.		Unaffiliated Common Stock - Public					0.0000		0.1630 (a)		0.1630 (a)	
13.		Unaffiliated Common Stock - Private					0.0000		0.1600		0.1600	
14.		Real Estate					(b)		(b)		(b)	
15.		Affiliated - Certain Other (See SVO Purposes and Procedures Manual)	5,115,895,472	XXX	XXX	5,115,895,472	0.0000		0.1300	665,066,411	0.1300	665,066,411
16.		Affiliated - All Other	313,450,298	XXX	XXX	313,450,298	0.0000		0.1600	50,152,048	0.1600	50,152,048
17.		Total Common Stock (Sum of Lines 1 through 16)	12,827,375,152			12,827,375,152	XXX	7,174,585	XXX	810,313,770	XXX	821,702,599
REAL ESTATE												
18.		Home Office Property (General Account only)	195,523,676			195,523,676	0.0000		0.0750	14,664,276	0.0750	14,664,276
19.		Investment Properties	292,782,876		930,595,760	1,223,378,636	0.0000		0.0750	91,753,398	0.0750	91,753,398
20.		Properties Acquired in Satisfaction of Debt					0.0000		0.1100		0.1100	
21.		Total Real Estate (Sum of Lines 18 through 20)	488,306,552		930,595,760	1,418,902,312	XXX		XXX	106,417,673	XXX	106,417,673
OTHER INVESTED ASSETS												
INVESTMENTS WITH THE UNDERLYING CHARACTERISTICS OF BONDS												
22.		Exempt Obligations		XXX	XXX		0.0000		0.0000		0.0000	
23.	1	Highest Quality		XXX	XXX		0.0004		0.0023		0.0030	
24.	2	High Quality	673,524,911	XXX	XXX	673,524,911	0.0019	1,279,697	0.0058	3,906,444	0.0090	6,061,724
25.	3	Medium Quality	178,018,201	XXX	XXX	178,018,201	0.0093	1,655,569	0.0230	4,094,419	0.0340	6,052,619
26.	4	Low Quality	118,195	XXX	XXX	118,195	0.0213	2,518	0.0530	6,264	0.0750	8,865
27.	5	Lower Quality	105,217,774	XXX	XXX	105,217,774	0.0432	4,545,408	0.1100	11,573,955	0.1700	17,887,022
28.	6	In or Near Default		XXX	XXX		0.0000		0.2000		0.2000	
29.		Total with Bond Characteristics (Sum of Lines 22 through 28)	956,879,081	XXX	XXX	956,879,081	XXX	7,483,192	XXX	19,581,083	XXX	30,010,229

ASSET VALUATION RESERVE (Continued)
BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS
EQUITY AND OTHER INVESTED ASSET COMPONENT

Line Number	NAIC Designation	Description	1 Book/Adjusted Carrying Value	2 Reclassify Related Party Encumbrances	3 Add Third Party Encumbrances	4 Balance for AVR Reserve Calculations (Cols. 1 + 2 + 3)	Basic Contribution		Reserve Objective		Maximum Reserve	
							5 Factor	6 Amount (Cols. 4 x 5)	7 Factor	8 Amount (Cols. 4 x 7)	9 Factor	10 Amount (Cols. 4 x 9)
INVESTMENTS WITH THE UNDERLYING CHARACTERISTICS OF PREFERRED STOCKS												
30.	1	Highest Quality	289,581,942	XXX	XXX	289,581,942	0.0004	115,833	0.0023	666,038	0.0030	868,746
31.	2	High Quality	9,350,000	XXX	XXX	9,350,000	0.0019	17,765	0.0058	54,230	0.0090	84,150
32.	3	Medium Quality		XXX	XXX		0.0093		0.0230		0.0340	
33.	4	Low Quality		XXX	XXX		0.0213		0.0530		0.0750	
34.	5	Lower Quality	165,302	XXX	XXX	165,302	0.0432	7,141	0.1100	18,183	0.1700	28,101
35.	6	In or Near Default		XXX	XXX		0.0000		0.2000		0.2000	
36.		Affiliated Life with AVR		XXX	XXX		0.0000		0.0000		0.0000	
37.		Total with Preferred Stock Characteristics (Sum of Lines 30 through 36)	299,097,244	XXX	XXX	299,097,244	XXX	140,739	XXX	738,452	XXX	980,997
INVESTMENTS WITH THE UNDERLYING CHARACTERISTICS OF MORTGAGE LOANS												
In Good Standing Affiliated:												
38.		Mortgages - CM1 - Highest Quality	58,378,797		XXX	58,378,797	0.0010	58,379	0.0050	291,894	0.0065	379,462
39.		Mortgages - CM2 - High Quality	326,178,677		XXX	326,178,677	0.0035	1,141,625	0.0100	3,261,787	0.0130	4,240,323
40.		Mortgages - CM3 - Medium Quality	15,611,691		XXX	15,611,691	0.0060	93,670	0.0175	273,205	0.0225	351,263
41.		Mortgages - CM4 - Low Medium Quality	8,007,213		XXX	8,007,213	0.0105	84,076	0.0300	240,216	0.0375	300,270
42.		Mortgages - CM5 - Low Quality			XXX		0.0160		0.0425		0.0550	
43.		Residential Mortgages - Insured or Guaranteed			XXX		0.0003		0.0006		0.0010	
44.		Residential Mortgages - All Other		XXX	XXX		0.0013		0.0030		0.0040	
45.		Commercial Mortgages - Insured or Guaranteed			XXX		0.0003		0.0006		0.0010	
Overdue, Not in Process Affiliated:												
46.		Farm Mortgages			XXX		0.0420		0.0760		0.1200	
47.		Residential Mortgages - Insured or Guaranteed			XXX		0.0005		0.0012		0.0020	
48.		Residential Mortgages - All Other			XXX		0.0025		0.0058		0.0090	
49.		Commercial Mortgages - Insured or Guaranteed			XXX		0.0005		0.0012		0.0020	
50.		Commercial Mortgages - All Other			XXX		0.0420		0.0760		0.1200	
In Process of Foreclosure Affiliated:												
51.		Farm Mortgages			XXX		0.0000		0.1700		0.1700	
52.		Residential Mortgages - Insured or Guaranteed			XXX		0.0000		0.0040		0.0040	
53.		Residential Mortgages - All Other			XXX		0.0000		0.0130		0.0130	
54.		Commercial Mortgages - Insured or Guaranteed			XXX		0.0000		0.0040		0.0040	
55.		Commercial Mortgages - All Other			XXX		0.0000		0.1700		0.1700	
56.		Total Affiliated (Sum of Lines 38 through 55)	408,176,378		XXX	408,176,378	XXX	1,377,750	XXX	4,067,102	XXX	5,271,319
57.		Unaffiliated - In Good Standing With Covenants			XXX		(c)		(c)		(c)	
58.		Unaffiliated - In Good Standing Defeased With Government Securities			XXX		0.0010		0.0050		0.0065	
59.		Unaffiliated - In Good Standing Primarily Senior			XXX		0.0035		0.0010		0.0130	
60.		Unaffiliated - In Good Standing All Other	338,828		XXX	338,828	0.0060	2,033	0.0175	5,929	0.0225	7,624
61.		Unaffiliated - Overdue, Not in Process			XXX		0.0420		0.0760		0.1200	
62.		Unaffiliated - In Process of Foreclosure			XXX		0.0000		0.1700		0.1700	
63.		Total Unaffiliated (Sum of Lines 57 through 62)	338,828		XXX	338,828	XXX	2,033	XXX	5,929	XXX	7,624
64.		Total with Mortgage Loan Characteristics (Lines 56 + 63)	408,515,206		XXX	408,515,206	XXX	1,379,783	XXX	4,073,031	XXX	5,278,942

ASSET VALUATION RESERVE (Continued)
BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS
EQUITY AND OTHER INVESTED ASSET COMPONENT

Line Number	NAIC Designation	Description	1 Book/Adjusted Carrying Value	2 Reclassify Related Party Encumbrances	3 Add Third Party Encumbrances	4 Balance for AVR Reserve Calculations (Cols. 1 + 2 + 3)	Basic Contribution		Reserve Objective		Maximum Reserve	
							5 Factor	6 Amount (Cols. 4 x 5)	7 Factor	8 Amount (Cols. 4 x 7)	9 Factor	10 Amount (Cols. 4 x 9)
INVESTMENTS WITH THE UNDERLYING CHARACTERISTICS OF COMMON STOCK												
65.		Unaffiliated Public		XXX	XXX		0.0000		0.1630 (a)		0.1630 (a)	
66.		Unaffiliated Private	1,950,333,322	XXX	XXX	1,950,333,322	0.0000		0.1600	312,053,332	0.1600	312,053,332
67.		Affiliated Life with AVR		XXX	XXX		0.0000		0.0000		0.0000	
68.		Affiliated Certain Other (See SVO Purposes & Procedures Manual)		XXX	XXX		0.0000		0.1300		0.1300	
69.		Affiliated Other - All Other	3,108,297,423	XXX	XXX	3,108,297,423	0.0000		0.1600	497,327,588	0.1600	497,327,588
70.		Total with Common Stock Characteristics (Sum of Lines 65 through 69)	5,058,630,745	XXX	XXX	5,058,630,745	XXX		XXX	809,380,919	XXX	809,380,919
INVESTMENTS WITH THE UNDERLYING CHARACTERISTICS OF REAL ESTATE												
71.		Home Office Property (General Account only)					0.0000		0.0750		0.0750	
72.		Investment Properties	1,309,967,987		1,089,435,909	2,399,403,896	0.0000		0.0750	179,955,292	0.0750	179,955,292
73.		Properties Acquired in Satisfaction of Debt					0.0000		0.1100		0.1100	
74.		Total with Real Estate Characteristics (Sum of Lines 71 through 73)	1,309,967,987		1,089,435,909	2,399,403,896	XXX		XXX	179,955,292	XXX	179,955,292
LOW INCOME HOUSING TAX CREDIT INVESTMENTS												
75.		Guaranteed Federal Low Income Housing Tax Credit	1,498,570			1,498,570	0.0003	450	0.0006	899	0.0010	1,499
76.		Non-guaranteed Federal Low Income Housing Tax Credit	285,217,181			285,217,181	0.0063	1,796,868	0.0120	3,422,606	0.0190	5,419,126
77.		Guaranteed State Low Income Housing Tax Credit					0.0003		0.0006		0.0010	
78.		Non-guaranteed State Low Income Housing Tax Credit					0.0063		0.0120		0.0190	
79.		All Other Low Income Housing Tax Credit					0.0273		0.0600		0.0975	
80.		Total LIHTC (Sum of Lines 75 through 79)	286,715,751			286,715,751	XXX	1,797,318	XXX	3,423,505	XXX	5,420,625
ALL OTHER INVESTMENTS												
81.		NAIC 1 Working Capital Finance Investments		XXX			0.0000		0.0037		0.0037	
82.		NAIC 2 Working Capital Finance Investments		XXX			0.0000		0.0120		0.0120	
83.		Other Invested Assets - Schedule BA	283,248,462	XXX		283,248,462	0.0000		0.1300	36,822,300	0.1300	36,822,300
84.		Other Short-Term Invested Assets - Schedule DA		XXX			0.0000		0.1300		0.1300	
85.		Total All Other (Sum of Lines 81, 82, 83 and 84)	283,248,462	XXX		283,248,462	XXX		XXX	36,822,300	XXX	36,822,300
86.		Total Other Invested Assets - Schedules BA & DA (Sum of Lines 29, 37, 64, 70, 74, 80 and 85)	8,603,054,476		1,089,435,909	9,692,490,385	XXX	10,801,032	XXX	1,053,974,582	XXX	1,067,849,305

(a) Times the company's weighted average portfolio beta (Minimum .10, Maximum .20).
 (b) Determined using the same factors and breakdowns used for directly owned real estate.
 (c) This will be the factor associated with the risk category determined in the company generated worksheet.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
57629*AA9	R		Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2	57,474,936	109,202	333,355	517,274
57629*AA9	R		Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2				
57629*AA9	R		Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2				
57629*AA9	R		Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2				
57629*AA9	R		Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3	54,092,807	503,063	1,244,135	1,839,155
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AB7	R		Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	284,136,027	113,654	653,513	852,408
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AC5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AE1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	102,668,002	41,067	236,136	308,004
57629*AE1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AE1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AE1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AE1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AE1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AE1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AE1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	107,393,729	42,957	247,006	322,181
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AD3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	107,767,309	43,107	247,865	323,302
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AF8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AH4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	111,200,000	44,480	255,760	333,600
57629*AH4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AH4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AH4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
57629*AH4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AH4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	104,162,734	41,665	239,574	312,488
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AG6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AJ0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	56,198,583	22,479	129,257	168,596
57629*AJ0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AJ0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AJ0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AJ0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AJ0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AJ0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AK7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	58,420,000	23,368	134,366	175,260
57629*AK7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AK7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AK7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AL5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	53,953,801	21,582	124,094	161,861
57629*AL5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AL5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AL5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AL5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AL5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AL5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AL5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AM3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	52,950,000	21,180	121,785	158,850
57629*AM3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AM3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AM3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AM3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AM3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AM3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AM3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AN1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	54,432,568	21,773	125,195	163,298
57629*AN1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AN1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AN1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AP6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	54,550,000	21,820	125,465	163,650
57629*AP6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AP6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AP6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AQ4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	52,372,697	20,949	120,457	157,118
57629*AQ4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AQ4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AQ4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AQ4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AQ4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				

35.1

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
57629*AO4	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AR2	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	55,690,000	22,276	128,087	167,070
57629*AR2	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AR2	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AR2	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AR2	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AR2	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AS0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	52,425,949	20,970	120,580	157,278
57629*AS0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AS0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AS0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AS0	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AT8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	53,980,000	21,592	124,154	161,940
57629*AT8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AT8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AT8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AW1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	58,450,000	23,380	134,435	175,350
57629*AW1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AW1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AW1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AW1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AW1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AW1	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AV3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	64,020,000	25,608	147,246	192,060
57629*AV3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AV3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AV3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AV3	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AX9	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	58,579,437	23,432	134,733	175,738
57629*AX9	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AX9	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AY7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	56,740,000	22,696	130,502	170,220
57629*AY7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AY7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AY7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AY7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AY7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AY7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AY7	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AU5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	58,700,000	23,480	135,010	176,100
57629*AU5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AU5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*AU5	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*BA8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	65,268,649	26,107	150,118	195,806
57629*BA8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*BA8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*BA8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*BA8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*BA8	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*BB6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	53,600,000	21,440	123,280	160,800
57629*BB6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				
57629*BB6	R		Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		87246M-AA-0	TICP CLO LTD-SERIES 2016-6A CLASS A	1	5,600,000	(52,080)	(128,800)	(190,400)
CW		77277L-A7-2	ROCKALL CLO BV Variable Funding Note- USD	1	2,483,711	(23,099)	(57,125)	(84,446)
CW		83149E-AG-2	SLM STUDENT LN TR 2006-5-NOTE CL B	1	4,313,594	(40,116)	(99,213)	(146,662)
CW		883310-AE-4	THAYER PARK CLO LTD.-THAYR 2017-1A B	1	5,470,000	(50,871)	(125,810)	(185,980)
CW		77342K-AA-8	ROCKFORD TOWER CLO 2018-ROCKT 2018-2A A	1	6,425,501	(59,757)	(147,787)	(218,467)
CW		09628F-AE-9	BlueMountain Fuji US CLO-SERIES 2017-3A CLASS B	1	4,000,000	(37,200)	(92,000)	(136,000)
CW		13876J-AE-2	Canyon Capital CLO Ltd-CANVC 2012-1RA B	1	4,000,000	(37,200)	(92,000)	(136,000)
CW		88432U-AC-0	Wind River CLO Ltd-SERIES 18-3A CLASS A2	1	15,000,000	(139,500)	(345,000)	(510,000)
CW		03762Y-AH-0	Apidos CLO XXV-APID 2016-25A A2R	1	6,800,000	(63,240)	(156,400)	(231,200)
CW		14316R-ZZ-6	Carlyle US CLO 2017-5 Re Term Loan	1	19,165,000	(7,666)	(44,080)	(57,495)
CW		83149F-AD-6	SLMA 2006 6 NT CL B	1	5,976,329	(2,391)	(13,746)	(17,929)
CW		375415-AA-4	GILBERT PARK CLO LTD-SERIES 17-1A CLASS A	1	15,500,000	(6,200)	(35,650)	(46,500)
CW		14310D-AY-3	CARLYLE GLOBAL MKT STRATEGIES CLO 2013-2 LTD MEZZ SECD DEF NT	1	13,500,000	(5,400)	(31,050)	(40,500)
CW		67097Q-AC-9	QCP CLO 2017-14 Ltd-SERIES 17-14A CLASS A1B	1	13,100,000	(5,240)	(30,130)	(39,300)
CW		57542Z-A0-7	MASSMUTUAL ASSET FIN LLC SR SECD REV NT	1	27,761,873	(11,105)	(63,852)	(83,286)
CW		126611-AL-6	CVP CASCADE CLO LTD-CVPC 2014-2A A1R	1	152,910,180	(61,164)	(351,693)	(458,731)
CW		94950G-AE-7	WELLFLEET CLO LTD-WELF 2017-1A B	1	6,200,000	(2,480)	(14,260)	(18,600)
CW		01748R-AE-5	ALLEGRO CLO V LTD-SERIES 17-1A CLASS MEZ, FLT	1	5,525,000	(2,210)	(12,708)	(16,575)
CW		38137M-AK-3	Goldentree Loan Opportun-GLD12 2016-12A AJR	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		03767M-AJ-7	Apidos CLO-APID 2018-29A B	1	4,500,000	(1,800)	(10,350)	(13,500)
CW		17181T-AA-9	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A1	1	4,997,645	(1,999)	(11,495)	(14,993)
CW		67112K-AC-3	QCP CLO Ltd-SEREIS 18-15A CLASS A3	1	12,000,000	(4,800)	(27,600)	(36,000)
CW		83609R-AE-1	SOUND POINT CLO LTD-SNDPT 2017-1A C	1	4,000,000	(1,600)	(9,200)	(12,000)
CW		14315J-YY-9	Carlyle US CLO 2017-3 Ri Term Loan	1	22,800,000	(9,120)	(52,440)	(68,400)
CW		03330A-AC-6	Anchorage Capital CLO 3-ANGCH 2014-3RA B	1	3,200,000	(1,280)	(7,360)	(9,600)
CW		87271L-AJ-1	TIAA CLO I Ltd-TIA 2016-1A AR	1	33,000,000	(13,200)	(75,900)	(99,000)
CW		14310D-AW-7	Carlyle Global Market St-SERIES 2013-2A CLASS BR	1	8,800,000	(3,520)	(20,240)	(26,400)
CW		24820R-AA-6	Statoil ASA-SENIOR UNSECURED NOTE	1	13,905,193	(5,562)	(31,982)	(41,716)
CW		12551J-AG-1	CIFC Funding 2017-IV Ltd-SERIES 17-4A CLASS B	1	4,962,810	(1,985)	(11,414)	(14,888)
CW		92977H-AG-3	WACHOVIA STUDENT LOAN TR-WSLT 2005-1 B	1	14,843,729	(5,937)	(34,141)	(44,531)
CW		04964K-AN-1	ATRIUM CDO CORP-SERIES 9A CLASS BR	1	18,990,000	(7,596)	(43,677)	(56,970)
CW		92912V-AQ-8	VOYA CLO LTD-VOYA 2014-2A A2AR	1	18,810,000	(7,524)	(43,263)	(56,430)
CW		48251B-AA-8	KKR FINANCIAL CLO LTD-KKR 16 A1	1	6,800,000	(2,720)	(15,640)	(20,400)
CW		06760P-AE-1	Babson CLO Ltd/Cayman Is-BABSN 2018-3A A2	1	23,000,000	(9,200)	(52,900)	(69,000)
CW		55821A-AE-8	Madison Park Funding Ltd-SERIES 18-28A CLASS B	1	9,500,000	(3,800)	(21,850)	(28,500)
CW		81883A-AC-3	Shackleton 2015-VII-R CL-SERIES 2015-7RA CLASS B	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		14311D-BC-9	CARLYLE GLOBAL MARKET ST-SERIES 15-1A CLASS BR	2	3,450,000	(1,380)	(7,935)	(10,350)
CW		28622J-AB-3	ARROWMARK COLORADO HOLDI-SERIES 17-7A CLASS B	1	4,000,000	(1,600)	(9,200)	(12,000)
CW		38138B-AG-5	Goldentree Loan Managem-GLM 2018-3A B1	1	6,000,000	(2,400)	(13,800)	(18,000)
CW		56608K-AA-1	Marble Point CLO XIV Ltd-MP14 2018-2A A	1	29,967,000	(11,987)	(68,924)	(89,901)
CW		87155M-AC-5	SYMPHONY CLO V LTD-SR SECD NT CL A-2 144A	1	9,690,309	(3,876)	(22,288)	(29,071)
CW		55818X-BA-0	MADISON PARK FUNDING LTD-SERIES 2015-16A CLASS BR	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		88432M-AC-8	WIND RIVER CLO LTD-WINDR 2017-1A B	1	11,050,000	(4,420)	(25,415)	(33,150)
CW		22615M-AL-6	Crestline Denali CLO XIV-SERIES16-1A CLASS A1R	1	23,000,000	(9,200)	(52,900)	(69,000)
CW		89852T-AN-8	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		87248K-AS-3	TICP CLO VI 2016-5 LTD-TICP 2016-5A A2R	1	3,000,000	(1,200)	(6,900)	(9,000)
CW		94950J-AA-9	Wellfleet CLO Ltd-SERIES 18-1A CLASS A	1	1,000,000	(400)	(2,300)	(3,000)
CW		40437L-AE-2	HPS LOAN MANAGEMENT 13-2-HLM 13A-18 A2	1	4,000,000	(1,600)	(9,200)	(12,000)
CW		92917A-AE-6	Voya CLO Ltd-SERIES 18-1A CLASS B	1	5,060,000	(2,024)	(11,638)	(15,180)
CW		94950J-AA-9	Wellfleet CLO Ltd-SERIES 18-1A CLASS A	1	59,000,000	(23,600)	(135,700)	(177,000)
CW		06759F-AB-2	BABSON CLO LTD 2015-II-SERIES 15-2A CLASS AR	1	14,200,000	(5,680)	(32,660)	(42,600)
CW		04017T-AE-9	Ares XXXIR CLO Ltd-SERIES 14-31RA CLASS B	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		55818Y-BE-0	MADISON PARK FUNDING LTD-SERIES 15-17A CLASS B1R	1	12,700,000	(5,080)	(29,210)	(38,100)
CW		12551R-AE-8	CIFC Funding 2018-I Ltd-SERIES 18-1A CLASS C	1	4,200,000	(1,680)	(9,660)	(12,600)
CW		08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2A	1	1,100,000	(440)	(2,530)	(3,300)
CW		09628N-AQ-5	BlueMountain CLO 2015-4 -SERIES 15-4A CLASS A2R	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		83609G-AN-5	SOUND POINT CLO IX LTD-SERIES 2015-2A CLASS B1R	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		38141G-VW-1	GOLDMAN SACHS GROUP INC-SENIOR UNSECURED	1	3,822,954	(1,529)	(8,793)	(11,469)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		63939F-AC-4	Navient Student Loan Tru-SERIES 15-1 CLASS B	1	12,272,369	(4,909)	(28,226)	(36,817)
CW		78447Y-AD-4	SLM STUDENT LOAN TRUST-SLMA 2013-3 B	1	8,906,411	(3,563)	(20,485)	(26,719)
CW		12550G-AE-3	CIFC Funding Ltd-CIFC 2018-5A B	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		55820T-AC-2	MADISON PARK FUNDING LTD-SERIES 2017-23A CLASS B	1	8,900,000	(3,560)	(20,470)	(26,700)
CW		33882G-AC-2	FLATIRON CLO LTD-FLAT 2017-1A C	1	8,650,000	(3,460)	(19,895)	(25,950)
CW		48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	1	1,000,000	(400)	(2,300)	(3,000)
CW		09626U-AQ-1	BLUEMOUNTAIN CLO LTD-BLUEM 2013-1A BR	1	4,250,000	(1,700)	(9,775)	(12,750)
CW		26249K-AM-3	DRYDEN SENIOR LOAN FUND-SERIES 2014-36A CLASS CR	1	6,350,000	(2,540)	(14,605)	(19,050)
CW		78447M-AD-0	SLM STUDENT LOAN TRUST-SERIES 2013-1 CLASS B	1	12,761,000	(5,104)	(29,350)	(38,283)
CW		75888M-AG-5	Regatta XIV Funding Ltd-SERIES 18-3A CLASS B	1	4,250,000	(1,700)	(9,775)	(12,750)
CW		04965F-AG-6	Regatta XIV Funding Ltd-SERIES 18-3A CLASS B	1	9,550,000	(3,820)	(21,965)	(28,650)
CW		55819B-AL-4	MADISON PARK FUNDING XVI-SERIES 15-18A CLASS A1R	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		63940A-AD-0	NAVIENT STUDENT LOAN TRU-SERIES 17-4A CLASS B	1	9,548,583	(3,819)	(21,962)	(28,646)
CW		00191Y-AM-6	ARES CLO LTD-SERIES 2015 1-A CLASS A2R	1	9,600,000	(3,840)	(22,080)	(28,800)
CW		26245C-AE-3	DRYDEN SENIOR LOAN FUND-SERIES 2016-43A CLASS B	1	7,500,000	(3,000)	(17,250)	(22,500)
CW		08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2A	1	1,100,000	(440)	(2,530)	(3,300)
CW		13876J-AE-2	Canyon Capital CLO Ltd-CANYC 2012-1RA B	1	2,500,000	(1,000)	(5,750)	(7,500)
CW		77342K-AC-4	Rockford Tower CLO 2018-2 Ltd	1	6,400,000	(2,560)	(14,720)	(19,200)
CW		24380L-AE-3	DEER CREEK CLO LTD 2017-SERIES 17-1A CLASS B	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		04624W-AC-1	ASSURANT CLO III LTD-SERIES 2018-2A CLASS A	1	30,000,000	(12,000)	(69,000)	(90,000)
CW		48249V-AQ-4	KKR FINANCIAL CLO LTD-SERIES 13-1A CLASS A2R	1	13,570,000	(5,428)	(31,211)	(40,710)
CW		08179H-AB-6	BENEFIT STREET PARTNERS -SERIES 2017-12A CLASS A2	1	4,850,000	(1,940)	(11,155)	(14,550)
CW		87232A-AE-4	TFLAT 2018-1A B	2	10,000,000	(4,000)	(23,000)	(30,000)
CW		78442G-PL-4	SLM STUDENT LOAN TRUST-SERIES 2005-4 CLASS B	1	10,643,801	(4,258)	(24,481)	(31,931)
CW		10302V-BC-8	BOWMAN PARK CLO LTD-BOWPK 2014-1A B1R	1	8,920,000	(3,568)	(20,516)	(26,760)
CW		674000-AQ-7	OAKTREE CLO LTD-SERIES 14-1A CLASS A2R	1	6,850,000	(2,740)	(15,755)	(20,550)
CW		88433R-AE-2	WIND RIVER CLO LTD-SERIES 17-2A CLASS B	1	6,840,000	(2,736)	(15,732)	(20,520)
CW		50188Y-AB-0	LCM LTD PARTNERSHIP-LCM 24A B	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2A	1	1,100,000	(440)	(2,530)	(3,300)
CW		05875H-AE-3	Ballyrock CLO 2018-1 Ltd-SERIES 2018-1A CLASS B	1	4,600,000	(1,840)	(10,580)	(13,800)
CW		12548J-AE-2	CIFC FUNDING LTD-SERIES 17-3A CLASS A2	1	5,400,000	(2,160)	(12,420)	(16,200)
CW		74988L-AC-8	ALM XIV Ltd-SERIES 14-14A CLASS A2R2	1	11,900,000	(4,760)	(27,370)	(35,700)
CW		00191Y-AP-9	ARES CLO LTD-SERIES 2015 1-A CLASS B2R	1	3,050,000	(1,220)	(7,015)	(9,150)
CW		50184K-AW-8	LCM LTD PARTNERSHIP-SERIES 13A CLASS CR	1	4,500,000	(1,800)	(10,350)	(13,500)
CW		08181L-AA-5	BENEFIT STREET PARTNERS -BSP 2016-10A A1	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		08181B-AS-8	Benefit Street Partners -SERIES 16-9A CLASS BR	1	11,200,000	(4,480)	(25,760)	(33,600)
CW		94951D-AC-7	Wellfleet CLO 2018-3 Ltd-SERIES 18-3A CLASS A1B	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		05875F-AC-1	BALLYROCK LTD-SERIES 16-1A CLASS B1	1	3,900,000	(1,560)	(8,970)	(11,700)
CW		36248M-AJ-6	GT Loan Financing I Ltd -SERIES 2013-1A CLASS AR	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		14315J-MM-8	Carlyle US CLO 2013-2 Re Term Loan	1	21,032,568	(8,413)	(48,375)	(63,098)
CW		74982L-AS-9	RACE POINT CLO LTD-SERIES 13-8A CLASS CR	1	7,550,000	(3,020)	(17,365)	(22,650)
CW		64131Q-AC-4	NEUBERGER BERMAN LOAN AD-SERIES 2017-26A CLASS B	1	5,850,000	(2,340)	(13,455)	(17,550)
CW		67707C-AE-8	Oak Hill Credit Partners-OAKC 2014-10RA A2A	1	9,900,000	(3,960)	(22,770)	(29,700)
CW		67104L-AF-4	OHA Loan Funding 2013-2 -HALF 2013-2A BR	1	25,000,000	(10,000)	(57,500)	(75,000)
CW		38137P-AU-4	GALAXY CLO LTD-GALXY 2014-18A AR	1	13,850,000	(5,540)	(31,855)	(41,550)
CW		941848-D@-9	Waters Corporation Gtd Senior Note Series H	2	2,000,000	(800)	(4,600)	(6,000)
CW		74988L-AJ-3	ALM XIV Ltd-SERIES 14-14A CLASS BR2	2	3,800,000	(1,520)	(8,740)	(11,400)
CW		55820J-AC-4	MADISON PARK FUNDING LTD-SERIES 2016-21A CLASS A2	1	14,300,000	(5,720)	(32,890)	(42,900)
CW		48250W-AJ-4	KKR CLO 14 Ltd-KKR 14 BR	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		87248K-AS-3	TICP CLO VI 2016-5 LTD-TICP 2016-5A A2R	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		020053-AS-3	ALM LOAN FUNDING-SERIES 13-8A CLASS A1R	1	4,350,000	(1,740)	(10,005)	(13,050)
CW		63939F-AC-4	Navient Student Loan Tru-SERIES 15-1 CLASS B	1	1,022,697	(409)	(2,352)	(3,068)
CW		59983H-AB-5	MILL CREEK CLO II LTD-SR SECD NT CL B-1 144A	1	8,700,000	(3,480)	(20,010)	(26,100)
CW		28622J-AB-3	ARROWMARK COLORADO HOLDI-SERIES 17-7A CLASS B	1	4,000,000	(1,600)	(9,200)	(12,000)
CW		38137P-AS-9	Goldentree Loan Opportun-SERIES 2015-10A CLASS AJR	1	8,800,000	(3,520)	(20,240)	(26,400)
CW		92916M-AC-5	VOYA CLO LTD-VOYA 2017-1A B	1	7,400,000	(2,960)	(17,020)	(22,200)
CW		69689A-AN-0	PALMER SQUARE CLO LTD-SERIES 15-1A CLASS A2R	1	5,350,000	(2,140)	(12,305)	(16,050)
CW		55819T-AU-5	Madison Park Funding XX -SERIES 2016-20A CLASS CR	1	7,500,000	(3,000)	(17,250)	(22,500)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		03328Y-AE-4	Anchorage Capital CLO Lt-ANCHC 2018-1RA B	1	13,900,000	(5,560)	(31,970)	(41,700)
CW		09626J-AN-8	BLUEMOUNTAIN CLO LTD-BLUEM 2013-1A A2R	1	12,740,000	(5,096)	(29,302)	(38,220)
CW		46616K-AE-4	JFIN CLO 2013 LTD SR SECD DEF NT CL B	1	10,025,949	(4,010)	(23,060)	(30,078)
CW		83608G-AQ-9	Sound Point CLO II Ltd-SNDPT 2013-1A A2R	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		05682Y-AC-9	Bain Capital Credit CLO -SERIES 18-2A CLASS A2	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		50188Q-AE-1	LCM XIX LTD PARTNERSHIP DEF MEZZ NT CL C	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		00900P-AE-5	AIMCO CLO Series 2018-B-SERIES 18-BA CLASS B	1	8,300,000	(3,320)	(19,090)	(24,900)
CW		08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2A	1	1,100,000	(440)	(2,530)	(3,300)
CW		87248W-AC-2	TICP CLO VIII LTD-SERIES 2017-8A CLASS A2	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		674000-AS-3	OAKTREE CLO LTD-SERIES 14-1A CLASS BR	1	3,430,000	(1,372)	(7,889)	(10,290)
CW		48251F-AB-7	KKR FINANCIAL CLO LTD-SERIES 17 CLASS B	1	5,900,000	(2,360)	(13,570)	(17,700)
CW		92917J-AE-7	Voya CLO 2018-2 Ltd-VOYA 2018-2A B1	1	12,000,000	(4,800)	(27,600)	(36,000)
CW		14315C-ZZ-0	Carlyle US CLO 2017-4 Ri Term Loan	1	22,650,000	(9,060)	(52,095)	(67,950)
CW		55953E-AN-0	MAGNETITE CLO LTD-SERIES 14-11A CLASS BR	1	6,830,000	(2,732)	(15,709)	(20,490)
CW		12550Y-AG-9	CIFC FUNDING LTD-CIFC 2017-2A C	1	5,600,000	(2,240)	(12,880)	(16,800)
CW		09629C-AE-5	BLUEMOUNTAIN CLO LTD-SERIES 17-1A CLASS B	1	4,280,000	(1,712)	(9,844)	(12,840)
CW		00163K-AS-7	ALM LOAN FUNDING-ALM 2013-7RA A2R	1	4,250,000	(1,700)	(9,775)	(12,750)
CW		81883A-AC-3	Shackleton 2015-VII-R CL-SERIES 2015-7RA CLASS B	1	6,000,000	(2,400)	(13,800)	(18,000)
CW		77342J-AC-7	Rockford Tower CLO 2018-SERIES 18-1A CLASS B	1	7,500,000	(3,000)	(17,250)	(22,500)
CW		94951M-AC-7	WELLFLEET CLO 2017-2 LTD-SERIES 17-2A CLASS A2	1	6,100,000	(2,440)	(14,030)	(18,300)
CW		64130H-AE-1	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A C	1	4,330,000	(1,732)	(9,959)	(12,990)
CW		64129J-AQ-3	NEUBERGER BERMAN CLO LTD-NEUB 2013-14A A1R	1	13,560,000	(5,424)	(31,188)	(40,680)
CW		74992*-AD-7	RXR Realty, LLC Senior Secured	2	17,970,000	(7,188)	(41,331)	(53,910)
CW		50188G-AX-1	LCM XVIII LP-LCM 18A A2R	1	18,500,000	(7,400)	(42,550)	(55,500)
CW		27830B-AQ-7	EATON VANCE CDO LTD-SERIES 2013-1A CLAS A2R	1	12,750,000	(5,100)	(29,325)	(38,250)
CW		67102Q-AK-4	OHA CREDIT PARTNERS LTD-SERIES 2012-7A CLASS B1R	1	12,800,000	(5,120)	(29,440)	(38,400)
CW		62848F-AC-6	MYERS PARK CLO LTD-MYERS 2018-1A A2	1	2,000,000	(800)	(4,600)	(6,000)
CW		83609Y-AC-0	Sounds Point CLO IV-R LT-SERIES 13-3RA CLASS A	1	26,000,000	(10,400)	(59,800)	(78,000)
CW		78442G-QA-7	SLM STUDENT LOAN TRUST-SERIES 2005-6 CLASS B	1	6,454,437	(2,582)	(14,845)	(19,363)
CW		74982L-AQ-3	RACE POINT CLO LTD-SERIES 13-8A CLASS BR	1	10,775,000	(4,310)	(24,782)	(32,325)
CW		14315J-RR-2	Carlyle US CLO 2013-4 Re Term Loan	1	15,350,000	(6,140)	(35,305)	(46,050)
CW		55820R-AG-7	MADISON PARK FUNDING LTD-SERIES 17-25A CLASS C	2	4,450,000	(1,780)	(10,235)	(13,350)
CW		55954K-AE-5	MAGNETITE CLO LTD-SERIES 2017-19A CLASS C	1	1,950,000	(780)	(4,485)	(5,850)
CW		14311C-RR-1	Carlyle US CLO 2017-1 Ri Term Loan	1	22,850,000	(9,140)	(52,555)	(68,550)
CW		033292-AS-2	ANCHORAGE CAPITAL CLO 20-SERIES 13-1A CLASS A2R	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		00900A-AN-8	AIMCO-SERIES 14-AA CLASS C1R	1	5,190,000	(2,076)	(11,937)	(15,570)
CW		50188Q-AC-5	LCM XIX LTD PARTNERSHIP SR NT CL B	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		06761C-AC-3	Babson CLO Ltd 2016-II-BABSN 2016-2A BR	1	3,300,000	(1,320)	(7,590)	(9,900)
CW		89852T-AN-8	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	1	1,000,000	(400)	(2,300)	(3,000)
CW		13876J-AE-2	Canyon Capital CLO Ltd-CANVC 2012-1RA B	1	1,000,000	(400)	(2,300)	(3,000)
CW		67110H-AA-6	OZLM XIV LTD SR SECD NT CL A-1A	1	28,800,000	(11,520)	(66,240)	(86,400)
CW		08179C-AE-1	BENEFIT STREET PARTNERS -BSP 2017-11A A2A	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		05875H-AC-7	BALLYROCK CLO 2018-1 LTD-SERIES 2018-1A CLASS A2	1	13,900,000	(5,560)	(31,970)	(41,700)
CW		62848F-AC-6	MYERS PARK CLO LTD-MYERS 2018-1A A2	1	1,000,000	(400)	(2,300)	(3,000)
CW		56607F-AA-3	Marble Point CLO XI Ltd-MP11 2017-2A A	1	21,900,000	(8,760)	(50,370)	(65,700)
CW		66704J-BD-9	NORTHSTAR EDUCATION FINA-SERIES 04-2 CLASS B	1	19,113,458	(7,645)	(43,961)	(57,340)
CW		66704J-BK-3	NORTHSTAR EDUCATION FINA-SERIES 05-1 CLASS B	1	16,555,191	(6,622)	(38,077)	(49,666)
CW		94950J-AC-5	Wellfleet CLO Ltd-SERIES 18-1A CLASS B	1	3,500,000	(1,400)	(8,050)	(10,500)
CW		22615E-AE-0	Crestline Denali CLO Ltd-SERIES 2018-1A CLASS C	1	3,200,000	(1,280)	(7,360)	(9,600)
CW		62848F-AC-6	MYERS PARK CLO LTD-MYERS 2018-1A A2	1	1,000,000	(400)	(2,300)	(3,000)
CW		01750C-AA-1	Allegro CLO VII Ltd-ALLEG 2018-1A A	1	34,500,000	(13,800)	(79,350)	(103,500)
CW		48250W-AG-0	KKR CLO 14 Ltd-KKR 14 AR	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		941848-D8-9	Waters Corporation Gtd Senior Note Series H	2	7,100,000	(2,840)	(16,330)	(21,300)
CW		14314L-AE-5	Carlyle Global Market St-CGMS 2014-2RA A2	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		126612-AJ-9	CVP CASCADE CLO LTD-CVPC 2013-GL01 A1R	1	26,223,664	(10,489)	(60,314)	(78,671)
CW		26251L-AC-8	DRYDEN 64 CLO LTD-DRSLF 2018-64A A	1	22,850,000	(9,140)	(52,555)	(68,550)
CW		06761C-AC-3	Babson CLO Ltd 2016-II-BABSN 2016-2A BR	1	3,300,000	(1,320)	(7,590)	(9,900)
CN		Q3915#-AB-2	Fletcher Building Intern Gtd Senior Note	2	23,500,000			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		92915Q-AE-3	VOYA CLO LTD-SERIES 2017-3A CLASS A1B	1	6,800,000	(2,720)	(15,640)	(20,400)
CW		88434G-AC-9	THL CREDIT WIND RIVER 20-SERIES 2017-3A CLASS B	1	6,780,000	(2,712)	(15,594)	(20,340)
CW		48249V-AS-0	KKR FINANCIAL CLO LTD-SERIES 13-1A CLASS BR	1	4,920,000	(1,968)	(11,316)	(14,760)
CW		55818Y-BA-8	MADISON PARK FUNDING LTD-SERIES 15-17A CLASS AR	1	21,100,000	(8,440)	(48,530)	(63,300)
CW		48249V-AN-1	KKR FINANCIAL CLO LTD-SERIES 13-1A CLASS A1R	1	21,015,000	(8,406)	(48,335)	(63,045)
CW		22616C-AA-1	CRESTLINE DENALI CLO XV -SERIES 17-1A CLASS A	1	20,800,000	(8,320)	(47,840)	(62,400)
CW		48250W-AG-0	KKR CLO 14 Ltd-KKR 14 AR	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		55818P-AS-9	MADISON PARK FUNDING LTD-MDPK 2014-12A CR	1	12,200,000	(4,880)	(28,060)	(36,600)
CW		346845-AC-4	FORT BENNING FAM-UNSECURED	1	20,124,711	(8,050)	(46,287)	(60,374)
CW		14311D-AY-2	CARLYLE GLOBAL MARKET ST-SERIES 15-1A CLASS BR	1	11,800,000	(4,720)	(27,140)	(35,400)
CW		38021X-AB-8	GOAL STRUCTURED SOLUTION-SERIES 2016-A CLASS A2	1	11,217,330	(4,487)	(25,800)	(33,652)
CW		16892D-AC-2	CHINA SOUTHERN POWER GRI-SENIOR UNSECURED	1	44,744,657	(17,898)	(102,913)	(134,234)
CW		29365T-AA-2	ENTERGY TEXAS INC-NOTE	1	4,001,957	(1,601)	(9,205)	(12,006)
CW		883310-AC-8	THAYER PARK CLO LTD.-THAYR 2017-1A A2	1	10,850,000	(4,340)	(24,955)	(32,550)
CW		77277L-GO-1	ROCKALL CLO BV EURO CL VF-1 SR SECD VAR FDG NT	1	11,148,009	(4,459)	(25,640)	(33,444)
CW		13876J-AC-6	Canyon Capital CLO Ltd-CANYC 2012-1RA A	1	45,000,000	(18,000)	(103,500)	(135,000)
CW		40436V-AC-5	HIGHBRIDGE LOAN MANAGEME-HLM 11A-17 C	1	9,100,000	(3,640)	(20,930)	(27,300)
CW		50184N-AP-7	LCM LTD PARTNERSHIP-SERIES 15A CLASS CR	1	8,950,000	(3,580)	(20,585)	(26,850)
CW		65341K-AJ-5	NEXTGEAR FLOORPLAN MASTE-SERIES 2016-1A CLASS A1	1	4,600,000	(1,840)	(10,580)	(13,800)
CW		75884B-AC-2	Regatta X Funding Ltd-SERIES 2017-3A CLASS B	1	13,100,000	(5,240)	(30,130)	(39,300)
CW		42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	44,981,404	(17,993)	(103,457)	(134,944)
CW		14315J-ZZ-5	Carlyle US CLO 2017-2 Ri Term Loan	1	23,007,143	(9,203)	(52,916)	(69,021)
CW		67105V-AW-4	OHA CREDIT PARTNERS LTD-OAKC 2013-9A B1R	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		77342J-AA-1	Rockford Tower CLO 2018-SERIES 18-1A CLASS A	1	50,000,000	(20,000)	(115,000)	(150,000)
CW		64130P-AE-3	Neuberger Berman CLO Ltd-NEUB 2018-28A B	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		13080B-AB-7	SYMPHONY CLO LTD-SERIES 13-12A CLASS B1R	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		39808P-AL-0	Greywolf CLO V Ltd-GWOLF 2015-1A A1R	1	19,900,000	(7,960)	(45,770)	(59,700)
CW		04017Q-AE-5	ARES CLO Ltd-SERIES 18-28RA CLASS B	1	9,000,000	(3,600)	(20,700)	(27,000)
CW		42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	28,888,057	(11,555)	(66,443)	(86,664)
CW		83715R-AG-7	SOUTH CAROLINA STUDENT L-SERIES 2014-1 CLASS B	1	17,078,152	(6,831)	(39,280)	(51,234)
CW		17181T-AA-9	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A1	1	3,998,116	(1,599)	(9,196)	(11,994)
CW		38021B-AG-5	GOAL CAPITAL FUNDING TRU-SERIES 2006-1 CLASS B	1	6,470,392	(2,588)	(14,882)	(19,411)
CW		429827-AS-7	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS B2	1	4,174,286	(1,670)	(9,601)	(12,523)
CW		69703P-AC-3	Palmer Square CLO 2018-1-PLMRS 2018-1A A2	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		06760E-AE-6	Babson CLO Ltd 2013-1-SERIES 2013-1A CLASS CR	1	9,050,000	(3,620)	(20,815)	(27,150)
CW		63940D-AD-4	Navient Student Loan Tru-SERIES 18-1A CLASS B	1	9,500,000	(3,800)	(21,850)	(28,500)
CW		64131T-AG-9	Neuberger Berman CLO XVI-SERIES 17-16SA CLASS C	1	7,750,000	(3,100)	(17,825)	(23,250)
CW		03330A-AE-2	Anchorage Capital CLO 3-ANCHC 2014-3RA C	1	7,500,000	(3,000)	(17,250)	(22,500)
CW		38137H-BW-7	Goldentree Loan Opportun-SERIES 2015-11A CLASS BR2	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		39808P-AN-6	Greywolf CLO V Ltd-GWOLF 2015-1A A2R	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		06760G-AC-5	Barings CLO Ltd 2018-1-SERIES 18-1A CLASS B	1	8,050,000	(3,220)	(18,515)	(24,150)
CW		01749B-AC-3	Allegro CLO VI Ltd-ALLEG 2017-2A C	1	5,800,000	(2,320)	(13,340)	(17,400)
CW		06760X-AC-8	BARINGS CLO LTD 2018-IV-SERIES 18-4A CLASS A2	1	16,000,000	(6,400)	(36,800)	(48,000)
CW		55818R-BC-9	Madison Park Funding XIV-MDPK 2014-14A CRR	1	8,650,000	(3,460)	(19,895)	(25,950)
CW		784424-AE-3	SLC STUDENT LOAN TRUST 2-SERIES 07-1 CLASS B	1	2,468,612	(987)	(5,678)	(7,406)
CW		67091H-AK-7	OHA LOAN FUNDING LTD-OHALF 2012-1A B1R	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		09628W-AC-6	BLUEMOUNTAIN CLO LTD-SERIES 16-2A CLASS A2	1	14,600,000	(5,840)	(33,580)	(43,800)
CW		69688A-AA-9	Palmer Square CLO 2013-2-SERIES 13-2A CLASS AARR	1	16,000,000	(6,400)	(36,800)	(48,000)
CW		11014P-AB-1	BRISTOL PARK CLO LTD-SERIES 2016-1A CLASS B	1	13,850,000	(5,540)	(31,855)	(41,550)
CW		056828-AC-0	BAIN CAPITAL CREDIT CLO -SERIES BCC 2016-2A CLASS B	1	12,150,000	(4,860)	(27,945)	(36,450)
CW		23340L-AA-2	DRB PRIME STUDENT LOAN T-SERIES 2015-B CLASS A1	1	3,479,822	(1,392)	(8,004)	(10,439)
CW		22101H-AA-6	CORVIAS CAMPUS LIVING - HU, LLC - Sr Secd Note	2	67,500,000	(27,000)	(155,250)	(202,500)
CW		858102-AX-4	Steele Creek CLO 2016-1 -SERIES 2016-1A CLASS AR	1	133,500,000	(53,400)	(307,050)	(400,500)
CW		04625A-AC-8	ASSURANT CLO I LTD-SERIES 17-1A CLASS B	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		48250W-AG-0	KKR CLO 14 Ltd-KKR 14 AR	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		85816W-AC-8	Steele Creek CLO 2014-1 -SERIES 14-1RA CLASS A	1	130,000,000	(52,000)	(299,000)	(390,000)
CW		88322U-AM-1	THACHER PARK CLO-THRPK 2014-1A BR	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		41154X-AG-0	Harbor Park CLO, Ltd-HARB-HARB 2018-1A B1	1	5,200,000	(2,080)	(11,960)	(15,600)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		17181T-AA-9	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A1	1	4,997,645	(1,999)	(11,495)	(14,993)
CW		04943A-AC-3	ATLAS SENIOR LOAN FUND L-SERIES 2017-8A CLASS B	1	25,300,000	(10,120)	(58,190)	(75,900)
CW		87159Q-BG-2	SYMPHONY CLO LTD-SYMP 2014-14A B1R	1	12,800,000	(5,120)	(29,440)	(38,400)
CW		64301U-AH-7	Harbour Aircraft Investm Series 2017-1 C	1	24,144,529	(9,658)	(55,532)	(72,434)
CW		67104L-AE-7	OHA Loan Funding 2013-2 -OHALF 2013-2A AR	1	79,100,000	(31,640)	(181,930)	(237,300)
CW		94949R-AW-7	Wellfleet CLO 2016-1 Ltd-WELF 2016-1A CR	1	4,000,000	(1,600)	(9,200)	(12,000)
CW		42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	44,981,404	(17,993)	(103,457)	(134,944)
CW		67818N-ZZ-5	SASOL CHEMICALS (USA) LL TERM LOAN	2	17,316,316	(6,927)	(39,828)	(51,949)
CW		00764M-GG-6	AEGIS ASSET BACKED SECUR-SERIES 2005-4 CLASS M1	1	6,123,240	(2,449)	(14,083)	(18,370)
CW		247358-CC-6	EAIV Delta MSN 15181	1	4,145,899	(1,658)	(9,536)	(12,438)
CW		67707C-AJ-7	Oak Hill Credit Partners-OAKC 2014-10RA B	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		64130H-AA-9	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A A	1	13,560,000	(5,424)	(31,188)	(40,680)
CW		64130H-AC-5	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A B1	1	13,600,000	(5,440)	(31,280)	(40,800)
CW		817176-AN-0	SENECA PARK CLO LTD-SPARK 2014-1A B1R	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		50512#-AE-2	LA Stadium Finance Compa Senior Secured	2	15,800,000	(6,320)	(36,340)	(47,400)
CW		64033L-AD-2	NELNET STUDENT LOAN TRUS-SERIES 2014-2A CLASS B	1	4,911,579	(1,965)	(11,297)	(14,735)
CW		05363U-AS-2	AVERY POINT CLO LTD-SERIES 14-1A CLASS AR	1	104,754,822	(41,902)	(240,936)	(314,264)
CW		17181T-AA-9	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A1	1	5,597,362	(2,239)	(12,874)	(16,792)
CW		38176D-AJ-8	Golub Capital Partners C-GOCAP 2015-26A A2R	1	27,700,000	(11,080)	(63,710)	(83,100)
CW		77277L-BB-9	ROCKALL CLO BV Variable Funding Note - GBP	1	27,953,783	(11,182)	(64,294)	(83,861)
CW		03765W-BC-1	Apollo Credit Funding IV-SERIES 4A CLASS A1BR	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		04016P-AC-2	ARES CLO LTD-SERIES 17-43A CLASS B	1	13,570,000	(5,428)	(31,211)	(40,710)
CW		22616C-AC-7	CRESTLINE DENALI CLO XV -SERIES 17-1A CLASS B	1	13,570,000	(5,428)	(31,211)	(40,710)
CW		77342K-AA-8	ROCKFORD TOWER CLO 2018-ROCKT 2018-2A A	1	13,560,506	(5,424)	(31,189)	(40,682)
CW		05683L-AG-1	Bain Capital Credit CLO -SERIES 1A CLASS C	1	3,900,000	(1,560)	(8,970)	(11,700)
CW		67707B-AB-6	OHA Credit Partners XV L-SERIES 17-15A CLASS B	1	13,100,000	(5,240)	(30,130)	(39,300)
CW		75888F-AE-5	Regatta XIII Funding LLC-SERIES 18-2A CLASS A2	1	13,300,000	(5,320)	(30,590)	(39,900)
CW		67115W-AG-5	OHA Credit Funding 1 LTD-SERIES 18-1A CLASS B	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		17180W-AC-9	CIFC Funding 2018-II Ltd-CIFC 2018-2A A2	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		03329A-AE-5	Anchorage Capital CLO Lt-SERIES 2014-5RA CLASS B	1	13,500,000	(5,400)	(31,050)	(40,500)
CW		247361-PP-9	DELTA AIR LINES INC AIRBUS A330-200 N856NW	1	10,751,509	(4,301)	(24,728)	(32,255)
CW		14315J-AL-3	CARLYLE GLOBAL MARKET ST-SERIES 17-2A CLASS A1B	1	35,000,000	(14,000)	(80,500)	(105,000)
CW		40436X-AG-2	HIGHBRIDGE LOAN MANAGEME-SERIES 2014 CLASS BR	1	5,900,000	(2,360)	(13,570)	(17,700)
CW		553205-AC-9	MP CLO III LTD-MP3 2013-1A AR	1	14,500,000	(5,800)	(33,350)	(43,500)
CW		36248M-AJ-6	GT Loan Financing I Ltd -SERIES 2013-1A CLASS AR	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		48251M-AS-5	KKR CLO 15 Ltd-KKR 15 A2R	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		88433R-AC-6	WIND RIVER CLO LTD-SERIES 17-2A CLASS A	1	19,590,000	(7,836)	(45,057)	(58,770)
CW		04016P-AA-6	ARES CLO LTD-ARES 2017-43A A	1	19,500,000	(7,800)	(44,850)	(58,500)
CW		15032T-AW-6	CEDAR FUNDING LTD-SERIES 13-1A CLASS BR	1	8,500,000	(3,400)	(19,550)	(25,500)
CW		12551J-AE-6	CIFC FUNDING LTD-SERIES 17-4A CLASS A2	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		06760B-AJ-1	BABSON CLO LTD-SERIES 17-1A CLASS C	1	5,100,000	(2,040)	(11,730)	(15,300)
CW		566061-AE-7	MARBLE POINT CLO X LTD-SERIES 2017-1A CLASS B	1	5,100,000	(2,040)	(11,730)	(15,300)
CW		55818Y-BG-5	MADISON PARK FUNDING LTD-SERIES 15-17A CLASS CR	1	3,400,000	(1,360)	(7,820)	(10,200)
CW		67102Q-AP-3	OHA CREDIT PARTNERS LTD-SERIES 2012-7A CLASS CR	1	2,975,000	(1,190)	(6,843)	(8,925)
CW		87231L-AC-5	TCI-CENT CLO 2016-1 LTD -TCENT 2016-1A A2	1	6,540,000	(2,616)	(15,042)	(19,620)
CW		94950G-AA-5	WELLFLEET CLO LTD-WELF 2017-1A A1	1	9,250,000	(3,700)	(21,275)	(27,750)
CW		41154X-AL-9	Harbor Park CLO, Ltd-HARB 2018-1A C	1	4,000,000	(1,600)	(9,200)	(12,000)
CW		04014W-AL-9	ARES CLO LTD-ARES 2014-1A A2R	1	17,000,000	(6,800)	(39,100)	(51,000)
CW		85816L-AA-6	Steele Creek Clo 2018-2 -SERIES 2018-2A CLASS A	1	15,981,866	(6,393)	(36,758)	(47,946)
CW		14315J-SS-9	Carlyle US CLO 2013-1 Re Term Loan	1	22,550,000	(9,020)	(51,865)	(67,650)
CW		55818P-AN-0	MADISON PARK FUNDING LTD-MDPK 2014-12A B1R	1	17,000,000	(6,800)	(39,100)	(51,000)
CW		55820N-AE-1	MADISON PARK FUNDING LTD-MDPK 2016-24A C1	1	8,125,000	(3,250)	(18,688)	(24,375)
CW		38136F-AL-7	Goldentree Loan Managem-GLM 2017-1A C	1	6,900,000	(2,760)	(15,870)	(20,700)
CW		50184N-AN-2	LOM LTD PARTNERSHIP-SERIES 15A CLASS BR	1	5,650,000	(2,260)	(12,995)	(16,950)
CW		61945C-AA-1	MOSAIC CO/THE-SENIOR UNSECURED NOTE	2	9,077,958	(3,631)	(20,879)	(27,234)
CW		67332#-AG-8	RRPF Engine Leasing Ltd Senior Secured	2	23,000,000	(9,200)	(52,900)	(69,000)
CW		04017Q-AE-5	ARES CLO Ltd-SERIES 18-28RA CLASS B	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		75888K-AC-8	REGATTA VIII FUNDING LTD-SERIES 2017-1A CLASS B	1	7,600,000	(3,040)	(17,480)	(22,800)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		00900C-AA-2	AIMCO-AIMCO 2017-AA A	1	7,460,000	(2,984)	(17,158)	(22,380)
CW		04017T-AC-3	Ares XXXIR CLO Ltd-SERIES 14-31RA CLASS A2	1	28,400,000	(11,360)	(65,320)	(85,200)
CW		26244Q-AB-9	DRYDEN SENIOR LOAN FUND-SERIES 17-49A CLASS B	1	11,806,084	(4,722)	(27,154)	(35,418)
CW		42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	41,982,644	(16,793)	(96,560)	(125,948)
CW		05683H-AC-9	BAIN CAPITAL CREDIT CLO -SERIES 2017-2A CLASS AR	1	12,500,000	(5,000)	(28,750)	(37,500)
CW		88432U-AE-6	Wind River CLO Ltd-SERIES 18-3A CLASS B	2	9,500,000	(3,800)	(21,850)	(28,500)
CW		247358-XT-6	EAIV Delta MSN 15166	1	4,071,125	(1,628)	(9,364)	(12,213)
CW		91754R-ZG-5	STATE BOARD OF REGENTS 0-SERIES USBR 2017-1 CLASS B	1	6,964,550	(2,786)	(16,018)	(20,894)
CW		78443K-AK-2	SLM STUDENT LOAN TRUST 2-SERIES 06-9 CLASS B	1	5,291,202	(2,116)	(12,170)	(15,874)
CW		87248K-AL-8	TICP CLO VI 2016-5 Ltd-TICP 2016-5A BR	1	15,200,000	(6,080)	(34,960)	(45,600)
CW		57643L-FG-6	MASTR ASSET BACKED SECUR-SERIES 2004-OPT2 CLASS A1	1	4,599,298	(1,840)	(10,578)	(13,798)
CW		03766G-AG-7	APIDOS CLO-SERIES 17-26A CLASS B	1	5,295,000	(2,118)	(12,179)	(15,885)
CW		55819X-AC-6	Madison Park Funding XXI-MDPK 2016-22A B	1	11,987,554	(4,795)	(27,571)	(35,963)
CW		33882G-AA-6	FLATIRON CLO LTD-FLAT 2017-1A A	1	16,300,000	(6,520)	(37,490)	(48,900)
CW		150323-AQ-6	CEDAR FUNDING LTD-SERIES 14-4A CLASS BR	1	16,280,000	(6,512)	(37,444)	(48,840)
CW		04943A-AE-9	ATLAS SENIOR LOAN FUND L-SERIES 17-8A CLASS C	1	9,410,000	(3,764)	(21,643)	(28,230)
CW		44330G-AE-3	Highbridge Loan Manageme-SERIES 4A-2014 CLASS A2R	1	11,900,000	(4,760)	(27,370)	(35,700)
CW		76761R-AE-9	Riserva Clo Ltd-SERIES 2016-3A CLASS C1	1	4,250,000	(1,700)	(9,775)	(12,750)
CW		87231L-AA-9	TCI-CENT CLO 2016-1 LTD.-TCENT 2016-1A A1	1	8,500,000	(3,400)	(19,550)	(25,500)
CW		62848F-AC-6	MYERS PARK CLO LTD-MYERS 2018-1A A2	1	1,000,000	(400)	(2,300)	(3,000)
CW		00900P-AG-0	AIMCO CLO Series 2018-B-SERIES 18-8A CLASS C	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		78443G-AJ-4	SLM STUDENT LOAN TRUST 2-SERIES 06-7 CLASS B	1	10,941,399	(4,377)	(25,165)	(32,824)
CW		92916Q-AC-6	VOYA CLO 2017-4 LTD-SERIES 17-4A CLASS B	1	7,900,000	(3,160)	(18,170)	(23,700)
CW		14314B-AC-1	CARLYLE GLOBAL MARKET ST-CGMS 2017-1A A2	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		85816B-CQ-1	STEELE CREEK CLO LTD-SERIES 15-1A CLASS BR	1	8,560,000	(3,424)	(19,688)	(25,680)
CW		92912V-AN-5	VOYA CLO LTD-VOYA 2014-2A A1R	1	9,050,000	(3,620)	(20,815)	(27,150)
CW		126612-AJ-9	CVP CASCADE CLO LTD-CVPC 2013-CL01 A1R	1	60,500,000	(24,200)	(139,150)	(181,500)
CW		398080-AN-1	GREYWOLF CLO LTD-SERIES 2014-2A CLASS BR	1	6,800,000	(2,720)	(15,640)	(20,400)
CW		00900A-AJ-7	AIMCO-SERIES 14-AA CLASS B1R	1	6,800,000	(2,720)	(15,640)	(20,400)
CW		67112K-AB-5	OCP CLO Ltd-SERIES 18-15A CLASS A2	1	14,250,000	(5,700)	(32,775)	(42,750)
CW		06761C-AC-3	Babson CLO Ltd 2016-II-BABSN 2016-2A BR	2	3,300,000	(1,320)	(7,590)	(9,900)
CW		06759Y-AA-3	BARINGS CLO LTD-BABSN 2016-3A A1	1	14,100,000	(5,640)	(32,430)	(42,300)
CW		14954W-AQ-9	BAIN CAPITAL CREDIT CLO -SERIES 2017-2A CLASS CR	1	2,350,000	(940)	(5,405)	(7,050)
CW		045487-AA-3	ASSOC BANC-CORP-SR UNSECURED	2	2,652,876	(1,061)	(6,102)	(7,959)
CW		94949J-AA-3	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A1	1	22,469,287	(8,988)	(51,679)	(67,408)
CW		74988L-AA-2	ALM XIV Ltd-SERIES 14-14A CLASS A1R2	1	15,900,000	(6,360)	(36,570)	(47,700)
CW		06760G-AA-9	Barings CLO Ltd 2018-I-SERIES 18-1A CLASS A1	1	16,475,000	(6,590)	(37,893)	(49,425)
CW		42086Q-AA-9	Kingsland VI Ltd-KING 2013-6A AR	1	100,000,000	(40,000)	(230,000)	(300,000)
CW		Z22066-36-8	AUST & NZ BANKING GROUP-SUBORDINATED NOTE	1	21,465,000	(8,586)	(49,370)	(64,395)
CW		48252Y-AE-9	KKR CLO 23 Ltd-KKR 23 B	1	8,400,000	(3,360)	(19,320)	(25,200)
CW		04015U-AK-4	Ares XXXVIII CLO Ltd-SERIES 2015-38A CLASS CR	1	2,750,000	(1,100)	(6,325)	(8,250)
CW		88433R-AG-7	WIND RIVER CLO LTD-SERIES 17-2A CLASS C1	1	2,590,000	(1,036)	(5,957)	(7,770)
CW		00900L-AJ-3	AIMCO CLO Series 2015-A-SERIES 15-AA CLASS CR	1	2,500,000	(1,000)	(5,750)	(7,500)
CW		14315L-AC-8	Carlyle Global Market St-SERIES 14-3RA CLASS A1B	1	10,500,000	(4,200)	(24,150)	(31,500)
CW		48275P-AG-6	KREF 2018-FL1 Ltd-KREF 2018-FL1 C	1	4,770,000	(1,908)	(10,971)	(14,310)
CW		55819B-AN-0	Madison Park Funding XVI-MDPK 2015-18A BR	1	9,826,366	(3,931)	(22,601)	(29,479)
CW		06760G-AB-7	Barings CLO Ltd 2018-I-SERIES 18-1A CLASS A2	1	20,100,000	(8,040)	(46,230)	(60,300)
CW		77341D-AA-5	Rockford Tower CLO 2017-ROCKT 2017-3A A	1	20,100,000	(8,040)	(46,230)	(60,300)
CW		817176-AS-9	SENECA PARK CLO LTD-SPARK 2014-1A CR	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		28108R-AA-0	EdLine Student Loan Fund-ESLFT 2017-A A	1	44,959,263	(17,984)	(103,406)	(134,878)
CW		61744C-NB-8	MORGAN STANLEY CAPITAL I-SERIES 2005-HE2 CLASS M1	1	6,580,682	(2,632)	(15,136)	(19,742)
CW		12481K-AC-2	CBAM 2017-2 LTD-SERIES 17-2A CLASS B1	1	4,900,000	(1,960)	(11,270)	(14,700)
CW		13080B-AD-3	SYMPHONY CLO LTD-SERIES 13-12A CLASS CR	1	2,950,000	(1,180)	(6,785)	(8,850)
CW		94950G-AC-1	WELLFLEET CLO LTD-WELF 2017-1A A2	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		55952Y-AR-8	Magnetite VIII Ltd-MAGNE 2014-8A BR2	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		88434H-AE-3	THL Credit Wind River 20-SERIES 18-2A CLASS A2	1	4,400,000	(1,760)	(10,120)	(13,200)
CW		87249C-AE-1	TICP CLO X LTD-SERIES 18-10A CLASS C	1	3,600,000	(1,440)	(8,280)	(10,800)
CW		G7332H-AD-5	RRPF Engine Leasing Ltd Senior Secured	2	60,000,000	(114,000)	(348,000)	(540,000)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	Basic Contribution	Reserve Objective	Maximum Reserve
CW		629394-AA-5	NTC CAPITAL 1-UNSECURED BOND	2	27,402,329	(52,064)	(158,934)	(246,621)
CW		230000-AB-7	CULLEN/FROST CAP TR 11-SUBORDINATED NOTE	2	20,990,792	(39,883)	(121,747)	(188,917)
CW		09627X-AW-1	BLUEMOUNTAIN CLO LTD-SERIES 2015-1A CLASS A2R	1	20,500,000	(38,950)	(118,900)	(184,500)
CW		16409T-AC-3	CHENANGO PARK CLO LTD-SERIES 18-1A CLASS A1B	1	16,200,000	(30,780)	(93,960)	(145,800)
CW		873549-AC-3	Taconic Park CLO Ltd 201-SERIES 2016-1A CLASS A2	1	16,100,000	(30,590)	(93,380)	(144,900)
CW		39862E-AB-0	GRIPPEN PARK CLO LTD-SERIES 17-1A CLASS B	1	7,000,000	(13,300)	(40,600)	(63,000)
CW		26251B-AN-6	Dryden XXVIII Senior Loa-DRSLF 2013-28A A2LR	1	3,554,347	(6,753)	(20,615)	(31,989)
CW		78442G-RC-2	SLMA 2005-9 STUDENT LN-BKD NT CL B	1	5,938,666	(11,283)	(34,444)	(53,448)
CW		87271L-AJ-1	TIAA CLO I Ltd-TIA 2016-1A AR	1	80,000,000	(32,000)	(184,000)	(240,000)
CW		55819D-AE-6	Madison Park Funding XXX-MDPK 2018-31A A2A	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		22616T-AA-4	Crestline Denali CLO XVI-DEN17 2018-1A A	1	35,000,000	(14,000)	(80,500)	(105,000)
CW		06761N-AE-5	Barings Middle Market CL-BMM 2018-II COM	1	110,000,000	(44,000)	(253,000)	(330,000)
CW		08181J-AA-0	Benefit Street Partners -SERIES 18-5BA CLASS A1A	1	22,445,000	(8,978)	(51,624)	(67,335)
CW		48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	1	1,000,000	(400)	(2,300)	(3,000)
CW		50188G-AT-0	LCM XVIII LP-LCM 18A A1R	1	34,479,172	(13,792)	(79,302)	(103,438)
CW		42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	45,980,991	(18,392)	(105,756)	(137,943)
CW		38172X-AG-4	GOLUB CAPITAL PARTNERS C-SERIES 13-16A CLASS A1R	1	30,000,000	(12,000)	(69,000)	(90,000)
CW		48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	1	1,200,000	(480)	(2,760)	(3,600)
CW		03328Y-AA-2	ANCHORAGE CAPITAL CLO 1--ANCHC 2018-1RA A1	1	15,187,114	(6,075)	(34,930)	(45,561)
CW		66776N-ZZ-9	ORANGE GROVE ENERGY, L.P DELAYED DRAW TE	2	14,404,435	(5,762)	(33,130)	(43,213)
CW		247358-BB-9	EAIV Delta MSN 15153	1	3,750,239	(1,500)	(8,626)	(11,251)
CW		247358-DD-3	EAIV Delta MSN 15161	1	4,057,609	(1,623)	(9,333)	(12,173)
CW		247358-PP-3	EAIV Delta MSN 15147	1	3,759,546	(1,504)	(8,647)	(11,279)
CW		247358-RR-7	EAIV 2017 Delta MSN 15146	1	3,759,695	(1,504)	(8,647)	(11,279)
CW		247358-RII-6	EAIV Delta MSN 15162	1	4,057,609	(1,623)	(9,333)	(12,173)
CW		83416T-RR-3	Arpad Solar Borrower LLC Term Loan	2	45,945,301	(18,378)	(105,674)	(137,836)
CW		29108Q-AY-8	EMERSON PARK CLO LTD-SERIES 13-1A	1	26,700,000	(10,680)	(61,410)	(80,100)
CW		61093*-AA-7	BIF II SAFE HARBOR HOLDINGS LLC	2	22,500,000	(9,000)	(51,750)	(67,500)
CW		04964K-AL-5	ATRIUM CDO CORP-SERIES 9A CLASS AR	1	48,000,000	(19,200)	(110,400)	(144,000)
CW		05682V-AA-3	BAIN CAPITAL CREDIT CLO -SERIES 18-2A CLASS A1	1	28,500,000	(11,400)	(65,550)	(85,500)
CW		13345*-AA-5	CAMERON LNG CONSTRUCTION FA	1	55,348,843	(22,140)	(127,302)	(166,047)
CW		46617N-AQ-0	JFIN CLO LTD-SERIES 14-2A CLASS A1AR	1	67,256,197	(26,902)	(154,689)	(201,769)
CW		74992*-AB-1	RXR Realty, LLC Senior Secured	2	37,400,000	(14,960)	(86,020)	(112,200)
CW		40437L-AG-7	HPS Loan Management 13-2-HLM 13A-18 B	1	10,490,000	(4,196)	(24,127)	(31,470)
CW		40436Q-AL-6	HPS Loan Management 9-20-HLM 9A-2016 A1BR	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		92915P-AK-1	Voya CLO 2014-1 Ltd-INGIM 2014-1A ABR2	1	16,600,000	(6,640)	(38,180)	(49,800)
CW		05363U-AW-3	AVERY POINT IV CLO LTD-SERIES 14-1A CLASS CR	1	13,660,000	(5,464)	(31,418)	(40,980)
CW		04964K-AS-0	ATRIUM CDO CORP-SERIES 9A CLASS CR	1	13,660,000	(5,464)	(31,418)	(40,980)
CW		67332F-AH-6	RRPF Engine Leasing Ltd Senior Secured	2	13,000,000	(5,200)	(29,900)	(39,000)
CW		04941Y-AJ-8	Atlas Senior Loan Fund X-ATCLO 2018-11A B	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		87806L-AC-0	TCI-CENT CLO 2016-1 LTD.-SERIES 17-1A CLASS A1	1	30,000,000	(12,000)	(69,000)	(90,000)
CW		12550Y-AC-8	CIFC FUNDING LTD-CIFC 2017-2A A	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		94951D-AJ-2	Wellfleet CLO 2018-3 Ltd-SERIES 18-3A CLASS A2	2	7,500,000	(3,000)	(17,250)	(22,500)
CW		664397-AK-2	EVERSOURCE ENERGY-UNSECURED NOTE	2	1,798,144	(719)	(4,136)	(5,394)
CW		55818X-AY-9	MADISON PARK FUNDING LTD-SERIES 2015-16A CLASS A2R	1	12,740,000	(5,096)	(29,302)	(38,220)
CW		55953E-AJ-9	MAGNETITE CLO LTD-SERIES 14-11A CLASS A1R	1	12,675,000	(5,070)	(29,153)	(38,025)
CW		03766G-AE-2	APIDOS CLO-SERIES 17-26A CLASS A2	1	12,240,000	(4,896)	(28,152)	(36,720)
CW		149420-AE-1	CATSKILL PARK CLO LTD.-SERIES 17-1A CLASS A2	1	11,980,000	(4,792)	(27,554)	(35,940)
CW		88434H-AE-3	THL Credit Wind River 20-SERIES 18-2A CLASS A2	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		48250L-AL-3	KKR FINANCIAL CLO LTD-SERIES 9 CLASS AR	1	21,100,000	(8,440)	(48,530)	(63,300)
CW		24824T-AQ-3	Denali Capital Clo XII L-DEN12 2016-1A A1R	1	23,100,000	(9,240)	(53,130)	(69,300)
CW		44330Q-AB-7	Highbridge Loan Manageme-SERIES 12A-18 CLASS A1B	1	10,250,000	(4,100)	(23,575)	(30,750)
CW		40436V-AA-9	HIGHBRIDGE LOAN MANAGEMEM-HLM 11A-17 A	1	18,100,000	(7,240)	(41,630)	(54,300)
CW		39808C-A@-4	GRIDIRON FDG LLC Term Facility	2	37,784,080	(15,114)	(86,903)	(113,352)
CW		66704J-CB-2	NORTHSTAR EDUCATION FINA-SERIES 07-1 CLASS B	1	27,013,508	(10,805)	(62,131)	(81,041)
CW		55955A-AA-4	Magnetite XX Ltd-MAGNE 2018-20A A	1	17,299,828	(6,920)	(39,790)	(51,899)
CW		03331J-AA-0	Anchorage Capital CLO Lt-ANCHC 2018-10A A1A	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		06760J-AE-5	Barings CLO Ltd 2018-II-SERIES 2018-2A CLAS A1B	1	16,200,000	(6,480)	(37,260)	(48,600)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	Basic Contribution	Reserve Objective	Maximum Reserve
CW		06760B-AC-6	BABSON CLO LTD-SERIES 17-1A CLASS A2	1	6,700,000	(2,680)	(15,410)	(20,100)
CW		55820R-AE-2	MADISON PARK FUNDING LTD-SERIES 17-25A CLASS B	1	4,960,000	(1,984)	(11,408)	(14,880)
CW		08179H-AC-4	Benefit Street Partners -BSP 2017-12A B	1	2,575,000	(1,030)	(5,923)	(7,725)
CW		79410U-AQ-4	SALEM FIELDS CLO LTD SR SEC2 NT CL A-2-R	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		001626-AC-4	ALM XIX Ltd SR SEC2 NT CL A-2	1	8,100,000	(3,240)	(18,630)	(24,300)
CW		08180X-AQ-5	Benefit Street Partners -BSP 2015-8A A1BR	1	6,425,000	(2,570)	(14,778)	(19,275)
CW		144577-TT-0	Carrix, Inc. Senior Term Loa	2	24,662,500	(9,865)	(56,724)	(73,987)
CW		55820R-AC-6	MADISON PARK FUNDING LTD-SERIES 17-25A CLASS A2	1	14,470,000	(5,788)	(33,281)	(43,410)
CW		04941Y-AC-3	Atlas Senior Loan Fund X-SERIES 18-11A CLASS A1L	1	34,949,527	(13,980)	(80,384)	(104,849)
CW		92557W-AE-3	VIBRANT CLO IV LTD-SR SEC2 NT CL B 144A	1	6,339,166	(2,536)	(14,580)	(19,017)
CW		04624W-AC-1	ASSURANT CLO III LTD-SERIES 2018-2A CLASS A	1	65,000,000	(26,000)	(149,500)	(195,000)
CW		48252W-AC-7	KKR CLO LTD 22-SERIES 22A CLASS B	1	9,444,147	(3,778)	(21,722)	(28,332)
CW		05618D-AN-4	BABSON CLO LTD-BABSN 2014-1A BR	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		056162-AQ-3	Babson CLO Ltd 2015-1-BABSN 2015-1A BR	1	2,045,000	(818)	(4,704)	(6,135)
CW		69703P-AE-9	Palmer Square CLO 2018-1-PLMRS 2018-1A B	1	3,900,000	(1,560)	(8,970)	(11,700)
CW		39808C-AA-3	Gridiron Fdg LLC Sr Secd Nt	2	36,000,000	(14,400)	(82,800)	(108,000)
CW		14307P-AE-5	Carlyle Global Market St-SERIES C17A CLASS A1BR	1	25,900,000	(10,360)	(59,570)	(77,700)
CW		05618D-AL-8	BABSON CLO LTD-BABSN 2014-1A A2R	1	23,500,000	(9,400)	(54,050)	(70,500)
CW		83610K-AA-1	SOUND POINT CLO LTD-SERIES 2017-2A CLASS A	1	23,100,000	(9,240)	(53,130)	(69,300)
CW		50184K-AU-2	LCM LTD PARTNERSHIP-SERIES 13A CLASS BR	1	12,750,000	(5,100)	(29,325)	(38,250)
CW		88576P-AE-3	321 HENDERSON RECEIVABLE-SERIES 05-1A CLASS A1	1	14,060,137	(5,624)	(32,338)	(42,180)
CW		92917A-AA-4	VOYA 2018-1A A1	1	13,768,313	(5,507)	(31,667)	(41,305)
CW		58806P-AC-2	MERCER FIELD CLO LP-MERCL 2017-1A A2	1	20,000,000	(8,000)	(46,000)	(60,000)
CW		64034B-AB-7	Nelnet Student Loan Trus-NSLT 2018-5A B	1	11,500,000	(4,600)	(26,450)	(34,500)
CW		94949J-AA-3	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A1	1	22,469,287	(8,988)	(51,679)	(67,408)
CW		10302V-BG-9	BOWMAN PARK CLO LTD-BOWPK 2014-1A CR	1	5,950,000	(2,380)	(13,685)	(17,850)
CW		87230A-AA-4	TCI-FLATIRON CLO 2016-1 LTD SR SEC2 NT CL A	1	13,107,617	(5,243)	(30,148)	(39,323)
CW		817176-AL-4	SENECA PARK CLO LTD-SPARK 2014-1A AR	1	12,909,487	(5,164)	(29,692)	(38,728)
CW		38136F-AG-8	Goldentree Loan Managem-GLM 2017-1A B1	1	13,500,000	(5,400)	(31,050)	(40,500)
CW		12481Q-AE-5	Cbam 2018-5 Ltd-SERIES 18-5A CLASS B1	1	11,100,000	(4,440)	(25,530)	(33,300)
CW		57542Z-AO-7	MASSMUTUAL ASSET FIN LLC SR SEC2 REV NT	1	328,073,426	(131,229)	(754,569)	(984,220)
CW		03328Q-AN-1	ANCHORAGE CAPITAL CLO LT-SERIES 2015-6A CLASS AR	1	16,900,000	(6,760)	(38,870)	(50,700)
CW		94950J-AC-5	Wellfleet CLO Ltd-SERIES 18-1A CLASS B	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		33882G-AB-4	FLATIRON CLO LTD-FLAT 2017-1A B	1	6,780,000	(2,712)	(15,594)	(20,340)
CW		36361U-AC-4	GALLATIN CLO LTD-SERIES 17-1A CLASS B	1	9,750,000	(3,900)	(22,425)	(29,250)
CW		67115W-AE-0	OHA Credit Funding 1 LTD-SERIES 18-1A CLASS A2	1	10,400,000	(4,160)	(23,920)	(31,200)
CW		26245R-AA-8	Dryden 58 Clo Ltd-DRSLF 2018-58A A1	1	21,668,705	(8,667)	(49,838)	(65,006)
CW		08179H-AA-8	BENEFIT STREET PARTNERS -SERIES 2017-12A CLASS A1	1	9,675,000	(3,870)	(22,253)	(29,025)
CW		78109Q-AE-8	RR 2 LTD-SERIES 17-2A CLASS A2	1	8,500,000	(3,400)	(19,550)	(25,500)
CW		674000-AN-4	OAKTREE CLO LTD-SERIES 14-1A CLASS A1R	1	17,120,000	(6,848)	(39,376)	(51,360)
CW		14315J-NN-5	Carlyle US CLO 2013-3 Re Term Loan	1	19,075,000	(7,630)	(43,873)	(57,225)
CW		74982L-AN-0	RACEP 2013-8A	1	21,375,328	(8,550)	(49,163)	(64,126)
CW		57542Z-AO-7	MASSMUTUAL ASSET FIN LLC SR SEC2 REV NT	1	56,000,000	(22,400)	(128,800)	(168,000)
CW		00900L-AH-7	AIMCO CLO Series 2015-A-SERIES 15-AA CLASS BR	1	6,400,000	(2,560)	(14,720)	(19,200)
CW		12551J-AG-1	CIFC Funding 2017-IV Ltd-SERIES 17-4A CLASS B	1	4,962,810	(1,985)	(11,414)	(14,888)
CW		92912V-AS-4	VOYA CLO LTD-VOYA 2014-2A BR	1	10,020,000	(4,008)	(23,046)	(30,060)
CW		564759-OB-7	MANUF & TRADERS TRUST CO-SUBORDINATED NOTE	1	10,508,846	(4,204)	(24,170)	(31,527)
CW		87806L-AE-6	TCI-CENT CLO 2016-1 LTD-SERIES 17-1A CLASS A2	1	13,500,000	(5,400)	(31,050)	(40,500)
CW		06760B-AE-2	BABSON CLO LTD-SERIES 17-1A CLASS B1	1	13,500,000	(5,400)	(31,050)	(40,500)
CW		398080-AL-5	GREYWOLF CLO LTD-SERIES 2014-2A CLASS A2R	1	12,700,000	(5,080)	(29,210)	(38,100)
CW		40436X-AE-7	HIGHBRIDGE LOAN MANAGEM-SERIES 2014 CLAS A2R	1	12,700,000	(5,080)	(29,210)	(38,100)
CW		14954W-AN-6	BAIN CAPITAL CREDIT CLO -SERIES 17-2A CLASS BR	1	11,400,000	(4,560)	(26,220)	(34,200)
CW		05682Q-AC-0	BAIN CAPITAL CREDIT CLO -SERIES 17-1A CLASS A1	1	11,200,000	(4,480)	(25,760)	(33,600)
CW		09628J-AN-1	BlueMountain CLO 2015-3 -BLUEM 2015-3A A2R	1	13,900,000	(5,560)	(31,970)	(41,700)
CW		053633-AH-6	AVERY POINT CLO LTD-SERIES 13-3A CLASS B1R	1	11,300,000	(4,520)	(25,990)	(33,900)
CW		00287Y-AL-3	AbbVie Inc-SENIOR UNSECURED NOTE	2	6,738,092	(2,695)	(15,498)	(20,214)
CW		55821T-AC-1	Madison Park Funding Ltd-SERIES 18-30A CLASS B	1	7,400,000	(2,960)	(17,020)	(22,200)
CW		89852T-AN-8	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	1	1,085,000	(434)	(2,496)	(3,255)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	Basic Contribution	Reserve Objective	Maximum Reserve
CW		00900C-AE-4	AIMCO-AIMCO 2017-AA C	1	5,280,000	(2,112)	(12,144)	(15,840)
CW		053633-AG-8	AVERY POINT CLO LTD-SERIES 13-3A CLASS AR	1	14,039,080	(5,616)	(32,290)	(42,117)
CW		05363U-AU-7	AVERY POINT IV CLO LTD-SERIES 14-1A CLASS BR	1	32,100,000	(12,840)	(73,830)	(96,300)
CW		66704J-AY-4	NORTHSTAR EDUCATION FINA-SERIES 2004-1 CLASS B1	1	24,767,880	(9,907)	(56,966)	(74,304)
CW		75887X-AA-5	Regatta Funding Ltd.-REG11 2018-1A A	1	27,000,000	(10,800)	(62,100)	(81,000)
CW		449258-AA-0	ICG US CLO 2018-1 LTD-SERIES 2018-1A CLASS A1	1	11,900,000	(4,760)	(27,370)	(35,700)
CW		00507U-AS-0	ACTAVIS FUNDING SCS-SENIOR UNSECURED NOTE	2	5,266,286	(2,107)	(12,112)	(15,799)
CW		64132M-AC-2	Neuberger Berman CLO Ltd-NEUB 2018-30A A2	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		17181T-AC-5	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A2	1	11,200,000	(4,480)	(25,760)	(33,600)
CW		14315J-TT-6	Carlyle US CLO 2015-1 Ri Term Loan	1	24,425,000	(9,770)	(56,178)	(73,275)
CW		55818R-BA-3	Madison Park Funding XIV-MDPK 2014-14A BRR	1	15,000,000	(6,000)	(34,500)	(45,000)
CW		04942J-AE-1	Atlas Senior Loan Fund X-ATCLO 2018-10A B	1	11,600,000	(4,640)	(26,680)	(34,800)
CW		77340E-AC-0	ROCKFORD TOWER CLO LTD-ROCKT 2017-1A B	1	18,090,000	(7,236)	(41,607)	(54,270)
CW		64129J-AU-4	NEUBERGER BERMAN CLO LTD-NEUB 2013-14A B1R	1	5,730,000	(2,292)	(13,179)	(17,190)
CW		04016V-AC-9	ARES XLVII CLO Ltd-SERIES 18-47A CLASS A2	1	25,900,000	(10,360)	(59,570)	(77,700)
CW		87248T-AE-5	TICP CLO LTD-SERIES 2017 CLASS 7A	1	4,300,000	(1,720)	(9,890)	(12,900)
CW		67097Q-AE-5	OCF CLO 2017-14 Ltd-SERIES 17-14A CLASS A2	1	11,400,000	(4,560)	(26,220)	(34,200)
CW		08179L-AC-5	Benefit Street Partners -SERIES 18-14A CLASS A2	1	13,400,000	(5,360)	(30,820)	(40,200)
CW		94950J-AC-5	Wellfleet CLO Ltd-SERIES 18-1A CLASS B	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		14315R-AE-1	Carlyle Global Market St-SERIES 18-4A CLASS A2	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		04943A-AG-4	ATLAS SENIOR LOAN FUND L-SERIES 17-8A CLASS C	1	3,100,000	(1,240)	(7,130)	(9,300)
CW		05683H-AC-9	BAIN CAPITAL CREDIT CLO -SERIES 2017-2A CLASS AR	1	45,000,000	(18,000)	(103,500)	(135,000)
CW		55954K-AC-9	MAGNETITE CLO LTD-SERIES 17-19A CLASS B	1	7,325,000	(2,930)	(16,848)	(21,975)
CW		92915Q-AG-8	VOYA CLO LTD-SERIES 2017-3A CLASS A2	1	7,200,000	(2,880)	(16,560)	(21,600)
CW		40436Q-AN-2	HPS Loan Management 9-20-HLM 9A-2016 A2R	1	12,750,000	(5,100)	(29,325)	(38,250)
CW		00900A-AJ-7	AIMCO-SERIES 14-AA CLASS B1R	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		87249Q-AA-8	TICP CLO Ltd-TICP 2018-11A A	1	25,000,000	(10,000)	(57,500)	(75,000)
CW		06760E-AA-4	Babson CLO Ltd 2013-I-SERIES 2013-1A CLASS AR	1	14,425,000	(5,770)	(33,178)	(43,275)
CW		24820R-AA-6	Statoil ASA-SENIOR UNSECURED NOTE	1	21,133,090	(8,453)	(48,606)	(63,399)
CW		09627X-AG-6	BLUEMOUNTAIN CLO 2015-1 LTD-SR SEC DEF NT CL C	2	2,686,671	(1,075)	(6,179)	(8,060)
CW		MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	8,846,600	(3,539)	(20,347)	(26,540)
CW		78449F-AC-5	SMB PRIVATE ED LN TR 201-SMB PRIVATE ED LN TR 2016-A NT	1	22,044,758	(8,818)	(50,703)	(66,134)
CW		63940F-AC-1	NAVIENT STUDENT LOAN TRU-SERIES 16-2 CLASS A3	1	22,420,000	(8,968)	(51,566)	(67,260)
CW		26827X-AA-1	ECMC GROUP STUDENT LOAN -SERIES 2016-1A CLASS A	1	11,150,634	(4,460)	(25,646)	(33,452)
CW		04941T-AS-9	Atlas Senior Loan Fund V-SERIES 16-7A CLASS A1R	1	23,500,000	(9,400)	(54,050)	(70,500)
CW		92916M-AB-7	VOYA CLO LTD-VOYA 2017-1A A2	1	11,500,000	(4,600)	(26,450)	(34,500)
CW		67109Y-AN-4	Oak Hill Credit Partners-SERIES 15-12A CLASS A2R	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		85816B-CS-7	STEELE CREEK CLO LTD-SERIES 15-1A CLASS CR	1	4,330,000	(1,732)	(9,959)	(12,990)
CW		08180X-AU-6	Benefit Street Partners -BSP 2015-8A BR	1	4,200,000	(1,680)	(9,660)	(12,600)
CW		22616C-AE-3	CRESTLINE DENALI CLO XV -SERIES 17-1A CLASS C	1	4,380,000	(1,752)	(10,074)	(13,140)
CW		04965L-AE-8	ATRIUM XIV LLC-ATRM 14A A2A	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	10,923,378	(4,369)	(25,124)	(32,770)
CW		78442G-PQ-3	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLASS A4	1	13,203,891	(5,282)	(30,369)	(39,612)
CW		49327H-AG-0	KEYCORP STUDENT LOAN TRU-SERIES 2006-A CLASS 2A4	1	1,465,837	(586)	(3,371)	(4,398)
CW		64031Q-BR-1	NELNET STUDENT LOAN TRUS-SERIES 2005-1 CLASS A5	1	9,196,079	(3,678)	(21,151)	(27,588)
CW		78448Q-AD-0	SMB PRIVATE EDUCATION LO-SMB 2015-B A3	1	11,973,198	(4,789)	(27,538)	(35,920)
CW		78442G-RX-6	SLM STUDENT LN TR 2006-2 LN BKD NT CL A-6	1	10,520,898	(4,208)	(24,198)	(31,563)
CW		78442G-EX-0	SLM STUDENT LOAN TRUST-SERIES 2002-7CLASS A11	1	5,411,010	(2,164)	(12,445)	(16,233)
CW		10620N-AX-6	BRAZOS HIGHER EDUCATION -SER 2006-2 STUDENT LN REV NT	1	10,352,635	(4,141)	(23,811)	(31,058)
CW		64031Q-BX-8	NELNET STUDENT LOAN TRUS-SERIES 2005-2 CLASS A5	1	7,703,901	(3,082)	(17,719)	(23,112)
CW		83715R-AF-9	SOUTH CAROLINA STUDENT L-SERIES 14-1 CLASS A2	1	9,838,355	(3,935)	(22,628)	(29,515)
CW		00432C-AV-3	ACCESS GROUP INC-SERIES 2003-A CLASS A3	1	2,878,475	(1,151)	(6,620)	(8,635)
CW		88322U-AN-9	THACHER PARK CLO-THRPK 2014-1A CR	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		75887X-AC-1	Regatta Funding Ltd.-REG11 2018-1A B	1	13,000,000	(5,200)	(29,900)	(39,000)
CW		77277L-A7-2	ROCKALL CLO BV Variable Funding Note- USD	1	4,626,289	(1,851)	(10,640)	(13,879)
CW		92558A-AA-8	VIBRANT CLO LTD-SERIES 2016-5A CLASS A	1	4,300,000	(1,720)	(9,890)	(12,900)
CW		12551R-AC-2	CIFC Funding 2018-I Ltd-SERIES 18-1A CLASS B	1	7,350,000	(2,940)	(16,905)	(22,050)
CW		88434H-AE-3	THL Credit Wind River 20-SERIES 18-2A CLASS A2	1	5,000,000	(2,000)	(11,500)	(15,000)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		MXPO01-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	16,260,938	(6,504)	(37,400)	(48,783)
CW		63940L-AC-8	NAVIENT STUDENT LOAN TRU-SERIES 2016-6A CLASS A3	1	65,300,000	(26,120)	(150,190)	(195,900)
CW		61205P-AL-3	MONTANA HIGHER EDUCATION-SERIES 12-1 CLASS A3	1	23,133,151	(9,253)	(53,206)	(69,399)
CW		04965L-AE-8	ATRIUM XIV LLC-ATRM 14A A2A	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		78442G-EW-2	SLM STUDENT LOAN TRUST-SERIES 2002-7 CLASS A10	1	898,120	(359)	(2,066)	(2,694)
CW		429827-AK-4	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS A10	1	1,823,650	(729)	(4,194)	(5,471)
CW		429827-AP-3	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS A14	1	1,189,068	(476)	(2,735)	(3,567)
CW		429827-AB-4	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS A2	1	1,103,943	(442)	(2,539)	(3,312)
CW		83715A-AJ-8	SOUTH CAROLINA STUDENT L-SR UNSECURED	1	1,867,287	(747)	(4,295)	(5,602)
CW		784427-AF-3	SLC STUDENT LN TR 2006-1 ASSET BK NT CL A-6	1	1,665,843	(666)	(3,831)	(4,998)
CW		64033Q-AC-3	NELNET STUDENT LOAN TRUS-SERIES 2015-2A CLASS B	1	1,698,086	(679)	(3,906)	(5,094)
CW		462590-JT-8	IOWA STUDENT LOAN LIQUID-SERIES 2012-1 CLASS B	1	1,861,867	(745)	(4,282)	(5,586)
CW		709163-GJ-2	PENNSYLVANIA ST HGR EDU -SERIES 2006 CL B	1	1,237,441	(495)	(2,846)	(3,712)
CW		17284L-AB-0	CIT EDUCATION LOAN TRUST-SERIES 2007-1 CLASS B	1	1,129,812	(452)	(2,599)	(3,389)
CW		78448C-AH-2	SLM STUDENT LOAN TRUST-SERIES 2013-6 CLASS B	1	1,342,972	(537)	(3,089)	(4,029)
CW		056162-AS-9	Babson CLO Ltd 2015-1-BABSN 2015-1A CR	1	4,000,000	(1,600)	(9,200)	(12,000)
CW		MXPO01-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	13,654,223	(5,462)	(31,405)	(40,963)
CW		78448R-AD-8	SMB PRIVATE ED LN TR 2015-C LN BCK NT CL A-3	1	6,292,680	(2,517)	(14,473)	(18,878)
CW		78448P-AD-2	SMB PRIVATE ED LOAN TR 2015-A LN BACKED NT A-3	1	5,510,181	(2,204)	(12,673)	(16,531)
CW		19458L-BH-2	COLLEGIATE FUNDING SERVI-SERIES 2005-B CLASS A4	1	4,213,231	(1,685)	(9,690)	(12,640)
CW		78446D-AC-3	SLM STUDENT LOAN TRUST-SERIES 2011-A CLASS A3	1	4,546,585	(1,819)	(10,457)	(13,640)
CW		63938E-AD-6	NAVIENT STUDENT LOAN TRU-SERIES 2014-1 CLASS A4	1	3,829,137	(1,532)	(8,807)	(11,487)
CW		00432C-CF-6	ACCESS GROUP INC DEL 2005-1 ASSET BKD CTF CL A-3	1	27,268	(11)	(63)	(82)
CW		840555-DA-1	SOUTH TX HIGHER ED AUTH REV SER 1 CL A-3	1	16,262,686	(6,505)	(37,404)	(48,788)
CW		00432C-CW-9	ACCESS GROUP INC-SERIES 2005-B CLASS A3	1	8,973,510	(3,589)	(20,639)	(26,921)
CW		28148W-AC-7	EDUCATIONAL FUNDING OF T-SERIES 2011-1 CLASS B	1	10,038,755	(4,016)	(23,089)	(30,116)
CW		78444C-AE-3	SLM STUDENT LOAN TRUST-SERIES 07-6 CLASS A5	1	9,316,911	(3,727)	(21,429)	(27,951)
CW		78443F-AF-4	SLM STUDENT LOAN TRUST-SERIES 2007-5 CLASS A6	1	8,460,655	(3,384)	(19,460)	(25,382)
CW		00400V-AB-3	ACADEMIC LOAN FUNDING TR-ALFT 2012-1A A2	1	7,287,978	(2,915)	(16,762)	(21,864)
CW		462592-AD-8	IOWA STUDENT LOAN LIQUID-SERIES 2005-1 CLASS B	1	770,603	(308)	(1,772)	(2,312)
CW		78442G-QA-7	SLM STUDENT LOAN TRUST-SERIES 2005-6 CLASS B	1	9,131,706	(3,653)	(21,003)	(27,395)
CW		38021F-AB-7	GOAL CAPITAL FUNDING TRU-SERIES 2015-1 CLASS B	1	1,659,443	(664)	(3,817)	(4,978)
CW		28138J-AB-0	EDUCATIONAL SERVICES OF -SERIES 15-2 CLASS B	1	1,679,498	(672)	(3,863)	(5,038)
CW		78442G-GM-2	SLM STUDENT LOAN TRUST 2003-4 LN BKD CTF CL B	1	2,436,558	(975)	(5,604)	(7,310)
CW		28090A-AB-5	EDUCATIONAL SERVICES OF -2014-4 SERIES B	1	1,356,180	(542)	(3,119)	(4,069)
CW		83401L-AA-2	SOCIAL PROFESSIONAL LOAN-SERIES 2015-A CLASS A1	1	428,679	(171)	(986)	(1,286)
CW		03767M-AE-8	Apidos CLO-SERIES 18-29A CLASS A1B	1	7,200,000	(2,880)	(16,560)	(21,600)
CW		39729R-AC-2	Greenwood Park CLO Ltd-SERIES 18-1A CLASS B	1	4,400,000	(1,760)	(10,120)	(13,200)
CW		13876J-AE-2	Canyon Capital CLO Ltd-CANVC 2012-1RA B	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		281397-AP-4	EDUCATION LOAN ASSET-BAC-SERIES 2003-2 CLASS 2A1	1	7,540,332	(3,016)	(17,343)	(22,621)
CW		MXPO01-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	11,916,413	(4,767)	(27,408)	(35,749)
CW		66705R-AA-7	NORTHSTAR EDUCATION FINA-NEF 2016-1 A	1	4,145,746	(1,658)	(9,535)	(12,437)
CW		281397-AB-5	EDUCATION LOAN ASSET-BAC-SERIES 2003-1 CLASS A2	1	6,668,047	(2,667)	(15,337)	(20,004)
CW		64031Q-CX-5	NELNET STUDENT LOAN TRUS-SERIES 2005-4 CLASS A4R1	1	5,158,616	(2,063)	(11,865)	(15,476)
CW		78443G-AG-0	SLM STUDENT LOAN TRUST-SERIES 2006-7 CLASS A6B	1	4,812,011	(1,925)	(11,068)	(14,436)
CW		106238-LJ-5	BRAZOS TX HGR EDU AUTH REVENUE BOND	1	4,290,093	(1,716)	(9,867)	(12,870)
CW		28108Q-AB-0	EDL INC STUDENT LOAN FUND-SERIES 2012-1 CLASS B	1	5,583,957	(2,234)	(12,843)	(16,752)
CW		281397-AQ-2	EDUCATION LOAN ASSET-BAC-SERIES 2003-2 CLASS 2A2	1	4,450,000	(1,780)	(10,235)	(13,350)
CW		38021E-AA-2	GOAL CAPITAL FUNDING TR 2010-1 STUDENT LN BKD NT	1	2,698,010	(1,079)	(6,205)	(8,094)
CW		64031Q-CM-1	NELNET STUDENT LOAN TRUS-SERIES 2005-4 CLASS A4R2	1	3,506,777	(1,403)	(8,066)	(10,520)
CW		658262-GD-6	NORTH CAROLINA STATE EDU-SERIES 2011-2 CLASS A3	1	3,750,769	(1,500)	(8,627)	(11,252)
CW		78442G-KW-5	SLM STUDENT LOAN TRUST-SERIES 2004-1 CLASS A6	1	1,899,995	(760)	(4,370)	(5,700)
CW		83149E-AG-2	SLM STUDENT LN TR 2006-5-NOTE CL B	1	14,702,353	(5,881)	(33,815)	(44,107)
CW		26251L-AE-4	Dryden 64 CLO Ltd-DRSLF 2018-64A B	1	13,900,000	(5,560)	(31,970)	(41,700)
CW		23341K-AA-3	DRB PRIME STUDENT LOAN T-SERIES 2015-D CLASS A1	1	3,446,945	(1,379)	(7,928)	(10,341)
CW		64031C-AB-8	NELNET STUDENT LOAN TRUS-SERIES 2012-2A CLASS B	1	8,791,794	(3,517)	(20,221)	(26,375)
CW		78442G-PS-9	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLASS B	1	12,784,962	(5,114)	(29,405)	(38,355)
CW		87244A-BC-3	WIND RIVER CLO LTD-SERIES 12-1A CLASS BR	1	3,900,000	(1,560)	(8,970)	(11,700)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		03328T-AS-4	ANCHORAGE CAPITAL CLO 7 -ANCHC 2015-7A B1R	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		89852T-AN-8	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	1	3,000,000	(1,200)	(6,900)	(9,000)
CW		MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	10,923,378	(4,369)	(25,124)	(32,770)
CW		83715R-AG-7	SOUTH CAROLINA STUDENT L-SERIES 2014-1 CLASS B	1	9,652,214	(3,861)	(22,200)	(28,957)
CW		784420-AE-1	SLC STUDENT LOAN TRUST-SERIES 2005-1 CLASS B	1	5,873,795	(2,350)	(13,510)	(17,621)
CW		78442G-OT-6	SLM STUDENT LOAN TRUST-SERIES 2005-8 CLASS B	1	5,499,313	(2,200)	(12,648)	(16,498)
CW		78442G-PD-2	SLM STUDENT LOAN TRUST-SERIES 2005-3 CLASS B	1	5,698,687	(2,279)	(13,107)	(17,096)
CW		493268-AU-0	KEYCORP STUDENT LOAN TRU-SERIES 1999-B CLASS CTFS	1	3,126,882	(1,251)	(7,192)	(9,381)
CW		78446C-AB-7	SLM STUDENT LOAN TRUST-SERIES 2013-2 CLASS B	1	6,659,776	(2,664)	(15,317)	(19,979)
CW		63938E-AE-4	NAVIENT STUDENT LOAN TRU-SERIES 2014-1 CLASS B	1	6,955,000	(2,782)	(15,997)	(20,865)
CW		64031A-AJ-5	NELNET STUDENT LOAN TRUS-SERIES 2006-3 CLASS B	1	4,981,340	(1,993)	(11,457)	(14,944)
CW		63939L-AC-1	NAVIENT STUDENT LOAN TRU-SERIES 2015-3 CLASS B	1	6,199,206	(2,480)	(14,258)	(18,598)
CW		78447M-AD-0	SLM STUDENT LOAN TRUST-SERIES 2013-1 CLASS B	1	6,500,000	(2,600)	(14,950)	(19,500)
CW		64033J-AB-1	NELNET STUDENT LOAN TRUS-SERIES 2014-1A CLASS B	1	5,381,839	(2,153)	(12,378)	(16,146)
CW		194266-AE-2	COLLEGE LOAN CORPORATION-SERIES 2005-2 CLASS B	1	3,549,828	(1,420)	(8,165)	(10,649)
CW		64033N-AB-2	NELNET STUDENT LOAN TRUS-SERIES 2014-5A CLASS B	1	4,478,990	(1,792)	(10,302)	(13,437)
CW		194262-CF-6	COLLEGE LOAN CORPORATION-SERIES 2004-1 CLASS B	1	396,094	(158)	(911)	(1,188)
CW		78442G-LJ-3	SLM STUDENT LOAN TRUST-SERIES 2004 - 3 CLASS B	1	2,713,709	(1,085)	(6,242)	(8,141)
CW		64032A-AB-1	NELNET STUDENT LOAN TRUS-SERIES 2012-1A CLASS B	1	3,650,000	(1,460)	(8,395)	(10,950)
CW		64032F-AH-7	NELNET STUDENT LOAN TRUS-SERIES 2007-2A CLASS A4A2	1	3,059,627	(1,224)	(7,037)	(9,179)
CW		64033L-AD-2	NELNET STUDENT LOAN TRUS-SERIES 2014-2A CLASS B	1	3,290,758	(1,316)	(7,569)	(9,872)
CW		64033K-AB-8	NELNET STUDENT LOAN TRUS-SERIES 2014-3A CLASS B	1	3,240,000	(1,296)	(7,452)	(9,720)
CW		03767M-AG-3	Apidos CLO-SERIES 18-29A CLASS A2	1	14,750,000	(5,900)	(33,925)	(44,250)
CW		55952Y-AT-4	Magnetite VIII Ltd-MAGNE 2014-8A CR2	1	4,500,000	(1,800)	(10,350)	(13,500)
CW		04015U-AJ-7	Ares XXXVIII CLO Ltd-SERIES 15-38A CLASS BR	1	6,700,000	(2,680)	(15,410)	(20,100)
CW		48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	1	3,000,000	(1,200)	(6,900)	(9,000)
CW		04964H-AN-8	ATRIUM CDO CORP-SERIES 8A CLASS BR	1	8,900,000	(3,560)	(20,470)	(26,700)
CW		MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	993,034	(397)	(2,284)	(2,979)
CW		87246M-AB-8	TICP CLO LTD-SERIES 2016-6A CLASS B	1	8,900,000	(3,560)	(20,470)	(26,700)
CW		92917A-AA-4	VOYA 2018-1A A1	1	9,834,510	(3,934)	(22,619)	(29,504)
CW		14309Y-AQ-7	CARLYLE GLOBAL MARKET ST-SERIES 2012-4A CLASS BR	1	8,850,000	(3,540)	(20,355)	(26,550)
CW		13876J-AE-2	Canyon Capital CLO Ltd-CANYC 2012-1RA B	1	1,500,000	(600)	(3,450)	(4,500)
CW		06759Y-AC-9	BARINGS CLO LTD-BABSN 2016-3A A2	1	7,500,000	(3,000)	(17,250)	(22,500)
CW		03331J-AJ-1	Anchorage Capital CLO Lt-ANCHC 2018-10A B	1	11,050,000	(4,420)	(25,415)	(33,150)
CW		056162-AN-0	Babson CLO Ltd 2015-1-BABSN 2015-1A AR	1	12,575,000	(5,030)	(28,923)	(37,725)
CW		83609Y-AE-6	Sounds Point CLO IV-R LT-SERIES 13-3RA CLASS B	1	10,000,000	(4,000)	(23,000)	(30,000)
CW		78448A-AD-5	SLM STUDENT LOAN TRUST-SERIES 2013-4 CLASS B	1	3,200,000	(1,280)	(7,360)	(9,600)
CW		00432C-DE-8	ACCESS GROUP INC-SERIES 2006-1 CLASS B	1	1,742,758	(697)	(4,008)	(5,228)
CW		78442G-KN-5	SLM STUDENT LOAN TRUST-SERIES 2003-14 CLASS A6	1	2,434,116	(974)	(5,598)	(7,302)
CW		493268-BW-5	KEYCORP STUDENT LOAN TRU-SERIES 2004-A CLASS 1B	1	1,715,690	(686)	(3,946)	(5,147)
CW		429827-AR-9	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS B1	1	603,688	(241)	(1,388)	(1,811)
CW		429827-AS-7	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS B2	1	2,031,928	(813)	(4,673)	(6,096)
CW		64033T-AB-9	NELNET STUDENT LOAN TRUS-SERIES 2015-3A CLASS B	1	1,948,127	(779)	(4,481)	(5,844)
CW		19458L-BD-1	COLLEGIATE FUNDING SERVI-SERIES 2005-A CLASS B	1	1,530,128	(612)	(3,519)	(4,590)
CW		00435T-AB-7	ACCESS GROUP INC-SERIES 2015-1 CLASS B	1	1,885,874	(754)	(4,338)	(5,658)
CW		78442G-RY-4	SLM STUDENT LOAN TRUST-SERIES 2006-2 CLASS B	1	2,774,680	(1,110)	(6,382)	(8,324)
CW		194267-AM-2	COLLEGE LOAN CORPORATION-SERIES 2007-1 CLASS B2	1	3,229,331	(1,292)	(7,427)	(9,688)
CW		92978J-AH-6	WACHOVIA STUDENT LOAN TR-SERIES 2006-1 CLASS B	1	2,443,381	(977)	(5,620)	(7,330)
CW		83715R-AH-5	SOUTH CAROLINA STUDENT L-SERIES 15-A CLASS A	1	1,990,522	(796)	(4,578)	(5,972)
CW		28137T-AB-9	EDUCATIONAL SERVICES OF -SERIES 2014-2 CLASS B	1	2,490,583	(996)	(5,728)	(7,472)
CW		78443B-AK-2	SLM STUDENT LOAN TRUST-SERIES 2006-10 CLASS B	1	1,858,923	(744)	(4,276)	(5,577)
CW		69340Q-AB-2	PENNSYLVANIA HIGHER EDUC-SERIES 2015-1A CLASS B	1	2,392,246	(957)	(5,502)	(7,177)
CW		28137B-AB-5	EDUCATIONAL SERVICES OF -SERIES 2015-1 CLASS B	1	2,147,401	(859)	(4,939)	(6,442)
CW		00432C-AR-2	ACCESS GROUP-STUDENT LN REVENUE NT	1	1,344,965	(538)	(3,093)	(4,035)
CW		63939D-AD-7	NAVIENT STUDENT LOAN TRUST 2014-8 CL B	1	7,097,254	(2,839)	(16,324)	(21,292)
CW		69688X-AU-5	Palmer Square CLO 2014-1-SERIES 2014-1A CLASS A2RR	1	9,900,000	(3,960)	(22,770)	(29,700)
CW		92558V-AC-8	Vibrant CLO Ltd-SERIES 18-9A CLASS A2	1	23,500,000	(9,400)	(54,050)	(70,500)
CW		94949J-AC-9	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A2	1	10,800,000	(4,320)	(24,840)	(32,400)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		04017E-AE-2	ARES XXXIIR CLO LTD-SERIES 14-32RA CLASS A1B	1	13,581,262	(5,433)	(31,237)	(40,744)
CW		55951P-BC-0	Magnetite VII Ltd-MAGNE 2012-7A A2R2	1	8,790,000	(3,516)	(20,217)	(26,370)
CW		40436V-AB-7	HIGHBRIDGE LOAN MANAGEM-HLM 11A-17 B	1	13,560,000	(5,424)	(31,188)	(40,680)
CW		87230A-AD-8	TCI-FLATIRON CLO LTD-TFLAT 2016-1A D	3	2,020,710	(808)	(4,648)	(6,062)
CW		04964H-AQ-1	ATRIUM VIII-DEF NT CL C-R	1	8,200,000	(3,280)	(18,860)	(24,600)
CW		06759Y-AE-5	BARINGS CLO LTD-BABSN 2016-3A B	1	7,516,250	(3,007)	(17,287)	(22,549)
CW		50189P-AN-2	LCM LTD PARTNERSHIP-SERIES 25A CLASS C2	1	2,500,000	(1,000)	(5,750)	(7,500)
CW		87244A-BE-9	WIND RIVER CLO LTD-WINDR 2012-1A CR	1	6,765,357	(2,706)	(15,560)	(20,296)
CW		14309Y-AY-0	CARLYLE GLOBAL MARKET ST-SERIES 2012-4A CLASS C1R	1	6,700,000	(2,680)	(15,410)	(20,100)
CW		66704J-AJ-7	Northstar Education Fina-REVENUE BONDS	1	7,509,545	(3,004)	(17,272)	(22,529)
CW		03328W-AE-8	ANCHORAGE CAPITAL CLO LT-ANHC 2016-9A C	1	5,000,000	(2,000)	(11,500)	(15,000)
CW		55820N-AE-1	MADISON PARK FUNDING LTD-MDPK 2016-24A C1	1	4,750,000	(1,900)	(10,925)	(14,250)
CW		67091H-AP-6	OHA LOAN FUNDING LTD-SERIES 2012-1A CLASS CR	1	4,500,000	(1,800)	(10,350)	(13,500)
CW		77341D-AE-7	Rockford Tower CLO 2017-SERIES 17-3A CLASS B	1	6,750,000	(2,700)	(15,525)	(20,250)
CW		48251B-AE-0	KKR FINANCIAL CLO LTD-KKR 16 B1	1	4,375,000	(1,750)	(10,063)	(13,125)
CN		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	60,184,776			
CN		912833-LN-8	US TREASURY STRIP 0% DUE 05/15/2023	1	63,908,042			
CN		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	55,169,378			
CN		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	53,163,219			
CN		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	79,243,289			
CN		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	77,237,129			
CN		01749B-AB-5	Allegro CLO VI Ltd-ALLEG 2017-2A B	1	6,400,000			
CN		39729R-AC-2	Greenwood Park CLO Ltd-SERIES 18-1A CLASS B	1	4,400,000			
CN		056162-AS-9	Babson CLO Ltd 2015-I-BABSN 2015-1A CR	1	5,095,000			
CN		09628F-AE-9	BlueMountain Fuji US CLO-SERIES 2017-3A CLASS B	1	4,000,000			
CN		22616C-AE-3	CRESTLINE DENALI CLO XV -SERIES 17-1A CLASS C	1	2,000,000			
CN		06760E-AC-0	Babson CLO Ltd 2013-I-SERIES 2013-IS CLASS BR	1	1,995,000			
CN		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	59,497,473			
CN		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	59,497,473			
CN		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	34,706,859			
CN		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	34,706,859			
CN		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	34,706,859			
CW		03073E-AM-7	AmerisourceBergen Corp-SENIOR UNSECURED	2	21,248,894	(8,500)	(48,872)	(63,747)
CW		055450-AH-3	BHP Billiton Finance USA-DEBENTURE	1	28,617,087	(11,447)	(65,819)	(85,851)
CW		12572Q-AG-0	CME GROUP INC-SR UNSECURED	1	31,148,558	(12,459)	(71,642)	(93,446)
CW		29364N-AS-7	ENTERGY MISSISSIPPI INC-SECURED NOTE	1	19,646,080	(7,858)	(45,186)	(58,938)
CW		29365T-AA-2	ENTERGY TEXAS INC-NOTE	1	20,560,052	(8,224)	(47,288)	(61,680)
CW		313747-AF-4	FEDERAL REALTY INVESTMEN-NOTE REID	1	25,710,844	(10,284)	(59,135)	(77,133)
CW		375558-AW-3	GILEAD SCIENCES INC-SENIOR UNSECURED NOTE	1	20,833,097	(8,333)	(47,916)	(62,499)
CW		384780-AA-0	GRAIN SPECTRUM FUND II-SECURED NOTE	1	19,430,045	(7,772)	(44,689)	(58,290)
CW		75972Y-AA-9	RENAISSANCERE FINANCE-SR UNSECURED	1	28,499,254	(11,400)	(65,548)	(85,498)
CW		884315-AG-7	THOMAS & BETTS CORP-NOTE	1	25,053,674	(10,021)	(57,623)	(75,161)
CW		958587-BJ-5	WEST MASS ELECTRIC CO-SENIOR UNSECURED NOTE	1	19,099,379	(7,640)	(43,929)	(57,298)
CW		22615E-AE-0	Crestline Denali CLO Ltd-SERIES 2018-1A CLASS C	1	3,200,000	(1,280)	(7,360)	(9,600)
CW		67104L-AG-2	OHA Loan Funding 2013-2 -CHALF 2013-2A CR	1	8,000,000	(3,200)	(18,400)	(24,000)
CW		39862E-AB-0	GRIPPEN PARK CLO LTD-SERIES 17-1A CLASS B	1	7,000,000	(2,800)	(16,100)	(21,000)
CW		031162-CJ-7	AMGEN INC-SENIOR UNSECURED	2	31,880,626	(60,573)	(184,908)	(286,926)
CW		44107T-AT-3	HOST HOTELS & RESORTS LP-SENIOR UNSECURED NOTE	2	36,279,355	(68,931)	(210,420)	(326,514)
CW		445658-CD-7	JB HUNT TRANSPRT SVCS-SENIOR UNSECURED NOTE	2	33,304,491	(63,279)	(193,166)	(299,740)
CW		456866-AM-4	INGERSOLL-RAND CO-DEBENTURE	2	35,204,599	(66,889)	(204,187)	(316,841)
CW		664397-AK-2	EVERSOURCE ENERGY-UNSECURED NOTE	2	42,890,735	(81,492)	(248,766)	(386,017)
CW		760759-AP-5	Republic Services Inc-SENIOR UNSECURED NOTE	2	32,900,281	(62,511)	(190,822)	(296,103)
CW		94106L-BA-6	Waste Management Inc-SR UNSECURED	2	37,894,773	(72,000)	(219,790)	(341,053)
CW		A05830-41-6	SPARC EM SPC PANAMA METR-SECURED	2	36,185,306	(68,752)	(209,875)	(325,668)
CW		00287Y-AL-3	AbbVie Inc-SENIOR UNSECURED NOTE	2	23,439,642	(44,535)	(135,950)	(210,957)
CW		00507U-AS-0	ACTAVIS FUNDING SCS-SENIOR UNSECURED NOTE	2	6,470,294	(12,294)	(37,528)	(58,233)
CW		03522A-AD-2	Anheuser-Busch Cos LLC /-SENIOR UNSECURED	2	38,705,681	(73,541)	(224,493)	(348,351)
CW		254709-AM-0	DISCOVER FINANCIAL SVS-SENIOR UNSECURED	2	50,093,481	(95,178)	(290,542)	(450,841)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		444859-BA-9	Humana Inc-SENIOR UNSECURED NOTE	2	25,114,106	(47,717)	(145,662)	(226,027)
CW		61945C-AA-1	MOSAIC CO/THE-SENIOR UNSECURED NOTE	2	23,550,876	(44,747)	(136,595)	(211,958)
CW		718549-AB-4	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED	2	24,565,744	(46,675)	(142,481)	(221,092)
CW		756109-AN-4	REALTY INCOME CORP-SENIOR UNSECURED NOTE REID	1	26,494,881	(50,340)	(153,670)	(238,454)
CW		09247X-AJ-0	BlackRock Inc-SENIOR UNSECURED NOTE	1	17,906,864	(34,023)	(103,860)	(161,162)
CW		883203-BQ-3	Textron Inc-NOTE	2	27,536,456	(52,319)	(159,711)	(247,828)
CW		760759-AP-5	Republic Services Inc-SENIOR UNSECURED NOTE	2	19,613,100	(37,265)	(113,756)	(176,518)
CW		05683L-AC-0	Bain Capital Credit CLO -BCC 2018-1A A2	1	8,800,000	(16,720)	(51,040)	(79,200)
CW		032095-AC-5	AMPHENOL CORP-SENIOR UNSECURED NOTE	2	22,499,157	(42,748)	(130,495)	(202,492)
CW		045487-AA-3	ASSOC BANC-CORP-SR UNSECURED	2	22,533,440	(42,814)	(130,694)	(202,801)
CW		378272-AL-2	GLENORE FUNDING LLC-SR UNSECURED	2	21,870,224	(41,553)	(126,847)	(196,832)
CW		45167R-AF-1	IDEX Corp-SENIOR UNSECURED NOTE	2	22,880,064	(43,472)	(132,704)	(205,921)
CW		49245P-AA-4	KERRY GROUP FIN SERVICES-SENIOR UNSECURED NOTE	2	22,093,696	(41,978)	(128,143)	(198,843)
CW		67103H-AF-4	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED	2	21,134,567	(40,156)	(122,580)	(190,211)
CW		72925P-AD-7	PLUM CREEK TIMBERLANDS-SENIOR UNSECURED NOTE	2	22,272,021	(42,317)	(129,178)	(200,448)
CW		759351-AG-4	Reinsurance Group of Ame-SENIOR UNSECURED NOTE	2	25,467,318	(48,388)	(147,710)	(229,206)
CW		806851-AG-6	SCHLUMBERGER HLDGS CORP-SR UNSECURED	2	25,868,407	(49,150)	(150,037)	(232,816)
CW		92936M-AB-3	WPP FINANCE 2010-SENIOR UNSECURED NOTE	2	22,674,614	(43,082)	(131,513)	(204,072)
CW		98310W-AL-2	WYNDHAM WORLDWIDE CORP-SENIOR UNSECURED NOTE	3	21,902,209	(41,614)	(127,033)	(197,120)
CW		98956P-AF-9	Zimmer Biomet Holdings I-SR UNSECURED	2	21,116,320	(40,121)	(122,475)	(190,047)
CW		EK5851-40-8	ISRAEL ELECTRIC CORP LTD-SECURED NOTE	2	21,052,841	(40,000)	(122,106)	(189,476)
CN		912810-RP-5	UNITED STATES TREASURY 3.00% DUE 11/15/45	1	10,835,120			
CN		912833-LL-2	US TREASURY DUE 2/15/2023	1	16,172,944			
CN		912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	19,988,195			
CN		912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	29,982,293			
CN		912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	29,982,293			
CN		912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	34,979,342			
CN		912810-RU-4	US TREASURY N/B-UNSECURED 2.875% DUE 11/15/2046	1	14,874,368			
CN		912810-RU-4	US TREASURY N/B-UNSECURED 2.875% DUE 11/15/2046	1	14,874,368			
CN		912810-RU-4	US TREASURY N/B-UNSECURED 2.875% DUE 11/15/2046	1	19,832,491			
CN		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	263,809,936			
CN		76116F-AG-2	RFCSP PRINCIPAL STRIP	1	253,784,793			
CN		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	250,769,901			
CN		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	90,277,164			
CN		76116F-AG-2	RFCSP PRINCIPAL STRIP	1	79,195,254			
CN		912810-QK-7	US Treasury 3.875% DUE 8/15/2040	1	87,369,274			
CN		912833-LN-8	US TREASURY STRIP 0% DUE 05/15/2023	1	19,971,263			
CN		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	87,758,772			
CN		912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455			
CN		912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	180,134,883			
CN		912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455			
CN		912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455			
CN		912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455			
CN		912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455			
CN		912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455			
CN		912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	109,935,075			
CW		87305Q-CM-1	TTX CO-SENIOR UNSECURED	1	33,227,015	(13,291)	(76,422)	(99,681)
CW		341081-FR-3	Florida Power & Light Co-SECURED	1	31,909,371	(12,764)	(73,392)	(95,728)
CW		45866F-AH-7	Intercontinental Exchang-SENIOR UNSECURED	1	26,200,963	(10,480)	(60,262)	(78,603)
CW		010392-FS-2	Alabama Power Co-SENIOR UNSECURED	1	26,133,480	(10,453)	(60,107)	(78,400)
CW		976843-BJ-0	WISCONSIN PUBLIC SERVICE-SECURED	1	26,991,624	(10,797)	(62,081)	(80,975)
CW		235851-AR-3	DANAHER CORP-SR UNSECURED	1	10,591,843	(4,237)	(24,361)	(31,776)
CW		45174X-AA-0	IHC Health Services Inc-SECURED	1	42,300,000	(16,920)	(97,290)	(126,900)
CW		91412N-AK-6	UNIVERSITY OF CHICAGO-UNSECURED BOND	1	41,500,000	(16,600)	(95,450)	(124,500)
CW		906548-CN-0	Union Electric Co-SECURED	1	40,925,512	(16,370)	(94,129)	(122,777)
CW		575718-AB-7	MASS INSTITUTE OF TECH-UNSECURED BOND	1	40,990,016	(16,396)	(94,277)	(122,970)
CW		39138Q-AC-9	GREAT-WEST LIFECO FINANC-SENIOR UNSECURED	1	29,340,233	(11,736)	(67,483)	(88,021)
CW		882508-BD-5	Texas Instruments Inc-SENIOR UNSECURED	1	54,188,820	(21,676)	(124,634)	(162,566)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

ASSET VALUATION RESERVE (Continued)

BASIC CONTRIBUTION, RESERVE OBJECTIVE AND MAXIMUM RESERVE CALCULATIONS REPLICATIONS (SYNTHETIC) ASSETS

1	2	3	4	5	6	7	8	9
RSAT Number	Type	CUSIP	Description of Asset(s)	NAIC Designation or Other Description of Asset	Value of Asset	AVR Basic Contribution	AVR Reserve Objective	AVR Maximum Reserve
CW		745332-CG-9	PUGET SOUND ENERGY INC-SECURED	1	50,400,449	(20,160)	(115,921)	(151,201)
CW		81373P-AA-1	Securian Financial Group-SENIOR UNSECURED	1	48,648,657	(19,459)	(111,892)	(145,946)
CW		92826C-AF-9	VISA INC-SR UNSECURED	1	51,949,232	(20,780)	(119,483)	(155,848)
CW		049560-AP-0	Atmos Energy Corp-SENIOR UNSECURED	1	28,754,127	(11,502)	(66,134)	(86,262)
CW		12572Q-AH-8	CME Group Inc-SENIOR UNSECURED	1	56,729,328	(22,692)	(130,477)	(170,188)
CW		00440E-AW-7	ACE INA HOLDINGS-SR UNSECURED	1	58,762,998	(23,505)	(135,155)	(176,289)
CW		30231G-AW-2	EXXON MOBIL CORPORATION-SR UNSECURED	1	53,307,260	(21,323)	(122,607)	(159,922)
CW		037833-BX-7	Apple Inc-SENIOR UNSECURED	1	55,789,452	(22,316)	(128,316)	(167,368)
CW		91324P-CR-1	UNITEDHEALTH GROUP INC-SR UNSECURED	1	58,560,916	(23,424)	(134,690)	(175,683)
CW		023135-AQ-9	AMAZON.COM INC-SR UNSECURED	1	58,795,350	(23,518)	(135,229)	(176,386)
CW		82620K-AT-0	SIEMENS FINANCIERINGSMAT-SENIOR UNSECURED	1	101,965,492	(40,786)	(234,521)	(305,896)
CW		585055-BU-9	MEDTRONIC INC-SR UNSECURED	1	89,421,417	(35,769)	(205,669)	(268,264)
CW		141781-BF-0	CARGILL INC-SR UNSECURED	1	68,102,459	(27,241)	(156,636)	(204,307)
CW		023135-BM-7	Amazon.com Inc-SENIOR UNSECURED	1	45,353,098	(18,141)	(104,312)	(136,059)
CW		899043-AA-1	TUFTS UNIVERSITY-UNSECURED BOND	1	48,349,262	(19,340)	(111,203)	(145,048)
CW		407281-AA-1	HAMILTON COLLEGE-UNSECURED	1	18,484,405	(7,394)	(42,514)	(55,453)
CW		575634-AT-7	MASSACHUSETTS ELECTRIC-SENIOR UNSECURED	1	40,344,481	(16,138)	(92,792)	(121,033)
CW		45138L-BD-4	IDAHO POWER CORP-SECURED NOTE	1	30,345,309	(12,138)	(69,794)	(91,036)
CW		29246Q-AB-1	Empresa de Transporte de-SENIOR UNSECURED	1	28,874,941	(11,550)	(66,412)	(86,625)
CW		771196-BH-4	ROCHE HOLDING INC-SENIOR UNSECURED NOTE	1	28,332,384	(11,333)	(65,164)	(84,997)
CW		437076-BH-4	Home Depot Inc/The-SENIOR UNSECURED	1	29,323,311	(11,729)	(67,444)	(87,970)
CW		578454-AD-2	MAYO CLINIC-UNSECURED	1	28,275,000	(11,310)	(65,033)	(84,825)
CW		009279-AC-4	AIRBUS SE-SENIOR UNSECURED	1	66,835,299	(26,734)	(153,721)	(200,506)
CW		701094-AL-8	Parker-Hannifin Corp-SENIOR UNSECURED	1	68,452,004	(27,381)	(157,440)	(205,356)
CW		23338V-AE-6	DTE Electric Co-SECURED	1	61,735,160	(24,694)	(141,991)	(185,205)
CW		66989H-AH-1	NOVARTIS CAPITAL CORP-SR UNSECURED	1	62,213,515	(24,885)	(143,091)	(186,641)
CW		594918-CB-8	MICROSOFT CORP-SENIOR UNSECURED	1	41,457,221	(16,583)	(95,352)	(124,372)
CW		69351U-AV-5	PPL Electric Utilities C-SECURED	1	23,531,018	(9,412)	(54,121)	(70,593)
CW		084664-CQ-2	Berkshire Hathaway Finan-SENIOR UNSECURED	1	22,883,195	(9,153)	(52,631)	(68,650)
CW		110122-AX-6	BRISTOL-MYERS SQUIBB CO-SR UNSECURED	1	21,479,389	(8,592)	(49,403)	(64,438)
CW		039483-BM-3	ARCHER-DANIELS-MIDLAND C-SENIOR UNSECURED	1	36,278,545	(14,511)	(83,441)	(108,836)
CW		00401M-AB-2	ABU DHABI CRUDE OIL PIPE-SECURED	1	27,482,409	(10,993)	(63,210)	(82,447)
CW		207597-EH-4	Connecticut Light & Powe-SECURED	1	28,608,341	(11,443)	(65,799)	(85,825)
CW		29736R-AG-5	ESTEE LAUDER CO INC-SENIOR UNSECURED	1	27,346,399	(10,939)	(62,897)	(82,039)
CW		04351L-AA-8	ASCENSION HEALTH-UNSECURED BOND	1	25,067,908	(10,027)	(57,656)	(75,204)
CW		00115A-AJ-8	AEP Transmission Co LLC-SENIOR UNSECURED	1	9,997,688	(3,999)	(22,995)	(29,993)
CW		02361D-AR-1	Ameren Illinois Co-SECURED	1	34,348,711	(13,739)	(79,002)	(103,046)
CW		468223-AT-9	Jackson Laboratory/The-UNSECURED	1	37,028,339	(14,811)	(85,165)	(111,085)
CW		743315-AS-2	PROGRESSIVE CORP-SENIOR UNSECURED	1	34,970,497	(13,988)	(80,432)	(104,911)
CW		17858P-AB-7	City of Hope-SENIOR UNSECURED	1	35,234,610	(14,094)	(81,040)	(105,704)
CW		44107H-AE-2	NY Society for Relief of-SECURED	1	35,017,540	(14,007)	(80,540)	(105,053)
CW		458140-AV-2	INTEL CORP-SENIOR UNSECURED	1	9,969,810	(3,988)	(22,931)	(29,909)
CW		828807-CZ-8	SIMON PROPERTY GROUP LP-SENIOR UNSECURED	1	36,783,940	(14,714)	(84,603)	(110,352)
CW		12189L-BB-6	BURLINGTN NORTH SANTA FE-SENIOR UNSECURED	1	34,617,570	(13,847)	(79,620)	(103,853)
CW		391382-AB-4	GREAT-WEST LIFE CO FINANC-SENIOR UNSECURED	1	29,541,464	(11,817)	(67,945)	(88,624)
CW		038222-AM-7	APPLIED MATERIALS INC-SENIOR UNSECURED	1	30,256,344	(12,103)	(69,590)	(90,769)
CW		210518-DB-9	Consumers Energy Co-SECURED	1	30,236,832	(12,095)	(69,545)	(90,710)
CW		455434-BR-0	INDIANAPOLIS PIWR & LIGHT-SECURED BOND	1	29,649,676	(11,860)	(68,194)	(88,949)
0199999. Subtotal Default Component - Other Than Mortgage					29,867,478,099	2,813,867	10,270,467	15,050,599
0599999 - Total					29,867,478,099	2,813,867	10,270,467	15,050,599

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE F

Showing all claims for death losses and all other contract claims resisted or compromised during the year, and all claims for death losses and all other contract claims resisted December 31 of current year

1	2	3	4	5	6	7	8
Contract Numbers	Claim Numbers	State of Residence of Claimant	Year of Claim for Death or Disability	Amount Claimed	Amount Paid During the Year	Amount Resisted Dec. 31 of Current Year	Why Compromised or Resisted
15683404	0278114	NY	2018	750,000			Company claims material misrepresentation in application. Premiums refunded and policy cancelled by agreement.
22301000	16-04322	TN	2017	76,883	7,688		Company claims material misrepresentation in application. Compromised to avoid legal expenses and uncertainty of litigation.
23821226	16-04322	TN	2017	673,117	67,312		Company claims material misrepresentation in application. Compromised to avoid legal expenses and uncertainty of litigation.
71385370	0001004	PR	2018	700,000	9,500		Company claims proceeds paid to the beneficiary. Compromised to avoid legal expenses and uncertainty of litigation.
6528548	17-00317	TX	2017	100,000			Company claims proceeds paid to the beneficiary. Suit against Company dismissed.
6985043	17-00317	TX	2017	50,000			Company claims proceeds paid to the beneficiary. Suit against Company dismissed.
7430480	17-00317	TX	2017	50,000			Company claims proceeds paid to the beneficiary. Suit against Company dismissed.
7714170	17-00317	TX	2017	50,000			Company claims proceeds paid to the beneficiary. Suit against Company dismissed.
7729829	17-00317	TX	2017	250,000			Company claims proceeds paid to the beneficiary. Suit against Company dismissed.
8659037	17-00317	TX	2017	50,000			Company claims proceeds paid to the beneficiary. Suit against Company dismissed.
8948985	17-00317	TX	2017	250,000			Company claims proceeds paid to the beneficiary. Suit against Company dismissed.
9730773	17-00317	TX	2017	50,000			Company claims proceeds paid to the beneficiary. Suit against Company dismissed.
24218549	16-07428	AZ	2017	1,000,000			Company claims due proof of death not furnished. Suit against Company dismissed.
0199999. Death Claims - Ordinary				4,050,000	84,500		XXX
0599999. Death Claims - Disposed Of				4,050,000	84,500		XXX
1099999. Additional Accidental Death Benefits Claims - Disposed Of							XXX
22281957	MMFG-16-01618-01-LW	NJ	2017	26,500	26,500		Company claims material misrepresentation in application. Compromised to avoid legal expenses and uncertainty of litigation.
22224590	MMFG-15-01110-01-LW	TX	2017	275,000	275,000		Company claims material misrepresentation in application. Compromised to avoid legal expenses and uncertainty of litigation.
1199999. Disability Benefits Claims - Ordinary				301,500	301,500		XXX
1599999. Disability Benefits Claims - Disposed Of				301,500	301,500		XXX
2099999. Matured Endowments Claims - Disposed Of							XXX
2599999. Annuities with Life Contingency Claims - Disposed Of							XXX
2699999. Claims Disposed of During Current Year				4,351,500	386,000		XXX
15676535	0000624	MA	2016	250,000		250,000	Company claims no policy issued.
9823522	17-04353	CA	2018	22,000		22,000	Company claims proceeds paid to the beneficiary.
2799999. Death Claims - Ordinary				272,000		272,000	XXX
3199999. Death Claims - Resisted				272,000		272,000	XXX
3699999. Additional Accidental Death Benefits Claims - Resisted							XXX
4199999. Disability Benefits Claims - Resisted							XXX
4699999. Matured Endowments Claims - Resisted							XXX
5199999. Annuities with Life Contingencies Claims - Resisted							XXX
5299999. Claims Resisted During Current Year				272,000		272,000	XXX
5399999 - Totals				4,623,500	386,000	272,000	XXX

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE H - ACCIDENT AND HEALTH EXHIBIT

	Total		Group Accident and Health		Credit Accident and Health (Group and Individual)		Collectively Renewable	Other Individual Contracts									
	1 Amount	2 %	3 Amount	4 %	5 Amount	6 %		Non-Cancelable		Guaranteed Renewable		Non-Renewable for Stated Reasons Only		Other Accident Only		All Other	
								9 Amount	10 %	11 Amount	12 %	13 Amount	14 %	15 Amount	16 %	17 Amount	18 %
PART 1. - ANALYSIS OF UNDERWRITING OPERATIONS																	
1. Premiums written	754,424,445	XXX	175,238	XXX		XXX	XXX	498,846,470	XXX	244,026,472	XXX	11,376,265	XXX		XXX		XXX
2. Premiums earned	753,521,094	XXX	175,238	XXX		XXX	XXX	498,703,569	XXX	243,284,878	XXX	11,357,409	XXX		XXX		XXX
3. Incurred claims	336,742,684	44.7	31,233	17.8				333,581,337	66.9	2,270,427	0.9	859,687	7.6				
4. Cost containment expenses	7,237,096	1.0						7,237,096	1.5								
5. Incurred claims and cost containment expenses (Lines 3 and 4)	343,979,780	45.6	31,233	17.8				340,818,433	68.3	2,270,427	0.9	859,687	7.6				
6. Increase in contract reserves	112,253,606	14.9						(2,593,352)	(0.5)	114,845,305	47.2	1,653	0.0				
7. Commissions (a)	72,449,321	9.6	55,689	31.8				69,267,385	13.9	1,548,761	0.6	1,577,486	13.9				
8. Other general insurance expenses	198,407,062	26.3	68,234	38.9				142,012,151	28.5	53,092,511	21.8	3,234,166	28.5				
9. Taxes, licenses and fees	23,720,851	3.1	(13,473)	(7.7)				17,106,279	3.4	6,238,469	2.6	389,576	3.4				
10. Total other expenses incurred	294,577,234	39.1	110,450	63.0				228,385,815	45.8	60,879,741	25.0	5,201,228	45.8				
11. Aggregate write-ins for deductions	1,403,520	0.2	(1,202)	(0.7)				1,108,443	0.2	296,279	0.1						
12. Gain from underwriting before dividends or refunds	1,306,954	0.2	34,757	19.8				(69,015,770)	(13.8)	64,993,126	26.7	5,294,841	46.6				
13. Dividends or refunds	26,219,848	3.5						25,632,147	5.1	3,601	0.0	584,100	5.1				
14. Gain from underwriting after dividends or refunds	(24,912,894)	(3.3)	34,757	19.8				(94,647,917)	(19.0)	64,989,525	26.7	4,710,741	41.5				
DETAILS OF WRITE-INS																	
1101. Miscellaneous charges	1,403,520	0.2	(1,202)	(0.7)				1,108,443	0.2	296,279	0.1						
1102.																	
1103.																	
1198. Summary of remaining write-ins for Line 11 from overflow page																	
1199. Totals (Lines 1101 thru 1103 plus 1198)(Line 11 above)	1,403,520	0.2	(1,202)	(0.7)				1,108,443	0.2	296,279	0.1						

(a) Includes \$ reported as "Contract, membership and other fees retained by agents."

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
SCHEDULE H - ACCIDENT AND HEALTH EXHIBIT (Continued)

	1	2	3	4	Other Individual Contracts				
					5	6	7	8	9
	Total	Group Accident and Health	Credit Accident and Health (Group and Individual)	Collectively Renewable	Non-Cancelable	Guaranteed Renewable	Non-Renewable for Stated Reasons Only	Other Accident Only	All Other
PART 2. - RESERVES AND LIABILITIES									
A. Premium Reserves:									
1. Unearned premiums	68,412,480				43,896,919	23,979,313	536,248		
2. Advance premiums	10,463,975				7,764,308	2,547,169	152,498		
3. Reserve for rate credits									
4. Total premium reserves, current year	78,876,455				51,661,227	26,526,482	688,746		
5. Total premium reserves, prior year	78,284,955				50,803,533	26,819,157	662,267		
6. Increase in total premium reserves	591,500				857,694	(292,675)	26,479		
B. Contract Reserves:									
1. Additional reserves (a)	1,052,152,344				526,724,897	525,396,682	30,765		
2. Reserve for future contingent benefits									
3. Total contract reserves, current year	1,052,152,344				526,724,897	525,396,682	30,765		
4. Total contract reserves, prior year	939,898,738				529,318,249	410,551,377	29,112		
5. Increase in contract reserves	112,253,606				(2,593,352)	114,845,305	1,653		
C. Claim Reserves and Liabilities:									
1. Total current year	1,874,495,751				1,855,574,892	16,099,369	2,821,490		
2. Total prior year	1,877,320,923				1,857,596,073	17,254,856	2,469,994		
3. Increase	(2,825,172)				(2,021,181)	(1,155,487)	351,496		

PART 3. - TEST OF PRIOR YEAR'S CLAIM RESERVES AND LIABILITIES									
1. Claims paid during the year:									
1.1 On claims incurred prior to current year	330,901,218				327,595,107	2,948,857	357,254		
1.2 On claims incurred during current year	8,666,638	31,233			8,007,411	477,057	150,937		
2. Claim reserves and liabilities, December 31, current year:									
2.1 On claims incurred prior to current year	1,643,632,617				1,635,557,479	6,216,566	1,858,572		
2.2 On claims incurred during current year	230,863,134				220,017,413	9,882,803	962,918		
3. Test:									
3.1 Lines 1.1 and 2.1	1,974,533,835				1,963,152,586	9,165,423	2,215,826		
3.2 Claim reserves and liabilities, December 31, prior year	1,877,320,923				1,857,596,073	17,254,856	2,469,994		
3.3 Line 3.1 minus Line 3.2	97,212,912				105,556,513	(8,089,433)	(254,168)		

PART 4. - REINSURANCE									
A. Reinsurance Assumed:									
1. Premiums written									
2. Premiums earned									
3. Incurred claims									
4. Commissions									
B. Reinsurance Ceded:									
1. Premiums written	(6,120,136)	196,365				(6,316,501)			
2. Premiums earned	(6,137,145)	196,365				(6,333,510)			
3. Incurred claims	86,419,248	57,892			3,209,212	83,152,144			
4. Commissions	13,054,524	88,012				12,966,512			

(a) Includes \$ premium deficiency reserve.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE H - PART 5 - HEALTH CLAIMS

	1 Medical	2 Dental	3 Other	4 Total
A. Direct:				
1. Incurred Claims			423,161,932	423,161,932
2. Beginning Claim Reserves and Liabilities			2,070,319,317	2,070,319,317
3. Ending Claim Reserves and Liabilities			2,103,410,478	2,103,410,478
4. Claims Paid			390,070,771	390,070,771
B. Assumed Reinsurance:				
5. Incurred Claims.....				
6. Beginning Claim Reserves and Liabilities				
7. Ending Claim Reserves and Liabilities				
8. Claims Paid				
C. Ceded Reinsurance:				
9. Incurred Claims.....			86,419,248	86,419,248
10. Beginning Claim Reserves and Liabilities			193,059,838	193,059,838
11. Ending Claim Reserves and Liabilities			229,069,424	229,069,424
12. Claims Paid			50,409,662	50,409,662
D. Net:				
13. Incurred Claims.....			336,742,684	336,742,684
14. Beginning Claim Reserves and Liabilities			1,877,259,479	1,877,259,479
15. Ending Claim Reserves and Liabilities			1,874,341,054	1,874,341,054
16. Claims Paid			339,661,109	339,661,109
E. Net Incurred Claims and Cost Containment Expenses:				
17. Incurred Claims and Cost Containment Expenses			343,979,780	343,979,780
18. Beginning Reserves and Liabilities			1,879,573,189	1,879,573,189
19. Ending Reserves and Liabilities			1,877,159,250	1,877,159,250
20. Paid Claims and Cost Containment Expenses			346,393,719	346,393,719

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 1 - SECTION 1

Reinsurance Assumed Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsured Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Reinsured	5 Domiciliary Jurisdiction	6 Type of Reinsurance Assumed	7 Type of Business Assumed	8 Amount of In Force at End of Year	9 Reserve	10 Premiums	11 Reinsurance Payable on Paid and Unpaid Losses	12 Modified Coinsurance Reserve	13 Funds Withheld Under Coinsurance
93432	06-1041383	01/01/1985	C. M. Life Insurance Company	CT	OTH/I	OL			371,091			
93432	06-1041383	01/01/2000	C. M. Life Insurance Company	CT	CO/I	AXXX	2,640,916,493	158,225,807	11,024,708	11,942,520		
93432	06-1041383	01/01/2000	C. M. Life Insurance Company	CT	CO/I	OL		213,026,568				
93432	06-1041383	01/01/2002	C. M. Life Insurance Company	CT	CO/I	AXXX	2,518,678,685	369,919,661	32,090,942	16,295,237		
70416	43-0581430	09/07/1983	MML Bay State Life Insurance Company	CT	YRT/I	OL	381,449,451	4,598,578	5,292,033	250,141		
70416	43-0581430	01/01/1997	MML Bay State Life Insurance Company	CT	OTH/I	OL			131,611			
0299999. General Account - U.S. Affiliates - Other							5,541,044,629	745,770,614	48,910,385	28,487,898		
0399999. Total General Account - U.S. Affiliates							5,541,044,629	745,770,614	48,910,385	28,487,898		
0699999. Total General Account - Non-U.S. Affiliates												
0799999. Total General Account - Affiliates							5,541,044,629	745,770,614	48,910,385	28,487,898		
80659	38-0397420	01/01/1986	The Canada Life Assurance Company	MI	YRT/I	OL	580,860	16,560	15,224			
97136	13-3114906	10/01/1981	Metropolitan Tower Life Insurance Co. (FAC)	NE	YRT/I	OL	2,269,195	93,244	204,750			
97136	13-3114906	11/01/1985	Metropolitan Tower Life Insurance Co. (JX25)	NE	YRT/I	OL	5,514,328	145,460	117,949			
80314	52-0913817	12/31/1994	UniCARE Life and Health Insurance Company	IN	CO/G	OL		713,187				
88072	06-0974148	01/01/2013	Talcott Resolution Life Insurance Company	CT	CO/G	FA		5,540,390,848	478,894,082			
0899999. General Account - U.S. Non-Affiliates							8,364,383	5,541,359,299	479,232,005			
00000	AA-3190973	10/01/2000	Argus International Life Insurance Limited	BMJ	YRT/I	OL	174,536	997	1,275			
00000	AA-3190974	01/01/2002	Argus International Life Bermuda Limited	BMJ	YRT/I	OL	2,000,000	6,820	12,139			
00000	AA-1120119	02/21/2017	Rothesay Life Plc	GBR	OTH/I	OL			19,005,953	1,435,664		
0999999. General Account - Non-U.S. Non-Affiliates							2,174,536	7,817	19,019,367	1,435,664		
1099999. Total General Account - Non-Affiliates							10,538,919	5,541,367,116	498,251,372	1,435,664		
1199999. Total General Account							5,551,583,548	6,287,137,730	547,161,757	29,923,562		
70416	43-0581430	01/01/2000	MML Bay State Life Insurance Company	CT	MCO/G	OL	2,240,562,579		(2,829,920)	4,247,820	1,120,900,750	
1399999. Separate Accounts - U.S. Affiliates - Other							2,240,562,579		(2,829,920)	4,247,820	1,120,900,750	
1499999. Total Separate Accounts - U.S. Affiliates							2,240,562,579		(2,829,920)	4,247,820	1,120,900,750	
1799999. Total Separate Accounts - Non-U.S. Affiliates												
1899999. Total Separate Accounts - Affiliates							2,240,562,579		(2,829,920)	4,247,820	1,120,900,750	
88072	06-0974148	01/01/2013	Talcott Resolution Life Insurance Company	CT	MCO/G	VA			783,134,885		8,077,771,552	
1999999. Separate Accounts - U.S. Non-Affiliates									783,134,885		8,077,771,552	
2199999. Total Separate Accounts - Non-Affiliates									783,134,885		8,077,771,552	
2299999. Total Separate Accounts							2,240,562,579		780,304,965	4,247,820	9,198,672,302	
2399999. Total U.S. (Sum of 0399999, 0899999, 1499999 and 1999999)							7,789,971,591	6,287,129,913	1,308,447,355	32,735,718	9,198,672,302	
2499999. Total Non-U.S. (Sum of 0699999, 0999999, 1799999 and 2099999)							2,174,536	7,817	19,019,367	1,435,664		
9999999 - Totals							7,792,146,127	6,287,137,730	1,327,466,722	34,171,382	9,198,672,302	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 1 - SECTION 2

Reinsurance Assumed Accident and Health Insurance Listed by Reinsured Company as of December 31, Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13
NAIC Company Code	ID Number	Effective Date	Name of Reinsured	Dual/Primary Jurisdiction	Type of Reinsurance Assumed	Type of Business Assumed	Premiums	Unearned Premiums	Reserve Liability Other Than for Unearned Premiums	Reinsurance Payable on Paid and Unpaid Losses	Modified Coinsurance Reserve	Funds Withheld Under Coinsurance
NONE												
9999999 - Totals												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 2

Reinsurance Recoverable on Paid and Unpaid Losses Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domiciliary Jurisdiction	6 Paid Losses	7 Unpaid Losses
0399999. Total Life and Annuity - U.S. Affiliates						
0699999. Total Life and Annuity - Non-U.S. Affiliates						
0799999. Total Life and Annuity - Affiliates						
61492	44-0188050	09/01/2018	Athene Annuity & Life Assur. Co. (TH18)	DE	75,447	
80659	38-0397420	09/24/1999	Canada Life Assurance Co (CRB1)	MI	6,394	1,050,476
80659	38-0397420	11/01/2005	Canada Life Assurance Co (CRB4)	MI	21,090	3,870,636
80659	38-0397420	11/23/2007	Canada Life Assurance Co (CRB5)	MI	63,952	140,564
80659	38-0397420	08/01/2008	Canada Life Assurance Co (CRH2)	MI		19,849
67652	23-2044248	11/01/1999	First Penn-Pacific Life Ins. Co. (FP86)	IN	89,552	
86258	13-2572994	03/01/1996	General Re Life Corp. (CL44)	CT	65,290	463,335
86258	13-2572994	09/01/1998	General Re Life Corp. (CL87)	CT	19,402	
86258	13-2572994	03/31/2003	General Re Life Corp. (CLH1)	CT	66,396	142,828
86258	13-2572994	09/01/1976	General Re Life Corp. (C001)	CT		620,463
86258	13-2572994	03/07/1994	General Re Life Corp. (C047)	CT		162,595
86258	13-2572994	03/01/1996	General Re Life Corp. (C061)	CT	73,978	1,359,853
86258	13-2572994	09/16/1996	General Re Life Corp. (C071)	CT		112,523
86258	13-2572994	02/08/1999	General Re Life Corp. (C081)	CT	40,599	314,522
86258	13-2572994	01/01/2005	General Re Life Corp. (C084)	CT		652,325
86258	13-2572994	07/01/2007	General Re Life Corp. (GRN1)	CT	64,671	187,069
86258	13-2572994	07/15/2008	General Re Life Corp. (GRN2)	CT	24,708	
86258	13-2572994	07/15/2008	General Re Life Corp. (GRN3)	CT	42,426	161,124
86258	13-2572994	07/15/2008	General Re Life Corp. (GRN4)	CT		112,524
86258	13-2572994	11/01/2010	General Re Life Corp. (GRN5)	CT	48,538	117,372
88340	59-2859797	08/05/2011	Hannover Life Reassurance Co of America (HAB5)	FL	18,018	
88340	59-2859797	01/01/2012	Hannover Life Reassurance Co of America (HAB7)	FL	17,419	181,113
88340	59-2859797	03/01/2008	Hannover Life Reassurance Co of America (HAE1)	FL	20,083	
88340	59-2859797	04/01/2005	Hannover Life Reassurance Co of America (HAM7)	FL	121,220	313,832
88340	59-2859797	04/01/2005	Hannover Life Reassurance Co of America (HAM8)	FL		75,000
88340	59-2859797	11/01/2010	Hannover Life Reassurance Co of America (HAN5)	FL	97,076	234,746
88340	59-2859797	01/01/2011	Hannover Life Reassurance Co of America (HAN6)	FL	406,188	539,237
88340	59-2859797	01/01/2012	Hannover Life Reassurance Co of America (HAN7)	FL	27,904	
88340	59-2859797	12/01/2015	Hannover Life Reassurance Co of America (HAS2)	FL	124,933	
88340	59-2859797	05/07/2012	Hannover Life Reassurance Co of America (SD96)	FL	3,549,703	5,123,912
65676	35-0472300	09/01/1998	Lincoln National Life Ins. Co. (LI87)	IN	12,950	
65676	35-0472300	11/19/2001	Lincoln National Life Ins. Co. (LID1)	IN		475,931
65676	35-0472300	06/01/1937	Lincoln National Life Ins. Co. (LN03)	IN	200,000	
65676	35-0472300	06/01/1937	Lincoln National Life Ins. Co. (LN04)	IN	100,000	
65676	35-0472300	09/01/1982	Lincoln National Life Ins. Co. (LN12)	IN		484,943
65676	35-0472300	01/05/1983	Lincoln National Life Ins. Co. (LN16)	IN		10,509
65676	35-0472300	03/29/1993	Lincoln National Life Ins. Co. (LN36)	IN	127,981	126,361
65676	35-0472300	09/16/1996	Lincoln National Life Ins. Co. (LN72)	IN		74,993
65676	35-0472300	02/08/1999	Lincoln National Life Ins. Co. (LN81)	IN	61,638	332,554
66346	58-0828824	01/01/1988	Munich American Reassurance Co (CA26)	GA	71,777	276,557
66346	58-0828824	05/01/1994	Munich American Reassurance Co (CA48)	GA	5,000,000	
66346	58-0828824	09/16/1996	Munich American Reassurance Co (CA69)	GA	62,794	149,985
66346	58-0828824	03/28/2000	Munich American Reassurance Co (CA84)	GA	395,944	746,659
66346	58-0828824	07/01/2007	Munich American Reassurance Co (CAN1)	GA	459,561	280,608
66346	58-0828824	01/01/1988	Munich American Reassurance Co (CN42)	GA	97,472	
66346	58-0828824	09/08/1997	Munich American Reassurance Co (CN85)	GA	23,878	
66346	58-0828824	05/01/2001	Munich American Reassurance Co (CN97)	GA	11,177	
66346	58-0828824	09/01/1998	Munich American Reassurance Co (MA87)	GA	19,402	
66346	58-0828824	05/01/2001	Munich American Reassurance Co (MA97)	GA	335,500	67,051
66346	58-0828824	09/16/1996	Munich American Reassurance Co (MAA1)	GA	88,934	21,075
66346	58-0828824	09/24/1999	Munich American Reassurance Co (MAB1)	GA	965,717	1,908,699
66346	58-0828824	03/31/2004	Munich American Reassurance Co (MAB2)	GA	25,719	274,861
66346	58-0828824	08/23/2004	Munich American Reassurance Co (MAB3)	GA	7,022,171	3,960,518
66346	58-0828824	11/01/2005	Munich American Reassurance Co (MAB4)	GA	6,303,043	6,773,614
66346	58-0828824	11/23/2007	Munich American Reassurance Co (MAB5)	GA	337,007	327,982
66346	58-0828824	03/31/2004	Munich American Reassurance Co (MAD1)	GA	3,228,446	713,896
66346	58-0828824	11/01/2005	Munich American Reassurance Co (MAD5)	GA	245,000	
66346	58-0828824	03/01/2008	Munich American Reassurance Co (MAE1)	GA	136,165	
66346	58-0828824	05/28/2012	Munich American Reassurance Co (MAE1)	GA	381,372	799,686
66346	58-0828824	08/01/2008	Munich American Reassurance Co (MAH2)	GA		14,887
66346	58-0828824	04/01/2005	Munich American Reassurance Co (MAM7)	GA	121,221	313,832
66346	58-0828824	04/01/2005	Munich American Reassurance Co (MAM8)	GA		75,000
66346	58-0828824	03/27/1979	Munich American Reassurance Co (MU09)	GA	323,140	16,284
66346	58-0828824	02/08/1999	Munich American Reassurance Co (MU81)	GA	158,633	367,668
66346	58-0828824	01/01/1999	Munich American Reassurance Co (MU82)	GA	84,284	20,737
66346	58-0828824	03/31/2004	Munich American Reassurance Co (MU84)	GA	441,896	668,622
66346	58-0828824	05/01/2004	Munich American Reassurance Co (MUJ3)	GA		186,760
66346	58-0828824	05/23/2005	Munich American Reassurance Co (MUL1)	GA	540,000	16,702
66346	58-0828824	05/23/2005	Munich American Reassurance Co (MUL2)	GA	54,000	51,163
66346	58-0828824	11/01/2008	Munich American Reassurance Co (MUL3)	GA	45,000	36,000
66346	58-0828824	04/28/2011	Munich American Reassurance Co (MUL6)	GA	382,500	445,434
66346	58-0828824	08/30/2010	Munich American Reassurance Co (MUL7)	GA	186,316	209,220
66346	58-0828824	08/30/2010	Munich American Reassurance Co (MUL8)	GA	205,000	266,363
66346	58-0828824	07/01/2007	Munich American Reassurance Co (MUN1)	GA	611,810	374,142
66346	58-0828824	07/15/2008	Munich American Reassurance Co (MUN2)	GA	121,048	
66346	58-0828824	07/15/2008	Munich American Reassurance Co (MUN3)	GA	268,374	799,029
66346	58-0828824	07/15/2008	Munich American Reassurance Co (MUN4)	GA	101,638	168,787
66346	58-0828824	11/01/2010	Munich American Reassurance Co (MUN5)	GA	85,089	117,373
66346	58-0828824	01/01/2011	Munich American Reassurance Co (MUN6)	GA	2,387,347	1,081,223
66346	58-0828824	01/01/2012	Munich American Reassurance Co (MUN7)	GA	92,087	
66346	58-0828824	08/08/2016	Munich American Reassurance Co (MUQ7)	GA		45,000
66346	58-0828824	08/08/2016	Munich American Reassurance Co (MUQ8)	GA	112,500	
66346	58-0828824	08/08/2016	Munich American Reassurance Co (MUQ9)	GA	199,999	62,500
66346	58-0828824	08/30/2010	Munich American Reassurance Co (MUT1)	GA	30,000	652,500
66346	58-0828824	08/30/2010	Munich American Reassurance Co (MUT2)	GA	130,000	493,731
88099	75-1608507	11/23/2007	Optimum Re Insurance Company (OPB5)	TX	41,804	46,854
88099	75-1608507	01/01/2012	Optimum Re Insurance Company (OPB7)	TX	17,419	190,107
93572	43-1235868	03/01/1996	RGA Reinsurance Co. (AL44)	MO	355,193	463,335
93572	43-1235868	10/01/1976	RGA Reinsurance Co. (AL95)	MO		21,108
93572	43-1235868	05/01/2001	RGA Reinsurance Co. (AL97)	MO	120,042	67,082
93572	43-1235868	09/16/1996	RGA Reinsurance Co. (ALA1)	MO	19,549	28,093
93572	43-1235868	09/01/2001	RGA Reinsurance Co. (ALB2)	MO	3,915	397,816
93572	43-1235868	11/19/2001	RGA Reinsurance Co. (ALD1)	MO	164,543	
93572	43-1235868	03/01/1996	RGA Reinsurance Co. (AZ62)	MO	233,487	1,359,853
93572	43-1235868	01/01/1999	RGA Reinsurance Co. (AZ82)	MO		24,914
93572	43-1235868	03/28/2000	RGA Reinsurance Co. (AZ84)	MO	14,798	751,122
93572	43-1235868	09/14/1981	RGA Reinsurance Co. (GA11)	MO	1,298,680	1,271,340
93572	43-1235868	12/31/2017	RGA Reinsurance Co. (GA17)	MO		3,576,430
93572	43-1235868	01/01/1984	RGA Reinsurance Co. (GA18)	MO	224,719	751,659
93572	43-1235868	09/01/1986	RGA Reinsurance Co. (GA24)	MO	209,184	817,664
93572	43-1235868	03/29/1993	RGA Reinsurance Co. (GA39)	MO	102,367	101,067
93572	43-1235868	03/29/1993	RGA Reinsurance Co. (GA43)	MO	19,549	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 2

Reinsurance Recoverable on Paid and Unpaid Losses Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domiciliary Jurisdiction	6 Paid Losses	7 Unpaid Losses
93572	43-1235868	02/08/1999	RG A Reinsurance Co. (GA81)	MO	61,638	332,554
93572	43-1235868	03/28/2000	RG A Reinsurance Co. (GA84)	MO	178,138	785,012
93572	43-1235868	05/01/2004	RG A Reinsurance Co. (GAJ3)	MO		74,704
93572	43-1235868	05/23/2005	RG A Reinsurance Co. (GAL2)	MO		30,698
93572	43-1235868	05/23/2005	RG A Reinsurance Co. (GAL3)	MO	1,650,074	2,119,286
93572	43-1235868	08/30/2010	RG A Reinsurance Co. (GAL7)	MO	150,000	557,919
93572	43-1235868	08/30/2010	RG A Reinsurance Co. (GAL8)	MO	225,000	1,314,379
93572	43-1235868	07/01/2007	RG A Reinsurance Co. (GAN1)	MO	307,211	496,536
93572	43-1235868	02/24/2014	RG A Reinsurance Co. (GAN3)	MO	8,512	64,554
93572	43-1235868	10/01/2015	RG A Reinsurance Co. (GAN3)	MO		359,836
93572	43-1235868	11/01/2010	RG A Reinsurance Co. (GAN5)	MO	48,607	117,373
93572	43-1235868	12/20/2017	RG A Reinsurance Co. (GAN6)	MO		211,878
93572	43-1235868	08/08/2016	RG A Reinsurance Co. (GAQ9)	MO	160,001	50,000
93572	43-1235868	08/30/2010	RG A Reinsurance Co. (GAT1)	MO		1,740,000
93572	43-1235868	08/30/2010	RG A Reinsurance Co. (GAT2)	MO	70,000	1,728,062
93572	43-1235868	10/01/1976	RG A Reinsurance Co. (NC02)	MO	58,212	1,256,398
93572	43-1235868	03/29/1993	RG A Reinsurance Co. (NC40)	MO	24,441	
93572	43-1235868	01/01/1997	RG A Reinsurance Co. (RG01G)	MO		39,197
93572	43-1235868	01/01/1997	RG A Reinsurance Co. (RG02G)	MO	2,320,000	5,564,480
93572	43-1235868	01/01/1997	RG A Reinsurance Co. (RG03G)	MO	199,922	66,546
93572	43-1235868	01/01/1997	RG A Reinsurance Co. (RG04G)	MO	1,136,000	823,214
93572	43-1235868	01/01/1997	RG A Reinsurance Co. (RG06G)	MO		37,500
93572	43-1235868	01/01/1983	RG A Reinsurance Co. (RG12)	MO		983,287
93572	43-1235868	02/14/1983	RG A Reinsurance Co. (RG13)	MO		173,762
93572	43-1235868	04/15/1991	RG A Reinsurance Co. (RG19)	MO	415,540	2,109,434
93572	43-1235868	09/14/1981	RG A Reinsurance Co. (RG22)	MO	100,000	130,085
93572	43-1235868	05/01/2001	RG A Reinsurance Co. (RG97)	MO	59,994	33,524
93572	43-1235868	09/16/1996	RG A Reinsurance Co. (RGA1)	MO	14,667	21,076
93572	43-1235868	02/29/2004	RG A Reinsurance Co. (RGB1)	MO	23,435	
93572	43-1235868	11/01/2004	RG A Reinsurance Co. (RGB2)	MO	21,432	12,500
93572	43-1235868	08/23/2004	RG A Reinsurance Co. (RGB3)	MO	5,387,949	3,300,432
93572	43-1235868	06/01/2008	RG A Reinsurance Co. (RGB5)	MO	175,050	182,156
93572	43-1235868	01/01/2012	RG A Reinsurance Co. (RGB7)	MO	34,838	389,209
93572	43-1235868	03/31/2004	RG A Reinsurance Co. (RGD1)	MO	2,689,034	713,896
93572	43-1235868	11/01/2005	RG A Reinsurance Co. (RGD5)	MO	140,000	
93572	43-1235868	02/29/2004	RG A Reinsurance Co. (RGH1)	MO		136,250
93572	43-1235868	06/01/2008	RG A Reinsurance Co. (RGH2)	MO		29,774
93572	43-1235868	04/01/2005	RG A Reinsurance Co. (RGM7)	MO	403,100	953,804
93572	43-1235868	04/01/2005	RG A Reinsurance Co. (RGM8)	MO		600,000
93572	43-1235868	07/01/2012	RG A Reinsurance Co. (RGPD)	MO		975,780
64688	75-6020048	09/01/2001	SCOR Global Life Americas Reins Co (SCB2)	DE		994,195
64688	75-6020048	08/23/2004	SCOR Global Life Americas Reins Co (SCB3)	DE		1,980,260
64688	75-6020048	01/01/2012	SCOR Global Life Americas Reins Co (SCB7)	DE	17,438	380,215
64688	75-6020048	11/01/2010	SCOR Global Life Americas Reins Co (SCN5)	DE		234,746
64688	75-6020048	01/01/2011	SCOR Global Life Americas Reins Co (SCN6)	DE	15,000	717,150
64688	75-6020048	09/01/1986	SCOR Global Life Americas Reins Co (TA23)	DE		408,833
64688	75-6020048	11/01/1986	SCOR Global Life Americas Reins Co (TA25)	DE	108,016	329,007
64688	75-6020048	11/01/1989	SCOR Global Life Americas Reins Co (TA27)	DE	172,946	
64688	75-6020048	01/01/2002	SCOR Global Life Americas Reins Co (TAF2)	DE	1,200,000	
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAL7)	DE		139,480
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAL8)	DE		532,726
64688	75-6020048	07/15/2008	SCOR Global Life Americas Reins Co (TAN3)	DE		719,821
64688	75-6020048	07/15/2008	SCOR Global Life Americas Reins Co (TAN4)	DE		112,524
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAT1)	DE		435,000
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAT2)	DE	50,000	1,234,330
64688	75-6020048	03/31/2003	SCOR Global Life Americas Reins Co (TRH1)	DE	83,008	200,442
64688	75-6020048	08/01/2008	SCOR Global Life Americas Reins Co (XLH2)	DE		9,925
87017	62-1003368	09/16/1996	SCOR Global Life Reins Co of Delaware (GG70)	DE		74,993
87017	62-1003368	09/24/1999	SCOR Global Life Reins Co of Delaware (GGB1)	DE	6,394	1,050,485
87017	62-1003368	09/01/2001	SCOR Global Life Reins Co of Delaware (GGB2)	DE		397,812
97071	13-3126819	05/01/2001	SCOR Global Life USA Reins Co (BA97)	DE		33,526
97071	13-3126819	03/28/2000	SCOR Global Life USA Reins Co (BM84)	DE	122,506	746,656
97071	13-3126819	01/01/2001	SCOR Global Life USA Reins Co (BMF1)	DE	1,600,000	
97071	13-3126819	11/01/2005	SCOR Global Life USA Reins Co (GIB4)	DE	15,817	2,902,978
97071	13-3126819	11/23/2007	SCOR Global Life USA Reins Co (GIB5)	DE	7,500	140,564
97071	13-3126819	01/01/2012	SCOR Global Life USA Reins Co (GIB7)	DE	26,157	570,323
97071	13-3126819	08/30/2010	SCOR Global Life USA Reins Co (GIL7)	DE		348,699
97071	13-3126819	08/30/2010	SCOR Global Life USA Reins Co (GIL8)	DE		124,464
97071	13-3126819	07/01/2007	SCOR Global Life USA Reins Co (GIN1)	DE		280,608
97071	13-3126819	07/15/2008	SCOR Global Life USA Reins Co (GIN3)	DE		639,222
97071	13-3126819	07/15/2008	SCOR Global Life USA Reins Co (GIN4)	DE		112,524
97071	13-3126819	11/01/2010	SCOR Global Life USA Reins Co (GIN5)	DE		234,746
97071	13-3126819	01/01/2011	SCOR Global Life USA Reins Co (GIN6)	DE	37,500	1,009,250
97071	13-3126819	08/08/2016	SCOR Global Life USA Reins Co (SUQ7)	DE		45,000
97071	13-3126819	08/08/2016	SCOR Global Life USA Reins Co (SUQ9)	DE	360,000	112,500
68713	84-0499703	03/29/1993	Security Life of Denver Ins. Co. (SD37)	CO	62,505	50,004
68713	84-0499703	03/29/1993	Security Life of Denver Ins. Co. (SD41)	CO	24,441	
68713	84-0499703	06/15/1999	Security Life of Denver Ins. Co. (SD83)	CO	225,000	5,058,081
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ3)	CO		336,168
68713	84-0499703	09/16/1996	Security Life of Denver Ins. Co. (SLA1)	CO		28,093
82627	06-0839705	11/01/1970	Swiss Re Life & Health America Inc. (CG07)	MO		38,406
82627	06-0839705	01/01/1971	Swiss Re Life & Health America Inc. (C121)	MO		15,761
82627	06-0839705	09/08/1997	Swiss Re Life & Health America Inc. (LF85)	MO	31,828	
82627	06-0839705	08/01/1984	Swiss Re Life & Health America Inc. (LF88)	MO		167,132
82627	06-0839705	10/01/1981	Swiss Re Life & Health America Inc. (LR10)	MO	195,955	
82627	06-0839705	01/01/1984	Swiss Re Life & Health America Inc. (LR17)	MO	59,375	116,741
82627	06-0839705	03/29/1993	Swiss Re Life & Health America Inc. (LR38)	MO	102,367	101,067
82627	06-0839705	03/29/1993	Swiss Re Life & Health America Inc. (LR42)	MO	19,549	
82627	06-0839705	03/01/1996	Swiss Re Life & Health America Inc. (N044)	MO	355,193	463,335
82627	06-0839705	02/01/1994	Swiss Re Life & Health America Inc. (N045)	MO		6,934
82627	06-0839705	09/08/1997	Swiss Re Life & Health America Inc. (N085)	MO	23,878	
82627	06-0839705	05/01/2001	Swiss Re Life & Health America Inc. (N097)	MO	231,165	67,051
82627	06-0839705	09/16/1996	Swiss Re Life & Health America Inc. (NOA1)	MO	19,549	28,093
82627	06-0839705	09/01/2001	Swiss Re Life & Health America Inc. (NOB2)	MO	17,620	2,959,725
82627	06-0839705	11/19/2001	Swiss Re Life & Health America Inc. (NOD1)	MO	65,806	237,966
82627	06-0839705	03/31/2003	Swiss Re Life & Health America Inc. (NOH1)	MO	49,812	69,369
82627	06-0839705	12/31/2016	Swiss Re Life & Health America Inc. (SR16)	MO	1,454,048	3,210,333
82627	06-0839705	03/01/1996	Swiss Re Life & Health America Inc. (SR59)	MO	153,608	
82627	06-0839705	03/01/1996	Swiss Re Life & Health America Inc. (SR60)	MO	206,763	1,359,853
82627	06-0839705	01/01/2000	Swiss Re Life & Health America Inc. (SR84)	MO	208,534	751,450
82627	06-0839705	06/12/2012	Swiss Re Life & Health America Inc. (SRB2)	MO	50,764	397,855
82627	06-0839705	08/05/2011	Swiss Re Life & Health America Inc. (SRB5)	MO	18,018	
82627	06-0839705	01/01/2012	Swiss Re Life & Health America Inc. (SRB7)	MO	17,419	190,107
82627	06-0839705	05/28/2012	Swiss Re Life & Health America Inc. (SRE1)	MO	194,586	799,685
82627	06-0839705	08/01/2008	Swiss Re Life & Health America Inc. (SRH2)	MO		14,887

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 2

Reinsurance Recoverable on Paid and Unpaid Losses Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domiciliary Jurisdiction	6 Paid Losses	7 Unpaid Losses
82627	06-0839705	05/23/2005	Swiss Re Life & Health America Inc. (SRL1)	MO	810,000	25,054
82627	06-0839705	05/23/2005	Swiss Re Life & Health America Inc. (SRL2)	MO		10,233
82627	06-0839705	05/23/2005	Swiss Re Life & Health America Inc. (SRL3)	MO	1,520,324	1,939,286
82627	06-0839705	11/01/2006	Swiss Re Life & Health America Inc. (SRL5)	MO	89,880	450,000
82627	06-0839705	08/30/2010	Swiss Re Life & Health America Inc. (SRL6)	MO	112,500	445,434
82627	06-0839705	08/30/2010	Swiss Re Life & Health America Inc. (SRL8)	MO	750,000	1,279,506
82627	06-0839705	04/01/2005	Swiss Re Life & Health America Inc. (SRM7)	MO	100,775	405,254
82627	06-0839705	04/01/2005	Swiss Re Life & Health America Inc. (SRM8)	MO		150,000
82627	06-0839705	05/01/2013	Swiss Re Life & Health America Inc. (SRN6)	MO	30,000	74,564
82627	06-0839705	06/29/2015	Swiss Re Life & Health America Inc. (SRR1)	MO	3,224	
82627	06-0839705	12/01/2015	Swiss Re Life & Health America Inc. (SRS2)	MO	124,933	
82627	06-0839705	08/30/2010	Swiss Re Life & Health America Inc. (SRT1)	MO		1,087,500
82627	06-0839705	08/30/2010	Swiss Re Life & Health America Inc. (SRT2)	MO	40,000	987,464
70688	36-6071399	05/01/2004	Transamerica Financial Life Ins. Co. (TAJ3)	NY		74,704
70688	36-6071399	05/23/2005	Transamerica Financial Life Ins. Co. (TAL2)	NY		10,233
70688	36-6071399	05/23/2005	Transamerica Financial Life Ins. Co. (TAL3)	NY	448,783	1,023,643
70688	36-6071399	07/15/2008	Transamerica Financial Life Ins. Co. (TAN3)	NY		132,916
70688	36-6071399	09/01/1991	Transamerica Financial Life Ins. Co. (TR63)	NY		31,500
0899999. Life and Annuity - U.S. Non-Affiliates					68,009,045	120,477,267
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (ST84)	CYM	263,002	14,343
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (ST85)	CYM		
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (ST97)	CYM	97,768	
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (STB1)	CYM	15,670	
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (STB2)	CYM	35,071	531,145
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (STB3)	CYM	1,368,966	2,044,537
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (STB4)	CYM	1,625,569	2,760,939
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (STB5)	CYM	18,665	5,353
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (STD1)	CYM	370,970	
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (STH1)	CYM		50,898
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co (Cayman) Ltd (STN1)	CYM	136,267	64,676
0999999. Life and Annuity - Non-U.S. Non-Affiliates					3,931,948	5,471,891
1099999. Total Life and Annuity - Non-Affiliates					71,940,993	125,949,158
1199999. Total Life and Annuity					71,940,993	125,949,158
1499999. Total Accident and Health - U.S. Affiliates						
1799999. Total Accident and Health - Non-U.S. Affiliates						
1899999. Total Accident and Health - Affiliates						
60054	06-6033492	03/22/2017	Aetna Life Insurance Corporation(AE17)	CT	74,823	109,021
68276	48-1024691	06/01/2000	Employers Reassurance Corp. (ER03)	KS		4,958,283
91898	86-0388413	01/01/2018	LifeCare Assurance Company (LC18)	AZ	65,874	34,435
88099	75-1608507	05/09/2016	Optimum Re Insurance Company (OP16)	TX	14,000	
80314	52-0913817	12/31/1994	UnicARE Life & Health Insurance Co. (UN02)	IN		50,000
39845	48-0921045	01/01/1993	Westport Insurance Corporation (ER01)	MO		597,699
1999999. Accident and Health - U.S. Non-Affiliates					154,697	5,749,438
2199999. Total Accident and Health - Non-Affiliates					154,697	5,749,438
2299999. Total Accident and Health					154,697	5,749,438
2399999. Total U.S. (Sum of 0399999, 0899999, 1499999 and 1999999)					68,163,742	126,226,705
2499999. Total Non-U.S. (Sum of 0699999, 0999999, 1799999 and 2099999)					3,931,948	5,471,891
9999999 Totals - Life, Annuity and Accident and Health					72,095,690	131,698,596

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
0399999. Total General Account - Authorized U.S. Affiliates														
0699999. Total General Account - Authorized Non-U.S. Affiliates														
0799999. Total General Account - Authorized Affiliates														
61492	44-0188050	09/01/2018	Athene Annuity & Life Assur. Co. (TH18)	DE	CO/L	JA		696,408,817		704,354,508				
80659	38-0397420	08/01/1985	Canada Life Assurance Co. (CR22)	MI	YRT/I	OL	128,981	5,175	4,916					
80659	38-0397420	03/01/1996	Canada Life Assurance Co. (CR57)	MI	YRT/I	OL	51,710,155	135,112	129,856					
80659	38-0397420	09/01/1984	Canada Life Assurance Co. (CR82)	MI	YRT/G	OL			1,079,846					
80659	38-0397420	09/01/1984	Canada Life Assurance Co. (CR82)	MI	YRT/I	OL	122,200	988	4,874					
80659	38-0397420	03/01/1996	Canada Life Assurance Co. (CR83)	MI	YRT/I	OL	12,216,110	79,348	68,232					
80659	38-0397420	03/28/2000	Canada Life Assurance Co. (CR85)	MI	YRT/I	OL	103,674,187	936,298	946,468					
80659	38-0397420	09/24/1999	Canada Life Assurance Co. (CRB1)	MI	YRT/I	OL	417,061,512	7,202,562	8,083,974					
80659	38-0397420	11/01/2005	Canada Life Assurance Co. (CRB4)	MI	YRT/I	OL	412,613,313	12,724,020	12,405,764					
80659	38-0397420	11/23/2007	Canada Life Assurance Co. (CRB5)	MI	YRT/I	OL	370,429,149	3,575,384	3,381,800					
80659	38-0397420	08/01/2008	Canada Life Assurance Co. (CRB6)	MI	YRT/I	OL	38,929,492	217,829	158,066					
80659	38-0397420	09/01/1999	Canada Life Assurance Co. (CRC1)	MI	YRT/I	OL	446,485	4,598	4,209					
80659	38-0397420	05/01/2004	Canada Life Assurance Co. (CRD3)	MI	YRT/I	OL	47,054,354	564,023	487,429					
80659	38-0397420	11/01/2005	Canada Life Assurance Co. (CRD5)	MI	YRT/I	OL	581,713,153	3,746,085	3,130,967					
80659	38-0397420	01/01/2009	Canada Life Assurance Co. (CRE4)	MI	YRT/I	OL	406,263	2,490	2,222					
80659	38-0397420	08/01/2008	Canada Life Assurance Co. (CRH2)	MI	YRT/I	OL	149,790,845	200,726	158,390					
80659	38-0397420	09/01/2003	Canada Life Assurance Co. (CRI1)	MI	YRT/I	OL	3,077,690	198,143	185,784					
80659	38-0397420	07/15/2008	Canada Life Assurance Co. (CRN2)	MI	YRT/I	OL	661,295,937	1,441,930	1,370,008					
80659	38-0397420	07/01/2012	Canada Life Assurance Co. (CRPE)	MI	YRT/I	OL	431,493,793	845,916	630,890					
67652	23-2044248	11/01/1999	First Penn-Pacific Life Ins. Co. (FP86)	IN	MCO/I	OL	40,158,817						34,595,787	
86258	13-2572994	05/01/1994	General Re Life Corp. (CL29)	CT	YRT/I	OL	75,456,387	343,492	637,344					
86258	13-2572994	03/01/1996	General Re Life Corp. (CL30)	CT	YRT/I	OL	131,519,970	2,080,099	1,922,611					
86258	13-2572994	07/01/1972	General Re Life Corp. (CL31)	CT	YRT/G	OL			7,987					
86258	13-2572994	07/01/1972	General Re Life Corp. (CL31)	CT	YRT/I	OL	9,596,718	266,037	344,367					
86258	13-2572994	01/19/2005	General Re Life Corp. (CL43)	CT	YRT/I	OL			93					
86258	13-2572994	03/01/1996	General Re Life Corp. (CL44)	CT	YRT/I	OL	115,331,227	2,516,178	2,539,960					
86258	13-2572994	09/01/1998	General Re Life Corp. (CL87)	CT	YRT/I	OL	102,014,126	799,505	776,454					
86258	13-2572994	03/31/2004	General Re Life Corp. (CLD2)	CT	YRT/I	OL	3,188,257	11,860	9,936					
86258	13-2572994	05/01/2004	General Re Life Corp. (CLD3)	CT	YRT/I	OL	7,822,773	82,344	70,140					
86258	13-2572994	03/31/2003	General Re Life Corp. (CLH1)	CT	YRT/I	OL	68,902,131	1,368,825	1,366,056					
86258	13-2572994	09/01/1976	General Re Life Corp. (CO01)	CT	YRT/G	OL	891,404	43,193	40,542					
86258	13-2572994	09/01/1976	General Re Life Corp. (CO01)	CT	YRT/I	OL	366,993,422	6,685,883	6,770,589					
86258	13-2572994	03/07/1994	General Re Life Corp. (CO47)	CT	YRT/I	OL	35,752,218	663,996	678,687					
86258	13-2572994	05/01/1994	General Re Life Corp. (CO50)	CT	YRT/I	OL	129,489,824	1,394,195	1,398,851					
86258	13-2572994	03/01/1996	General Re Life Corp. (CO61)	CT	YRT/G	OL	23,184,209	336,957	320,819					
86258	13-2572994	03/01/1996	General Re Life Corp. (CO61)	CT	YRT/I	OL	419,057,228	3,847,615	3,870,397					
86258	13-2572994	01/19/2005	General Re Life Corp. (CO66)	CT	YRT/I	OL	18,404,375	46,004	41,210					
86258	13-2572994	09/16/1996	General Re Life Corp. (CO71)	CT	YRT/I	OL	228,028,484	1,362,452	1,392,492					
86258	13-2572994	02/08/1999	General Re Life Corp. (CO81)	CT	YRT/I	OL	44,209,272	366,913	357,418					
86258	13-2572994	01/01/2005	General Re Life Corp. (CO84)	CT	YRT/I	OL	711,834,617	2,605,108	2,565,276					
86258	13-2572994	09/01/1999	General Re Life Corp. (COC1)	CT	YRT/I	OL	446,485	4,598	4,209					
86258	13-2572994	07/01/2007	General Re Life Corp. (GRN1)	CT	YRT/I	OL	891,201,946	2,130,458	2,095,164					
86258	13-2572994	07/15/2008	General Re Life Corp. (GRN2)	CT	YRT/I	OL	495,025,816	1,055,604	1,019,827					
86258	13-2572994	07/15/2008	General Re Life Corp. (GRN3)	CT	YRT/I	OL	1,311,179,055	1,272,164	1,258,406					
86258	13-2572994	07/15/2008	General Re Life Corp. (GRN4)	CT	YRT/I	OL	4,602,559,001	7,285,808	7,113,070					
86258	13-2572994	11/01/2010	General Re Life Corp. (GRN5)	CT	YRT/I	OL	1,902,956,063	1,813,580	1,617,046					
86258	13-2572994	05/14/2014	General Re Life Corp. (GRN6)	CT	YRT/I	OL	1,204,582	4,400	4,151					
86258	13-2572994	07/01/2018	General Re Life Corp. (GRN9)	CT	YRT/I	OL	274,231,658	248,074						
86258	13-2572994	09/01/1976	General Re Life Corp. (GRPA)	CT	YRT/I	OL	54,222,354	79,790	66,722					
88340	59-2859797	03/01/1981	Hannover Life Reassurance (HA96)	FL	YRT/I	OL	259,154	10,394	10,025					
88340	59-2859797	08/05/2011	Hannover Life Reassurance (HAB5)	FL	YRT/I	OL	51,383,824	410,656	375,639					
88340	59-2859797	01/01/2012	Hannover Life Reassurance (HAB7)	FL	YRT/I	OL	108,030,631	978,321	921,889					
88340	59-2859797	08/05/2011	Hannover Life Reassurance (HAD5)	FL	YRT/I	OL	51,661,469	240,841	199,167					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
88340	59-2859797	01/01/2012	Hannover Life Reassurance (HAD6)	FL	YRT/I	OL	140,348,879	230,433	187,489	82,519				
88340	59-2859797	03/01/2008	Hannover Life Reassurance (HAE1)	FL	YRT/G	OL	278,874,245	1,057,516	990,998	666,847				
88340	59-2859797	03/01/2008	Hannover Life Reassurance (HAE2)	FL	YRT/G	OL	324,675	2,997	2,840	2,050				
88340	59-2859797	03/01/2008	Hannover Life Reassurance (HAE3)	FL	YRT/G	OL	51,022,279	170,578	160,583	105,076				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM2)	FL	YRT/G	OL	2,029,320	637	702	5,365				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM3)	FL	YRT/G	OL	4,965,320	997	1,086	8,873				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM3)	FL	YRT/I	OL	711,426	685	629	618				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM4)	FL	YRT/G	OL	1,407,360	306	283	2,593				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM4)	FL	YRT/I	OL	19,800	32	32	33				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM5)	FL	YRT/G	OL	4,055,679	1,094	1,033	9,463				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM5)	FL	YRT/I	OL	744,955	2,420	2,268	2,407				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM6)	FL	YRT/G	OL	116,000	82	74	729				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM7)	FL	YRT/G	OL	149,742,403	45,621	52,435	439,767				
88340	59-2859797	04/01/2005	Hannover Life Reassurance (HAM8)	FL	YRT/G	OL	3,957,180	1,419	1,890	17,698				
88340	59-2859797	04/01/2010	Hannover Life Reassurance (HAM9)	FL	YRT/G	OL	16,359,574	2,208	2,693	22,517				
88340	59-2859797	11/01/2010	Hannover Life Reassurance (HAM5)	FL	YRT/I	OL	3,820,607,609	3,617,190	3,227,115	1,719,138				
88340	59-2859797	01/01/2011	Hannover Life Reassurance (HAN6)	FL	YRT/I	OL	4,384,976,667	8,240,562	8,158,545	4,243,458				
88340	59-2859797	01/01/2012	Hannover Life Reassurance (HAN7)	FL	YRT/I	OL	345,758,255	693,119	681,812	310,630				
88340	59-2859797	07/01/2018	Hannover Life Reassurance (HAN9)	FL	YRT/I	OL	553,812,732	499,077		8,185				
88340	59-2859797	07/01/2012	Hannover Life Reassurance (HAPG)	FL	YRT/I	OL	303,112,995	652,055	527,711	228,014				
88340	59-2859797	08/08/2016	Hannover Life Reassurance (HAQ0)	FL	CO/L	XXXL	180,151,600	460,987	133,989	193,166				
88340	59-2859797	12/01/2015	Hannover Life Reassurance (HAS2)	FL	YRT/G	OL	413,427,872	87,245	56,070	542,096				
88340	59-2859797	05/07/2012	Hannover Life Reassurance (SD96)	FL	CO/L	XXXL	15,149,832,340	344,552,309	384,786,137	22,264,709				
88340	59-2859797	05/07/2012	Hannover Life Reassurance (SD96)	FL	YRT/I	OL	1,288,582,350	5,492,633	4,940,811	3,797,393				
88340	59-2859797	05/23/2005	Hannover Life Reassurance (STL1)	FL	CO/L	XXXL	5,465,770	14,952	48,240	3,409				
88340	59-2859797	05/23/2005	Hannover Life Reassurance (STL1)	FL	YRT/I	OL	43,586,651	507,775	499,015	314,778				
88340	59-2859797	05/23/2005	Hannover Life Reassurance (STL2)	FL	CO/L	XXXL	14,224,245	24,097	138,825	(108,059)				
88340	59-2859797	05/23/2005	Hannover Life Reassurance (STL2)	FL	YRT/I	OL	72,409,149	315,174	293,113	245,798				
93440	06-1041332	07/15/1994	HM Life Insurance Co. (GL49)	PA	YRT/I	OL	133,741	2,178	2,467	4,976				
93440	06-1041332	03/31/1997	HM Life Insurance Co. (TG67)	PA	YRT/I	OL	1,061,336	40,841	44,852	72,301				
65676	35-0472300	12/01/1964	Lincoln National Life Ins. Co. (LI51)	IN	YRT/I	OL	2,753,359	243,840	276,666	419,871				
65676	35-0472300	01/05/1983	Lincoln National Life Ins. Co. (LI54)	IN	YRT/I	OL	33,035,686	612,742	563,777	338,765				
65676	35-0472300	09/01/1998	Lincoln National Life Ins. Co. (LI87)	IN	YRT/I	OL	68,090,268	533,656	518,290	308,258				
65676	35-0472300	11/19/2001	Lincoln National Life Ins. Co. (LID1)	IN	YRT/I	OL	268,678,300	5,176,932	4,941,732	1,496,779				
65676	35-0472300	06/01/1937	Lincoln National Life Ins. Co. (LN03)	IN	MCO/I	OL	10,298,931			195,859			8,079,527	
65676	35-0472300	06/01/1937	Lincoln National Life Ins. Co. (LN04)	IN	MCO/I	OL	5,364,814			89,467			3,801,198	
65676	35-0472300	09/01/1982	Lincoln National Life Ins. Co. (LN12)	IN	YRT/I	OL	8,912,825	419,364	496,130	552,285				
65676	35-0472300	01/05/1983	Lincoln National Life Ins. Co. (LN16)	IN	YRT/G	OL	9,636,989	141,953	122,919	127,240				
65676	35-0472300	01/05/1983	Lincoln National Life Ins. Co. (LN16)	IN	YRT/I	OL	118,838,192	3,260,196	3,212,488	3,356,048				
65676	35-0472300	03/29/1993	Lincoln National Life Ins. Co. (LN36)	IN	YRT/I	OL	487,303,901	3,771,839	3,800,049	3,137,735				
65676	35-0472300	09/16/1996	Lincoln National Life Ins. Co. (LN72)	IN	YRT/I	OL	151,984,297	907,519	927,540	690,088				
65676	35-0472300	02/08/1999	Lincoln National Life Ins. Co. (LN81)	IN	YRT/I	OL	67,116,921	557,042	542,605	350,828				
65676	35-0472300	03/28/2000	Lincoln National Life Ins. Co. (LN85)	IN	YRT/I	OL	151,266,977	1,671,383	1,672,036	941,843				
65676	35-0472300	09/01/1999	Lincoln National Life Ins. Co. (LNC1)	IN	YRT/I	OL	446,485	4,598	4,209	2,118				
66346	58-0828824	01/01/1988	Munich American Reassurance (CA26)	GA	YRT/G	OL	754,903	21,320	19,688	24,040				
66346	58-0828824	01/01/1988	Munich American Reassurance (CA26)	GA	YRT/I	OL	200,477,131	1,898,732	1,846,107	2,400,596				
66346	58-0828824	05/01/1994	Munich American Reassurance (CA48)	GA	YRT/I	OL	225,561,292	1,390,404	1,376,748	865,751				
66346	58-0828824	03/01/1996	Munich American Reassurance (CA65)	GA	YRT/I	OL	112,279,829	599,154	523,292	421,175				
66346	58-0828824	09/16/1996	Munich American Reassurance (CA69)	GA	YRT/I	OL	303,943,700	1,815,902	1,855,774	1,286,307				
66346	58-0828824	09/08/1997	Munich American Reassurance (CA76)	GA	YRT/I	OL	87,851,900	731,625	751,702	453,748				
66346	58-0828824	03/28/2000	Munich American Reassurance (CA84)	GA	YRT/I	OL	1,682,805,265	6,910,176	6,790,407	3,860,139				
66346	58-0828824	03/28/2000	Munich American Reassurance (CA85)	GA	YRT/I	OL	155,526,438	1,404,633	1,419,869	792,916				
66346	58-0828824	07/01/2007	Munich American Reassurance (CAN1)	GA	YRT/I	OL	1,336,773,267	3,196,027	3,143,014	2,469,903				
66346	58-0828824	05/01/1994	Munich American Reassurance (CN40)	GA	YRT/I	OL	198,493,188	1,396,530	1,239,759	593,549				
66346	58-0828824	11/01/1980	Munich American Reassurance (CN41)	GA	YRT/G	OL	355,791	10,927	10,585	11,051				
66346	58-0828824	11/01/1980	Munich American Reassurance (CN41)	GA	YRT/I	OL	20,992,976	523,318	532,226	892,164				

43.1

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
66346	58-0828824	01/01/1988	Munich American Reassurance (CN42)	GA	YRT/I	OL	83,810,648	1,013,339	1,000,637	776,214				
66346	58-0828824	03/01/1996	Munich American Reassurance (CN43)	GA	YRT/I	OL	8,992,836	196,217	175,993	99,895				
66346	58-0828824	09/08/1997	Munich American Reassurance (CN85)	GA	YRT/I	OL	23,086,234	279,422	269,044	209,916				
66346	58-0828824	05/01/2001	Munich American Reassurance (CN97)	GA	YRT/I	OL	32,763,020	244,491	231,222	131,519				
66346	58-0828824	09/01/1998	Munich American Reassurance (MA87)	GA	YRT/I	OL	102,014,126	799,505	776,471	431,951				
66346	58-0828824	10/01/1994	Munich American Reassurance (MA91)	GA	YRT/I	OL	77,719,287	483,823	713,656	394,757				
66346	58-0828824	10/01/1981	Munich American Reassurance (MA92)	GA	YRT/I	OL	223,978	6,397	7,331	7,869				
66346	58-0828824	05/01/2001	Munich American Reassurance (MA97)	GA	YRT/I	OL	790,368,813	3,511,025	3,433,437	1,872,342				
66346	58-0828824	09/16/1996	Munich American Reassurance (MAA1)	GA	YRT/I	OL	66,821,691	572,399	556,790	247,817				
66346	58-0828824	04/01/1997	Munich American Reassurance (MAA7)	GA	YRT/I	OL	202,894	4,620	4,344	2,083				
66346	58-0828824	09/24/1999	Munich American Reassurance (MAB1)	GA	YRT/I	OL	834,093,284	14,404,540	16,167,538	7,445,803				
66346	58-0828824	03/31/2004	Munich American Reassurance (MAB2)	GA	YRT/I	OL	62,024,006	2,329,366	2,095,790	1,432,722				
66346	58-0828824	08/23/2004	Munich American Reassurance (MAB3)	GA	YRT/I	OL	299,434,514	13,501,036	13,967,221	6,971,195				
66346	58-0828824	11/01/2005	Munich American Reassurance (MAB4)	GA	YRT/I	OL	722,073,351	22,266,979	21,710,039	19,062,196				
66346	58-0828824	11/23/2007	Munich American Reassurance (MAB5)	GA	YRT/I	OL	864,333,698	8,342,400	7,890,585	5,547,922				
66346	58-0828824	08/01/2008	Munich American Reassurance (MAB6)	GA	YRT/I	OL	38,929,490	217,829	158,066	101,165				
66346	58-0828824	03/31/2004	Munich American Reassurance (MAD1)	GA	YRT/I	OL	235,306,222	3,957,831	4,062,240	997,421				
66346	58-0828824	09/01/2002	Munich American Reassurance (MAD2)	GA	YRT/I	OL	37,247,806	368,015	332,516	112,547				
66346	58-0828824	05/01/2004	Munich American Reassurance (MAD3)	GA	YRT/I	OL	94,108,711	1,128,042	974,840	272,165				
66346	58-0828824	08/23/2004	Munich American Reassurance (MAD4)	GA	YRT/I	OL	44,160,647	154,120	133,154	49,849				
66346	58-0828824	11/01/2005	Munich American Reassurance (MAD5)	GA	YRT/I	OL	1,017,998,038	6,555,635	5,479,208	2,749,501				
66346	58-0828824	03/01/2008	Munich American Reassurance (MAE1)	GA	YRT/G	OL	669,493,134	2,538,311	2,378,676	1,472,511				
66346	58-0828824	05/28/2012	Munich American Reassurance (MAE1B)	GA	YRT/G	OL	2,793,608,551	6,629,622	6,222,736	3,267,673				
66346	58-0828824	03/01/2008	Munich American Reassurance (MAE2)	GA	YRT/G	OL	779,222	7,193	6,814	4,357				
66346	58-0828824	05/28/2012	Munich American Reassurance (MAE2B)	GA	YRT/G	OL	5,261,118	21,837	20,403	11,263				
66346	58-0828824	03/01/2008	Munich American Reassurance (MAE3)	GA	YRT/G	OL	122,453,490	409,385	385,409	228,103				
66346	58-0828824	05/28/2012	Munich American Reassurance (MAE3B)	GA	YRT/G	OL	473,101,391	1,132,325	1,061,474	526,710				
66346	58-0828824	08/01/2008	Munich American Reassurance (MAH2)	GA	YRT/I	OL	115,242,404	155,904	123,111	67,273				
66346	58-0828824	09/01/2003	Munich American Reassurance (MA11)	GA	YRT/I	OL	3,847,159	247,676	232,230	150,634				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM2)	GA	YRT/G	OL	1,521,990	471	530	4,265				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM3)	GA	YRT/G	OL	3,733,990	747	818	7,126				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM3)	GA	YRT/I	OL	533,570	514	471	490				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM4)	GA	YRT/G	OL	1,055,520	230	213	2,060				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM4)	GA	YRT/I	OL	14,850	25	25	26				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM5)	GA	YRT/G	OL	3,041,760	815	773	7,540				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM5)	GA	YRT/I	OL	558,716	1,817	1,702	1,909				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM6)	GA	YRT/G	OL	87,000	61	55	579				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM7)	GA	YRT/G	OL	178,739,630	51,492	58,476	586,517				
66346	58-0828824	04/01/2005	Munich American Reassurance (MAM8)	GA	YRT/G	OL	3,957,180	1,419	1,890	19,546				
66346	58-0828824	04/01/2010	Munich American Reassurance (MAM9)	GA	YRT/G	OL	16,359,522	2,208	2,693	32,206				
66346	58-0828824	03/27/1979	Munich American Reassurance (MU09)	GA	YRT/I	OL	1,144,461	30,485	38,991	47,053				
66346	58-0828824	10/01/1994	Munich American Reassurance (MU53)	GA	YRT/G	OL	4,818,494	70,976	61,460	63,620				
66346	58-0828824	10/01/1994	Munich American Reassurance (MU53)	GA	YRT/I	OL	76,064,053	211,356	226,942	143,226				
66346	58-0828824	02/08/1999	Munich American Reassurance (MU81)	GA	YRT/I	OL	111,727,703	927,245	903,222	543,523				
66346	58-0828824	01/01/1999	Munich American Reassurance (MU82)	GA	YRT/I	OL	27,490,840	348,104	353,695	213,995				
66346	58-0828824	03/31/2004	Munich American Reassurance (MU84)	GA	YRT/I	OL	1,631,485,455	6,066,359	5,981,663	3,418,928				
66346	58-0828824	03/31/2004	Munich American Reassurance (MU85)	GA	YRT/I	OL	139,506,908	1,061,394	1,102,249	570,523				
66346	58-0828824	09/01/1999	Munich American Reassurance (MUC1)	GA	YRT/I	OL	446,485	4,598	4,209	2,664				
66346	58-0828824	07/01/2002	Munich American Reassurance (MUE4)	GA	YRT/I	OL	34,298,659	391,705	416,960	199,170				
66346	58-0828824	08/01/2008	Munich American Reassurance (MUE4)	GA	YRT/I	OL	55,077,606	339,378	319,153	193,029				
66346	58-0828824	05/01/2004	Munich American Reassurance (MUJ1)	GA	CO/I	XXXL	16,722,272	80,842	74,502	97,863				
66346	58-0828824	05/01/2004	Munich American Reassurance (MUJ1)	GA	YRT/I	OL	27,831,364	208,823	198,800	125,395				
66346	58-0828824	05/01/2004	Munich American Reassurance (MUJ2)	GA	CO/I	XXXL	18,820,771	90,728	95,422	109,399				
66346	58-0828824	05/01/2004	Munich American Reassurance (MUJ2)	GA	YRT/I	OL	32,086,030	143,863	139,716	112,146				
66346	58-0828824	05/01/2004	Munich American Reassurance (MUJ3)	GA	CO/I	XXXL	270,600,534	6,191,603	6,536,444	514,478				
66346	58-0828824	05/01/2004	Munich American Reassurance (MUJ3)	GA	YRT/I	OL	31,465,846	91,049	83,116	69,305				

43.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
66346	58-0828824	05/01/2004	Munich American Reassurance (MUJ4)	GA	CO/I	XXXL	71,320,819	5,531,020	5,169,380	143,993				
66346	58-0828824	05/01/2004	Munich American Reassurance (MUJ4)	GA	YRT/I	DL	13,449,805	20,092	18,732	13,329				
66346	58-0828824	01/01/2005	Munich American Reassurance (MUJ5)	GA	CO/I	XXXL	5,469,211	7,297	8,005	20,038				
66346	58-0828824	01/01/2005	Munich American Reassurance (MUJ5)	GA	YRT/I	DL	6,825,795	25,048	29,005	(1,893)				
66346	58-0828824	01/01/2005	Munich American Reassurance (MUJ6)	GA	CO/I	XXXL	7,049,114	11,528	15,095	28,612				
66346	58-0828824	01/01/2005	Munich American Reassurance (MUJ6)	GA	YRT/I	DL	13,269,666	54,229	54,058	41,233				
66346	58-0828824	01/01/2005	Munich American Reassurance (MUJ7)	GA	CO/I	XXXL	113,112,303	2,510,398	2,559,188	220,871				
66346	58-0828824	01/01/2005	Munich American Reassurance (MUJ7)	GA	YRT/I	DL	14,618,423	37,287	34,892	26,849				
66346	58-0828824	01/01/2005	Munich American Reassurance (MUJ8)	GA	CO/I	XXXL	30,457,105	1,804,287	1,732,379	58,307				
66346	58-0828824	01/01/2005	Munich American Reassurance (MUJ8)	GA	YRT/I	DL	4,609,037	5,579	5,313	3,889				
66346	58-0828824	05/23/2005	Munich American Reassurance (MUL1)	GA	CO/I	XXXL	70,386,454	236,519	348,437	33,461				
66346	58-0828824	05/23/2005	Munich American Reassurance (MUL1)	GA	YRT/I	DL	145,775,741	1,496,142	1,573,870	559,376				
66346	58-0828824	05/23/2005	Munich American Reassurance (MUL2)	GA	CO/I	XXXL	459,446,621	1,484,921	2,727,253	1,474,892				
66346	58-0828824	05/23/2005	Munich American Reassurance (MUL2)	GA	YRT/I	DL	186,828,481	813,337	679,752	535,809				
66346	58-0828824	11/01/2008	Munich American Reassurance (MUL3)	GA	CO/I	XXXL	801,395,306	14,325,089	13,878,679	1,237,171				
66346	58-0828824	11/01/2008	Munich American Reassurance (MUL3)	GA	YRT/I	DL	55,191,767	98,713	81,716	67,711				
66346	58-0828824	04/28/2011	Munich American Reassurance (MUL6)	GA	CO/I	XXXL	4,314,040,353	5,724,439	5,795,552	4,848,144				
66346	58-0828824	04/28/2011	Munich American Reassurance (MUL6)	GA	YRT/I	DL	526,152,877	976,985	812,690	545,367				
66346	58-0828824	08/30/2010	Munich American Reassurance (MUL7)	GA	CO/I	XXXL	2,041,269,613	11,766,947	13,063,580	2,960,455				
66346	58-0828824	08/30/2010	Munich American Reassurance (MUL7)	GA	YRT/I	DL	193,968,035	450,303	376,310	307,538				
66346	58-0828824	08/30/2010	Munich American Reassurance (MUL8)	GA	CO/I	XXXL	5,230,342,883	38,347,899	31,939,344	6,453,072				
66346	58-0828824	08/30/2010	Munich American Reassurance (MUL8)	GA	YRT/I	DL	243,487,903	299,644	241,433	204,718				
66346	58-0828824	07/01/2007	Munich American Reassurance (MUN1)	GA	CO/I	XXXL	1,782,352,546	4,261,044	4,190,612	2,923,608				
66346	58-0828824	07/15/2008	Munich American Reassurance (MUN2)	GA	YRT/I	DL	1,204,817,051	2,597,187	2,488,976	1,528,396				
66346	58-0828824	07/15/2008	Munich American Reassurance (MUN3)	GA	YRT/I	DL	6,211,537,419	4,841,104	4,388,220	3,054,559				
66346	58-0828824	07/15/2008	Munich American Reassurance (MUN4)	GA	YRT/I	DL	7,364,632,164	11,869,137	11,540,158	6,746,444				
66346	58-0828824	11/01/2010	Munich American Reassurance (MUN5)	GA	YRT/I	DL	1,944,405,880	1,837,887	1,638,217	763,303				
66346	58-0828824	01/01/2011	Munich American Reassurance (MUN6)	GA	YRT/I	DL	8,965,109,961	16,722,881	16,512,965	8,335,699				
66346	58-0828824	01/01/2012	Munich American Reassurance (MUN7)	GA	YRT/I	DL	711,007,414	1,433,533	1,431,601	602,579				
66346	58-0828824	07/01/2018	Munich American Reassurance (MUN9)	GA	YRT/I	DL	288,057,045	288,724		3,467				
66346	58-0828824	07/01/2012	Munich American Reassurance (MUJPC)	GA	YRT/I	DL	456,310,227	1,018,856	809,848	312,286				
66346	58-0828824	08/08/2016	Munich American Reassurance (MUQ0)	GA	CO/I	XXXL	360,303,200	921,973	267,978	386,331				
66346	58-0828824	08/08/2016	Munich American Reassurance (MUQ7)	GA	CO/I	XXXL	148,643,550	203,617	93,605	180,768				
66346	58-0828824	08/08/2016	Munich American Reassurance (MUQ8)	GA	CO/I	XXXL	173,437,650	314,590	108,192	194,620				
66346	58-0828824	08/08/2016	Munich American Reassurance (MUQ9)	GA	CO/I	XXXL	507,661,123	1,002,345	354,242	464,576				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT0)	GA	CO/I	XXXL	183,182,626	191,853		237,910				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT0)	GA	YRT/I	DL	453,536		227	56				
66346	58-0828824	08/30/2010	Munich American Reassurance (MUT1)	GA	CO/I	XXXL	3,129,357,746	8,071,253	4,136,033	4,513,504				
66346	58-0828824	08/30/2010	Munich American Reassurance (MUT1)	GA	YRT/I	DL	61,999,706	74,761	27,982	33,740				
66346	58-0828824	08/30/2010	Munich American Reassurance (MUT2)	GA	CO/I	XXXL	6,553,923,904	15,370,412	6,401,694	8,089,017				
66346	58-0828824	08/30/2010	Munich American Reassurance (MUT2)	GA	YRT/I	DL	75,027,649	67,216	16,343	30,089				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT5)	GA	CO/I	XXXL	1,229,749,932	1,422,114		1,647,956				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT5)	GA	YRT/I	DL	3,697,656	4,925		1,071				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT7)	GA	CO/I	XXXL	137,445,657	204,371		244,733				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT7)	GA	YRT/I	DL	17,500		53	14				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT8)	GA	CO/I	XXXL	83,487,057	73,384		95,904				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT9)	GA	CO/I	XXXL	268,318,444	324,862		400,629				
66346	58-0828824	07/07/2018	Munich American Reassurance (MUT9)	GA	YRT/I	DL	205,263	149		48				
66346	58-0828824	04/15/2017	Munich American Reassurance (MUU1)	GA	CO/I	XXXL	415,125	240		257				
66346	58-0828824	04/15/2017	Munich American Reassurance (MUU2)	GA	CO/I	XXXL	4,333,033	943		3,097				
66346	58-0828824	04/15/2017	Munich American Reassurance (MUU3)	GA	YRT/I	DL	18,385,377	11,208	72	3,580				
66346	58-0828824	04/15/2017	Munich American Reassurance (MUU5)	GA	CO/I	XXXL	3,600,000	3,604		5,982				
66346	58-0828824	04/15/2017	Munich American Reassurance (MUU6)	GA	CO/I	XXXL	333,300	414		598				
66346	58-0828824	05/01/2018	Munich American Reassurance (MUV1)	GA	CO/I	XXXL	29,197,500	36,989		32,161				
66346	58-0828824	05/01/2018	Munich American Reassurance (MUV2)	GA	CO/I	XXXL	25,117,500	26,871		28,057				
66346	58-0828824	05/01/2018	Munich American Reassurance (MUV3)	GA	CO/I	XXXL	133,095,000	112,574		133,698				

433

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
66346	58-0828824	05/01/2018	Munich American Reassurance (MUV4)	GA	CO/I	XXXL	90,562,500	70,730		98,510				
88099	75-1608507	11/23/2007	Optimum Re Insurance Company (OPB5)	TX	YRT/I	DL	175,113,213	1,603,054	1,503,438	1,182,139				
88099	75-1608507	01/01/2012	Optimum Re Insurance Company (OPB7)	TX	YRT/I	DL	142,247,836	1,132,162	947,067	519,315				
88099	75-1608507	08/05/2011	Optimum Re Insurance Company (OPD5)	TX	YRT/I	DL	51,661,468	240,841	199,167	126,758				
88099	75-1608507	01/01/2012	Optimum Re Insurance Company (OPD6)	TX	YRT/I	DL	156,361,536	239,478	175,807	76,205				
88099	75-1608507	07/01/2012	Optimum Re Insurance Company (OPP1)	TX	YRT/I	DL	513,241,439	997,404	686,154	402,181				
88099	75-1608507	04/15/2017	Optimum Re Insurance Company (OPU3)	TX	YRT/I	DL	15,501,779	9,362	58	2,048				
74900	63-0483783	07/07/2018	Partner Re (PRT3)	AR	CO/I	XXXL	143,545,323	367,378		323,612				
74900	63-0483783	07/07/2018	Partner Re (PRT4)	AR	CO/I	XXXL	43,995,101	59,511		51,174				
74900	63-0483783	07/07/2018	Partner Re (PRT6)	AR	CO/I	XXXL	533,396,454	396,313		486,614				
74900	63-0483783	07/07/2018	Partner Re (PRT6)	AR	YRT/I	DL	1,096,188	542		260				
74900	63-0483783	07/07/2018	Partner Re (PRT7)	AR	CO/I	XXXL	58,905,283	87,587		104,886				
74900	63-0483783	07/07/2018	Partner Re (PRT7)	AR	YRT/I	DL	7,500	23		9				
74900	63-0483783	07/07/2018	Partner Re (PRT8)	AR	CO/I	XXXL	35,780,168	31,451		41,102				
74900	63-0483783	07/07/2018	Partner Re (PRTB)	AR	CO/I	XXXL	564,638,700	1,361,420		1,007,805				
74900	63-0483783	07/07/2018	Partner Re (PRTB)	AR	YRT/I	DL	1,585,261	1,844		713				
93572	43-1235868	03/01/1996	RGA Reinsurance Co. (AL44)	MO	YRT/I	DL	135,450,778	3,198,993	3,155,349	2,674,547				
93572	43-1235868	05/01/1994	RGA Reinsurance Co. (AL93)	MO	YRT/I	DL	7,567,441	95,396	480,034	175,062				
93572	43-1235868	01/01/1974	RGA Reinsurance Co. (AL94)	MO	YRT/I	DL	1,228,672	47,845	53,558	77,602				
93572	43-1235868	10/01/1976	RGA Reinsurance Co. (AL95)	MO	YRT/I	DL	40,051,936	636,422	575,298	460,630				
93572	43-1235868	05/01/2001	RGA Reinsurance Co. (AL97)	MO	YRT/I	DL	584,477,066	2,956,135	2,877,049	1,544,757				
93572	43-1235868	09/16/1996	RGA Reinsurance Co. (ALA1)	MO	YRT/I	DL	89,069,685	763,157	742,382	333,800				
93572	43-1235868	04/01/1997	RGA Reinsurance Co. (ALA7)	MO	YRT/I	DL	101,447	2,310	2,171	1,200				
93572	43-1235868	09/01/2001	RGA Reinsurance Co. (ALB2)	MO	YRT/I	DL	144,736,060	3,788,350	3,404,211	1,570,650				
93572	43-1235868	11/19/2001	RGA Reinsurance Co. (ALD1)	MO	YRT/I	DL	253,243,257	4,513,185	4,184,629	1,376,540				
93572	43-1235868	09/01/2002	RGA Reinsurance Co. (ALD2)	MO	YRT/I	DL	30,099,214	337,935	307,292	107,277				
93572	43-1235868	05/01/1994	RGA Reinsurance Co. (AZ51)	MO	YRT/G	DL	202,632	5,828	5,397	4,203				
93572	43-1235868	05/01/1994	RGA Reinsurance Co. (AZ51)	MO	YRT/I	DL	16,160,350	101,849	95,291	64,836				
93572	43-1235868	03/01/1996	RGA Reinsurance Co. (AZ62)	MO	YRT/G	DL	23,184,209	336,957	320,819	364,696				
93572	43-1235868	03/01/1996	RGA Reinsurance Co. (AZ62)	MO	YRT/I	DL	420,055,070	3,851,760	3,874,996	4,678,327				
93572	43-1235868	01/01/1999	RGA Reinsurance Co. (AZ82)	MO	YRT/I	DL	33,028,303	418,244	424,919	329,714				
93572	43-1235868	03/28/2000	RGA Reinsurance Co. (AZ84)	MO	YRT/I	DL	612,307,830	3,146,055	3,075,012	1,664,487				
93572	43-1235868	03/28/2000	RGA Reinsurance Co. (AZ85)	MO	YRT/I	DL	67,841,199	811,194	790,661	497,131				
93572	43-1235868	06/01/2002	RGA Reinsurance Co. (AZE4)	MO	YRT/I	DL	17,861,581	233,463	273,728	93,926				
93572	43-1235868	09/14/1981	RGA Reinsurance Co. (GA11)	MO	YRT/G	DL	5,616,403	74,906	69,873	86,333				
93572	43-1235868	09/14/1981	RGA Reinsurance Co. (GA11)	MO	YRT/I	DL	875,182,983	10,758,097	10,741,728	13,846,990				
93572	43-1235868	12/31/2017	RGA Reinsurance Co. (GA17)	MO	COFII/G	DL	6,530,552,989	4,084,838,452	4,000,939,904	530,139				4,085,560,807
93572	43-1235868	12/31/2017	RGA Reinsurance Co. (GA17)	MO	YRT/G	DL	3,875,551,643	722,355						
93572	43-1235868	01/01/1984	RGA Reinsurance Co. (GA18)	MO	YRT/G	DL	1,627,758	53,166	58,484	61,112				
93572	43-1235868	01/01/1984	RGA Reinsurance Co. (GA18)	MO	YRT/I	DL	119,343,903	2,518,587	2,593,981	3,101,279				
93572	43-1235868	03/01/1985	RGA Reinsurance Co. (GA19)	MO	YRT/I	DL	8,207,859	852,619	96,134	1,155,635				
93572	43-1235868	09/01/1986	RGA Reinsurance Co. (GA24)	MO	YRT/I	DL	705,856,932	1,790,298	1,792,445	8,427,892				
93572	43-1235868	03/29/1993	RGA Reinsurance Co. (GA39)	MO	YRT/I	DL	389,448,980	3,009,488	3,032,480	2,458,299				
93572	43-1235868	03/29/1993	RGA Reinsurance Co. (GA43)	MO	YRT/I	DL	10,070,253	113,768	112,007	93,788				
93572	43-1235868	05/01/1994	RGA Reinsurance Co. (GA49)	MO	YRT/I	DL	239,729,098	1,578,398	1,650,276	1,048,886				
93572	43-1235868	04/15/2004	RGA Reinsurance Co. (GA66)	MO	YRT/I	DL	92,710,253	387,890	324,802	313,815				
93572	43-1235868	02/08/1999	RGA Reinsurance Co. (GA81)	MO	YRT/I	DL	67,116,921	557,042	542,605	345,322				
93572	43-1235868	03/28/2000	RGA Reinsurance Co. (GA84)	MO	YRT/I	DL	2,310,852,163	9,464,501	9,300,830	5,273,974				
93572	43-1235868	01/01/2005	RGA Reinsurance Co. (GA85)	MO	YRT/I	DL	90,497,896	675,848	685,996	403,157				
93572	43-1235868	07/01/2002	RGA Reinsurance Co. (GAE4)	MO	YRT/I	DL	35,988,194	380,716	376,302	182,705				
93572	43-1235868	07/01/2002	RGA Reinsurance Co. (GAE5)	MO	YRT/G	DL	81,503,084	726,948	702,974	565,536				
93572	43-1235868	05/01/2004	RGA Reinsurance Co. (GAJ2)	MO	CO/I	XXXL	7,528,308	36,291	38,169	43,759				
93572	43-1235868	05/01/2004	RGA Reinsurance Co. (GAJ2)	MO	YRT/I	DL	12,834,433	57,562	55,885	49,717				
93572	43-1235868	05/01/2004	RGA Reinsurance Co. (GAJ3)	MO	CO/I	XXXL	108,240,211	2,476,623	2,614,560	205,791				
93572	43-1235868	05/01/2004	RGA Reinsurance Co. (GAJ3)	MO	YRT/I	DL	12,586,354	36,405	33,259	30,491				
93572	43-1235868	05/01/2004	RGA Reinsurance Co. (GAJ4)	MO	CO/I	XXXL	28,528,328	2,212,404	2,067,748	57,597				

43.4

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
93572	43-1235868	05/01/2004	RG Reinsurance Co. (GAJ4)	MO	YRT/I	OL	5,379,921	8,032	7,492	5,971				
93572	43-1235868	01/01/2005	RG Reinsurance Co. (GAJ6)	MO	CO/I	XXXL	2,819,646	4,611	6,038	11,445				
93572	43-1235868	01/01/2005	RG Reinsurance Co. (GAJ6)	MO	YRT/I	OL	5,307,877	21,694	21,622	17,888				
93572	43-1235868	01/01/2005	RG Reinsurance Co. (GAJ7)	MO	CO/I	XXXL	45,244,920	1,004,151	1,023,667	88,348				
93572	43-1235868	01/01/2005	RG Reinsurance Co. (GAJ7)	MO	YRT/I	OL	5,847,372	14,911	13,949	11,901				
93572	43-1235868	01/01/2005	RG Reinsurance Co. (GAJ8)	MO	CO/I	XXXL	12,182,842	721,712	692,949	23,323				
93572	43-1235868	01/01/2005	RG Reinsurance Co. (GAJ8)	MO	YRT/I	OL	1,843,617	2,235	2,125	1,649				
93572	43-1235868	05/23/2005	RG Reinsurance Co. (GAL2)	MO	CO/I	XXXL	284,202,509	905,408	1,719,641	820,100				
93572	43-1235868	05/23/2005	RG Reinsurance Co. (GAL2)	MO	YRT/I	OL	155,541,137	677,091	583,709	507,287				
93572	43-1235868	05/23/2005	RG Reinsurance Co. (GAL3)	MO	CO/I	XXXL	12,448,994,617	237,297,294	236,699,036	19,233,035				
93572	43-1235868	05/23/2005	RG Reinsurance Co. (GAL3)	MO	YRT/I	OL	1,103,701,810	2,526,399	2,220,844	1,956,492				
93572	43-1235868	08/30/2010	RG Reinsurance Co. (GAL7)	MO	CO/I	XXXL	7,542,692,253	39,537,570	39,841,515	11,319,302				
93572	43-1235868	08/30/2010	RG Reinsurance Co. (GAL7)	MO	YRT/I	OL	485,353,424	1,186,107	987,934	788,725				
93572	43-1235868	08/30/2010	RG Reinsurance Co. (GAL8)	MO	CO/I	XXXL	26,295,113,520	206,121,986	174,606,859	32,810,350				
93572	43-1235868	08/30/2010	RG Reinsurance Co. (GAL8)	MO	YRT/I	OL	917,605,528	1,267,956	1,072,967	849,602				
93572	43-1235868	07/01/2007	RG Reinsurance Co. (GAN1)	MO	YRT/I	OL	2,562,585,489	6,137,081	6,033,508	4,358,252				
93572	43-1235868	06/01/2012	RG Reinsurance Co. (GAN2)	MO	YRT/I	OL	7,146,733	18,001	18,130	9,280				
93572	43-1235868	06/01/2012	RG Reinsurance Co. (GAN3)	MO	YRT/I	OL	96,704,538	93,886	79,628	56,201				
93572	43-1235868	02/24/2014	RG Reinsurance Co. (GAN3B)	MO	YRT/I	OL	3,206,637,069	2,160,205	1,799,720	1,041,567				
93572	43-1235868	06/01/2012	RG Reinsurance Co. (GAN4)	MO	YRT/I	OL	163,803,498	201,964	202,369	118,152				
93572	43-1235868	11/01/2010	RG Reinsurance Co. (GAN5)	MO	YRT/I	OL	2,128,937,759	2,127,461	1,853,779	1,088,041				
93572	43-1235868	06/01/2012	RG Reinsurance Co. (GAN6)	MO	YRT/I	OL	135,648,578	232,320	211,900	134,150				
93572	43-1235868	12/20/2017	RG Reinsurance Co. (GAN6)	MO	YRT/I	OL	3,733,993,565	6,021,987	24,686	79,807				
93572	43-1235868	06/01/2012	RG Reinsurance Co. (GAN7)	MO	YRT/I	OL	9,347,391	23,023	23,451	11,434				
93572	43-1235868	12/06/2017	RG Reinsurance Co. (GAN8)	MO	YRT/I	OL	1,809,859,695	2,290,121	52,982	107,847				
93572	43-1235868	07/01/2018	RG Reinsurance Co. (GAN9)	MO	YRT/I	OL	306,957,012	384,871		3,467				
93572	43-1235868	03/15/2015	RG Reinsurance Co. (GAQ1)	MO	CO/I	XXXL	1,732,500	2,491	1,838	1,178				
93572	43-1235868	03/15/2015	RG Reinsurance Co. (GAQ2)	MO	CO/I	XXXL	2,565,000	5,747	4,216	1,533				
93572	43-1235868	03/15/2015	RG Reinsurance Co. (GAQ3)	MO	CO/I	XXXL	14,445,000	38,094	27,756	10,905				
93572	43-1235868	08/08/2016	RG Reinsurance Co. (GAQ9)	MO	CO/I	XXXL	406,130,377	802,014	283,457	372,425				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT0)	MO	CO/I	XXXL	102,203,602	101,761		131,616				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT0)	MO	YRT/I	OL	226,768		114	30				
93572	43-1235868	08/30/2010	RG Reinsurance Co. (GAT1)	MO	CO/I	XXXL	8,379,186,437	21,770,328	11,515,993	12,330,101				
93572	43-1235868	08/30/2010	RG Reinsurance Co. (GAT1)	MO	YRT/I	OL	166,169,592	200,239	74,653	104,550				
93572	43-1235868	08/30/2010	RG Reinsurance Co. (GAT2)	MO	CO/I	XXXL	23,202,517,946	53,484,170	22,333,626	28,610,775				
93572	43-1235868	08/30/2010	RG Reinsurance Co. (GAT2)	MO	YRT/I	OL	266,865,477	237,720	57,797	115,948				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT3)	MO	CO/I	XXXL	256,592,197	681,046		593,700				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT4)	MO	CO/I	XXXL	76,325,168	119,017		93,151				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT5)	MO	CO/I	XXXL	1,559,831,556	1,847,376		2,141,061				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT5)	MO	YRT/I	OL	4,622,072	6,156		1,284				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT6)	MO	CO/I	XXXL	701,535,859	553,688		681,395				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT6)	MO	YRT/I	OL	1,370,238	678		275				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT7)	MO	CO/I	XXXL	40,695,188	59,391		71,838				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT7)	MO	YRT/I	OL	5,000	15		4				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT8)	MO	CO/I	XXXL	26,500,751	31,377		33,436				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT9)	MO	CO/I	XXXL	135,859,224	163,005		202,077				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GAT9)	MO	YRT/I	OL	102,632	75		19				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GATB)	MO	CO/I	XXXL	1,146,689,897	2,863,419		2,147,706				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GATB)	MO	YRT/I	OL	3,170,521	3,681		993				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GATR)	MO	CO/I	XXXL	145,641,027	386,438		156,393				
93572	43-1235868	07/07/2018	RG Reinsurance Co. (GATR)	MO	YRT/I	OL	3,118,618	2,177		804				
93572	43-1235868	10/01/1976	RG Reinsurance Co. (NC02)	MO	YRT/G	OL	59,896	3,113	2,345	3,611				
93572	43-1235868	10/01/1976	RG Reinsurance Co. (NC02)	MO	YRT/I	OL	139,656,227	2,310,759	2,227,194	2,888,360				
93572	43-1235868	03/29/1993	RG Reinsurance Co. (NC40)	MO	YRT/I	OL	12,590,128	142,247	140,038	118,856				
93572	43-1235868	12/06/2017	RG Reinsurance Co. (RA17)	MO	COFI/I	OL	20,045,021	20,980,169	461,656	47,267,317				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG01)	MO	YRT/G	OL	124,630,164	66,839	74,223	589,311				

43.5

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG02)	MO	YRT/G	OL	2,271,598,348	1,620,865	1,701,787	14,496,358				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG03)	MO	YRT/G	OL	208,931,140	195,151	204,983	2,182,741				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG04)	MO	YRT/G	OL	499,261,141	613,199	658,825	7,404,843				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG05)	MO	YRT/G	OL	316,345,739	140,515	141,446	1,084,177				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG05)	MO	YRT/I	OL	8,242,434	19,888	36,407	26,689				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG06)	MO	YRT/G	OL	10,125,750	5,641	5,904	49,171				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG06)	MO	YRT/I	OL	33,501	34	31	35				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG09G)	MO	YRT/G	OL	925,400	411	374	3,451				
93572	43-1235868	11/01/1986	RG Reinsurance Co. (RG10)	MO	CO/I	OL	6,216,128	5,199,113	4,957,361	29,331				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG10G)	MO	YRT/G	OL	1,361,600	797	894	7,813				
93572	43-1235868	01/01/1979	RG Reinsurance Co. (RG11)	MO	YRT/I	OL	495,271	4,086	3,785	7,701				
93572	43-1235868	01/01/1983	RG Reinsurance Co. (RG12)	MO	YRT/G	OL	2,261,413	124,148	1,476,005	1,697,559				
93572	43-1235868	01/01/1983	RG Reinsurance Co. (RG12)	MO	YRT/I	OL	44,714,880	1,790,937	1,862,445	2,996,350				
93572	43-1235868	02/14/1983	RG Reinsurance Co. (RG13)	MO	YRT/G	OL	839,109			51,785				
93572	43-1235868	02/14/1983	RG Reinsurance Co. (RG13)	MO	YRT/I	OL	8,469,804			562,726				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG13G)	MO	YRT/G	OL	650,000	540	499	6,843				
93572	43-1235868	01/01/1988	RG Reinsurance Co. (RG14)	MO	YRT/I	OL	17,330,085	568,404	543,975	665,130				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG14G)	MO	YRT/G	OL	23,296,634	20,819	19,828	176,824				
93572	43-1235868	01/01/1988	RG Reinsurance Co. (RG15)	MO	YRT/I	OL	5,649,841	299,337	699,329	373,856				
93572	43-1235868	04/15/1991	RG Reinsurance Co. (RG16)	MO	YRT/I	OL	3,740,998	87,524	98,098	114,719				
93572	43-1235868	04/15/1991	RG Reinsurance Co. (RG19)	MO	YRT/I	OL	18,126,727	568,048	700,671	881,858				
93572	43-1235868	02/01/1994	RG Reinsurance Co. (RG20)	MO	YRT/I	OL	2,461,957	21,272	23,349	34,121				
93572	43-1235868	09/14/1981	RG Reinsurance Co. (RG22)	MO	YRT/I	OL	314,982,568	6,274,296	5,905,801	4,522,439				
93572	43-1235868	05/01/1994	RG Reinsurance Co. (RG26)	MO	YRT/I	OL	189,176,881	4,619,632	4,171,898	2,035,666				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG26G)	MO	YRT/G	OL	27,318,750	16,792	15,600	139,952				
93572	43-1235868	02/01/1994	RG Reinsurance Co. (RG27)	MO	YRT/I	OL	157,970	2,063	1,954	4,422				
93572	43-1235868	01/01/1997	RG Reinsurance Co. (RG30)	MO	YRT/G	OL	37,436,841	13,171	12,797	100,989				
93572	43-1235868	04/15/1991	RG Reinsurance Co. (RG37)	MO	YRT/I	OL	4,631,490	47,719	42,087	50,949				
93572	43-1235868	02/01/1994	RG Reinsurance Co. (RG38)	MO	YRT/I	OL	3,535,912	11,021	16,633	8,782				
93572	43-1235868	02/01/1994	RG Reinsurance Co. (RG39)	MO	YRT/I	OL	321,077	7,464	7,051	11,929				
93572	43-1235868	04/15/2004	RG Reinsurance Co. (RG43)	MO	YRT/I	OL			181	25				
93572	43-1235868	04/01/1994	RG Reinsurance Co. (RG55)	MO	YRT/I	OL	3,580,788	90,480	85,538	83,915				
93572	43-1235868	02/01/1994	RG Reinsurance Co. (RG59)	MO	YRT/I	OL	171,881	3,579	3,419	5,486				
93572	43-1235868	09/01/1998	RG Reinsurance Co. (RG87)	MO	YRT/I	OL	136,059,251	1,066,296	1,035,622	563,343				
93572	43-1235868	05/01/2001	RG Reinsurance Co. (RG97)	MO	YRT/I	OL	650,423,971	2,678,306	2,621,120	1,435,033				
93572	43-1235868	09/16/1996	RG Reinsurance Co. (RGA1)	MO	YRT/I	OL	66,822,597	572,572	556,960	248,584				
93572	43-1235868	02/29/2004	RG Reinsurance Co. (RGA1)	MO	YRT/I	OL	96,613,747	1,332,448	1,276,598	723,868				
93572	43-1235868	11/01/2004	RG Reinsurance Co. (RGA2)	MO	YRT/I	OL	25,521,908	1,045,889	940,968	761,419				
93572	43-1235868	08/23/2004	RG Reinsurance Co. (RGA3)	MO	YRT/I	OL	249,528,727	11,250,862	11,639,356	5,997,836				
93572	43-1235868	06/01/2008	RG Reinsurance Co. (RGA5)	MO	YRT/I	OL	566,696,503	5,275,489	4,975,449	3,629,198				
93572	43-1235868	08/01/2008	RG Reinsurance Co. (RGA6)	MO	YRT/I	OL	55,392,376	287,074	210,894	136,267				
93572	43-1235868	01/01/2012	RG Reinsurance Co. (RGA7)	MO	YRT/I	OL	333,211,037	2,764,609	2,164,227	1,155,418				
93572	43-1235868	03/31/2004	RG Reinsurance Co. (RGA1)	MO	YRT/I	OL	236,384,865	4,045,585	4,141,672	1,273,431				
93572	43-1235868	03/31/2004	RG Reinsurance Co. (RGA2)	MO	YRT/I	OL	8,607,743	38,155	32,099	7,694				
93572	43-1235868	05/01/2004	RG Reinsurance Co. (RGA3)	MO	YRT/I	OL	94,108,720	1,128,043	974,840	358,411				
93572	43-1235868	08/23/2004	RG Reinsurance Co. (RGA4)	MO	YRT/I	OL	44,160,647	154,120	133,154	58,193				
93572	43-1235868	11/01/2005	RG Reinsurance Co. (RGA5)	MO	YRT/I	OL	708,521,576	4,184,996	3,490,081	2,422,026				
93572	43-1235868	01/01/2012	RG Reinsurance Co. (RGA6)	MO	YRT/I	OL	360,710,529	623,196	484,299	218,648				
93572	43-1235868	02/29/2004	RG Reinsurance Co. (RGA1)	MO	YRT/I	OL	122,877,477	2,803,843	2,545,035	1,341,069				
93572	43-1235868	06/01/2008	RG Reinsurance Co. (RGA2)	MO	YRT/I	OL	231,124,921	326,612	243,539	143,634				
93572	43-1235868	04/01/2005	RG Reinsurance Co. (RGA7)	MO	YRT/G	OL	1,190,271,567	364,530	419,103	3,880,480				
93572	43-1235868	04/01/2005	RG Reinsurance Co. (RGA8)	MO	YRT/G	OL	31,657,448	11,384	15,142	145,215				
93572	43-1235868	07/01/2012	RG Reinsurance Co. (RGA9)	MO	YRT/I	OL	796,793,280	2,440,223	2,660,850	1,001,701				
64688	75-6020048	09/01/2001	SCOR Global Life Americas Reins Co (SCB2)	DE	YRT/I	OL	279,576,195	7,923,196	7,122,310	3,270,548				
64688	75-6020048	08/23/2004	SCOR Global Life Americas Reins Co (SCB3)	DE	YRT/I	OL	149,717,338	6,750,537	6,983,612	2,970,015				
64688	75-6020048	08/05/2011	SCOR Global Life Americas Reins Co (SCB5)	DE	YRT/I	OL	102,778,863	822,247	752,075	466,631				

436

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
64688	75-6020048	01/01/2012	SCOR Global Life Americas Reins Co (SCB7)	DE	YRT/I	OL	268,290,788	2,257,837	1,888,260	899,588				
64688	75-6020048	08/05/2011	SCOR Global Life Americas Reins Co (SCD5)	DE	YRT/I	OL	103,322,958	481,664	398,335	196,389				
64688	75-6020048	01/01/2012	SCOR Global Life Americas Reins Co (SCD6)	DE	YRT/I	OL	270,178,726	448,291	344,904	148,126				
64688	75-6020048	01/01/2001	SCOR Global Life Americas Reins Co (SCG1)	DE	YRT/I	OL	76,994,920	332,611	313,883	228,440				
64688	75-6020048	11/01/2010	SCOR Global Life Americas Reins Co (SCN5)	DE	YRT/I	OL	3,797,090,877	3,515,759	3,130,571	1,524,138				
64688	75-6020048	01/01/2011	SCOR Global Life Americas Reins Co (SCN6)	DE	YRT/I	OL	5,641,642,372	10,303,613	10,209,278	4,895,213				
64688	75-6020048	01/01/2012	SCOR Global Life Americas Reins Co (SCN7)	DE	YRT/I	OL	448,522,588	897,971	884,728	362,867				
64688	75-6020048	07/01/2018	SCOR Global Life Americas Reins Co (SCN9)	DE	YRT/I	OL	552,578,836	499,010		6,935				
64688	75-6020048	01/01/2002	SCOR Global Life Americas Reins Co (SCPH)	DE	YRT/I	OL	68,826,578	37,722	37,318	31,912				
64688	75-6020048	09/01/1986	SCOR Global Life Americas Reins Co (TA23)	DE	YRT/I	OL	353,171,304	914,237	916,198	4,135,709				
64688	75-6020048	11/01/1986	SCOR Global Life Americas Reins Co (TA25)	DE	YRT/I	OL	67,911,884	1,477,688	1,482,101	2,118,204				
64688	75-6020048	11/01/1989	SCOR Global Life Americas Reins Co (TA27)	DE	YRT/I	OL	3,150,462	197,894	203,720	323,484				
64688	75-6020048	01/01/2002	SCOR Global Life Americas Reins Co (TAF2)	DE	YRT/I	OL	94,202,796	295,080	287,593	194,314				
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAL7)	DE	CO/I	XXXL	4,059,637,028	18,587,292	17,120,356	6,033,629				
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAL7)	DE	YRT/I	OL	274,274,379	519,560	397,160	305,138				
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAL8)	DE	CO/I	XXXL	10,304,265,784	75,953,367	63,387,194	12,761,112				
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAL8)	DE	YRT/I	OL	480,436,805	596,043	479,037	329,874				
64688	75-6020048	07/15/2008	SCOR Global Life Americas Reins Co (TAN3)	DE	YRT/I	OL	6,619,732,742	5,226,635	4,759,053	3,320,083				
64688	75-6020048	07/15/2008	SCOR Global Life Americas Reins Co (TAN4)	DE	YRT/I	OL	4,554,285,992	7,137,146	6,969,879	4,311,716				
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAT1)	DE	CO/I	XXXL	2,113,268,029	5,245,074	2,707,451	3,069,044				
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAT1)	DE	YRT/I	OL	42,265,005	50,546	18,934	23,945				
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAT2)	DE	CO/I	XXXL	16,295,734,795	37,153,022	15,541,239	19,845,045				
64688	75-6020048	08/30/2010	SCOR Global Life Americas Reins Co (TAT2)	DE	YRT/I	OL	185,302,632	166,492	39,458	76,913				
64688	75-6020048	04/15/1991	SCOR Global Life Americas Reins Co (TR37)	DE	YRT/I	OL	4,631,491	47,719	42,087	51,059				
64688	75-6020048	04/15/1991	SCOR Global Life Americas Reins Co (TR61)	DE	YRT/I	OL	3,488,105	61,127	71,467	70,309				
64688	75-6020048	04/15/1991	SCOR Global Life Americas Reins Co (TR62)	DE	YRT/I	OL	7,704,677	190,091	186,841	395,631				
64688	75-6020048	09/01/1991	SCOR Global Life Americas Reins Co (TR63)	DE	CO/I	OL	31,943,088	464,681	403,923	482,894				
64688	75-6020048	09/01/1991	SCOR Global Life Americas Reins Co (TR64)	DE	CO/I	OL	125,000	401	85	2,346				
64688	75-6020048	09/01/1991	SCOR Global Life Americas Reins Co (TR65)	DE	YRT/I	OL	2,186,482	18,817	14,977	37,901				
64688	75-6020048	09/01/1991	SCOR Global Life Americas Reins Co (TR66)	DE	YRT/I	OL	21,448,831	316,357	289,562	478,039				
64688	75-6020048	09/01/1991	SCOR Global Life Americas Reins Co (TR67)	DE	CO/I	OL	10,039,992	39,909	51,665	120,456				
64688	75-6020048	09/01/1991	SCOR Global Life Americas Reins Co (TR68)	DE	CO/I	OL	121,887	16,881	17,323	2,269				
64688	75-6020048	09/01/2002	SCOR Global Life Americas Reins Co (TRD2)	DE	YRT/I	OL	29,793,917	294,365	265,970	83,558				
64688	75-6020048	01/01/2002	SCOR Global Life Americas Reins Co (TRF2)	DE	YRT/I	OL	40,161,511	949,491	847,518	457,521				
64688	75-6020048	03/31/2003	SCOR Global Life Americas Reins Co (TRH1)	DE	YRT/I	OL	163,376,502	3,468,297	3,295,890	1,539,856				
64688	75-6020048	09/01/2003	SCOR Global Life Americas Reins Co (TRI1)	DE	YRT/I	OL	3,847,159	247,676	232,230	146,885				
64688	75-6020048	08/01/2008	SCOR Global Life Americas Reins Co (XLB6)	DE	YRT/I	OL	19,464,762	108,910	79,047	53,295				
64688	75-6020048	08/01/2008	SCOR Global Life Americas Reins Co (XLH2)	DE	YRT/I	OL	74,895,463	100,432	79,255	44,839				
87017	62-1003368	09/16/1996	SCOR Global Life Re Ins Co of DE (GG70)	DE	YRT/I	OL	151,998,215	907,575	927,569	642,251				
87017	62-1003368	03/01/1996	SCOR Global Life Re Ins Co of DE (GG80)	DE	YRT/I	OL	12,459,849	74,508	124,944	41,405				
87017	62-1003368	03/01/1996	SCOR Global Life Re Ins Co of DE (GG99)	DE	YRT/I	OL	2,717,617	146,354	423,602	164,398				
87017	62-1003368	09/24/1999	SCOR Global Life Re Ins Co of DE (GGB1)	DE	YRT/I	OL	416,130,315	7,200,123	8,081,611	3,792,886				
87017	62-1003368	09/01/2001	SCOR Global Life Re Ins Co of DE (GGB2)	DE	YRT/I	OL	99,565,754	2,103,882	2,062,766	1,028,127				
87017	62-1003368	11/19/2001	SCOR Global Life Re Ins Co of DE (GGD1)	DE	YRT/I	OL	67,400,134	1,348,830	1,233,146	457,855				
87017	62-1003368	10/01/2001	SCOR Global Life Re Ins Co of DE (GGE1)	DE	YRT/G	OL	2,443,710	9,228	15,017	8,395				
87017	62-1003368	10/01/2001	SCOR Global Life Re Ins Co of DE (GGE3)	DE	YRT/G	OL			39,595					
97071	13-3126819	02/01/1992	SCOR Global Life USA Reins Co (BA75)	DE	YRT/I	OL	6,261,363	287,245	277,876	485,733				
97071	13-3126819	05/01/2001	SCOR Global Life USA Reins Co (BA97)	DE	YRT/I	OL	411,566,905	1,877,976	1,832,589	970,936				
97071	13-3126819	08/01/1990	SCOR Global Life USA Reins Co (BM31)	DE	YRT/I	OL	760,268	5,349	5,034	8,646				
97071	13-3126819	03/28/2000	SCOR Global Life USA Reins Co (BM84)	DE	YRT/I	OL	1,688,014,060	6,935,918	6,814,332	3,501,339				
97071	13-3126819	03/28/2000	SCOR Global Life USA Reins Co (BM85)	DE	YRT/I	OL	103,674,103	936,300	946,466	509,745				
97071	13-3126819	07/01/2002	SCOR Global Life USA Reins Co (BME4)	DE	YRT/I	OL	17,149,325	195,852	208,479	86,697				
97071	13-3126819	01/01/2001	SCOR Global Life USA Reins Co (BMF1)	DE	YRT/I	OL	125,451,642	551,380	534,455	373,707				
97071	13-3126819	11/01/2005	SCOR Global Life USA Reins Co (GIB4)	DE	YRT/I	OL	309,460,080	9,543,032	9,304,346	9,487,970				
97071	13-3126819	11/23/2007	SCOR Global Life USA Reins Co (GIB5)	DE	YRT/I	OL	524,597,528	4,808,768	4,509,905	3,417,465				
97071	13-3126819	01/01/2012	SCOR Global Life USA Reins Co (GIB7)	DE	YRT/I	OL	409,949,877	3,489,853	2,920,157	1,273,682				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
97071	13-3126819	11/01/2005	SCOR Global Life USA Reins Co (GID5)	DE	YRT/I	OL	565,344,133	3,407,045	2,842,314	1,882,595				
97071	13-3126819	01/01/2012	SCOR Global Life USA Reins Co (GID6)	DE	YRT/I	OL	342,621,423	559,607	430,671	200,431				
97071	13-3126819	08/30/2010	SCOR Global Life USA Reins Co (GIL7)	DE	CO/I	XXXL	3,368,986,653	19,180,405	20,294,471	5,080,730				
97071	13-3126819	08/30/2010	SCOR Global Life USA Reins Co (GIL7)	DE	YRT/I	OL	302,136,134	739,716	616,103	436,579				
97071	13-3126819	08/30/2010	SCOR Global Life USA Reins Co (GIL8)	DE	CO/I	XXXL	2,699,227,325	25,818,277	22,893,734	3,375,507				
97071	13-3126819	08/30/2010	SCOR Global Life USA Reins Co (GIL8)	DE	YRT/I	OL	151,407,496	209,931	177,196	124,483				
97071	13-3126819	07/01/2007	SCOR Global Life USA Reins Co (GIN1)	DE	YRT/I	OL	1,336,750,669	3,195,957	3,142,945	2,006,767				
97071	13-3126819	07/15/2008	SCOR Global Life USA Reins Co (GIN2)	DE	YRT/I	OL	670,569,935	1,439,979	1,365,910	728,494				
97071	13-3126819	07/15/2008	SCOR Global Life USA Reins Co (GIN3)	DE	YRT/I	OL	5,025,310,382	3,928,881	3,547,762	2,178,571				
97071	13-3126819	07/15/2008	SCOR Global Life USA Reins Co (GIN4)	DE	YRT/I	OL	4,852,693,940	7,752,347	7,471,406	3,829,091				
97071	13-3126819	11/01/2010	SCOR Global Life USA Reins Co (GIN5)	DE	YRT/I	OL	3,887,810,606	3,616,352	3,212,564	1,585,870				
97071	13-3126819	01/01/2011	SCOR Global Life USA Reins Co (GIN6)	DE	YRT/I	OL	9,438,319,528	17,282,118	13,862,175	6,353,099				
97071	13-3126819	01/01/2012	SCOR Global Life USA Reins Co (GIN7)	DE	YRT/I	OL	608,000,806	1,223,855	1,201,163	484,181				
97071	13-3126819	07/01/2018	SCOR Global Life USA Reins Co (GIN9)	DE	YRT/I	OL	558,671,980	512,120		6,935				
97071	13-3126819	07/01/2012	SCOR Global Life USA Reins Co (GIPF)	DE	YRT/I	OL	75,602,868	83,940	55,565	32,100				
97071	13-3126819	12/06/2017	SCOR Global Life USA Reins Co (SU17)	DE	COFI/I	OL	16,036,213	16,783,923	369,324	37,812,032				5,265,825
97071	13-3126819	07/01/2018	SCOR Global Life USA Reins Co (SU20)	DE	COFI/I	OL	(35,862)	2,038,169		16,673,788				464,182
97071	13-3126819	01/01/2018	SCOR Global Life USA Reins Co (SUE0)	DE	YRT/G	OL	51,951,974	86,433						
97071	13-3126819	01/01/2018	SCOR Global Life USA Reins Co (SUE8)	DE	YRT/G	OL	244,818,100	461,985						
97071	13-3126819	12/06/2017	SCOR Global Life USA Reins Co (SUN8)	DE	YRT/I	OL	1,431,823,410	1,765,732	42,387	97,568				
97071	13-3126819	03/15/2015	SCOR Global Life USA Reins Co (SU01)	DE	CO/I	XXXL	1,732,500	2,491	1,838	1,178				
97071	13-3126819	03/15/2015	SCOR Global Life USA Reins Co (SU02)	DE	CO/I	XXXL	2,565,000	5,747	4,216	1,533				
97071	13-3126819	03/15/2015	SCOR Global Life USA Reins Co (SU03)	DE	CO/I	XXXL	14,445,000	38,094	27,756	10,905				
97071	13-3126819	08/08/2016	SCOR Global Life USA Reins Co (SU07)	DE	CO/I	XXXL	148,643,550	203,617	93,605	180,768				
97071	13-3126819	08/08/2016	SCOR Global Life USA Reins Co (SU08)	DE	CO/I	XXXL	173,437,650	314,590	108,192	194,620				
97071	13-3126819	08/08/2016	SCOR Global Life USA Reins Co (SU09)	DE	CO/I	XXXL	913,791,500	1,804,532	637,778	836,236				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT0)	DE	CO/I	XXXL	367,365,246	384,512		477,250				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT0)	DE	YRT/I	OL	907,072	456		112				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT3)	DE	CO/I	XXXL	247,907,193	627,897		619,283				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT4)	DE	CO/I	XXXL	73,325,167	99,185		85,291				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT5)	DE	CO/I	XXXL	1,235,795,210	1,443,037		1,666,790				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT5)	DE	YRT/I	OL	3,697,653	4,925		912				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT6)	DE	CO/I	XXXL	538,196,434	403,179		493,585				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT6)	DE	YRT/I	OL	1,096,185	542		217				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT7)	DE	CO/I	XXXL	45,270,184	100,935		84,054				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT7)	DE	YRT/I	OL	5,000	15		4				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT8)	DE	CO/I	XXXL	23,853,445	20,967		27,401				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT9)	DE	CO/I	XXXL	539,636,885	654,903		808,353				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUT9)	DE	YRT/I	OL	410,526	299		85				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUTB)	DE	CO/I	XXXL	296,769,338	746,690		553,056				
97071	13-3126819	07/07/2018	SCOR Global Life USA Reins Co (SUTB)	DE	YRT/I	OL	792,634	920		259				
97071	13-3126819	04/15/2017	SCOR Global Life USA Reins Co (SUU3)	DE	YRT/I	OL	11,594,169	7,193		1,550				
97071	13-3126819	05/01/2018	SCOR Global Life USA Reins Co (SUV1)	DE	CO/I	XXXL	87,592,500	110,967		96,483				
97071	13-3126819	05/01/2018	SCOR Global Life USA Reins Co (SUV2)	DE	CO/I	XXXL	75,352,500	80,612		84,172				
97071	13-3126819	05/01/2018	SCOR Global Life USA Reins Co (SUV3)	DE	CO/I	XXXL	399,285,000	337,293		401,091				
97071	13-3126819	05/01/2018	SCOR Global Life USA Reins Co (SUV4)	DE	CO/I	XXXL	271,687,500	212,190		295,529				
68713	84-0499703	11/01/1990	Security Life of Denver Ins. Co. (SD33)	CO	YRT/G	OL			6,815	4,869				
68713	84-0499703	11/01/1990	Security Life of Denver Ins. Co. (SD33)	CO	YRT/I	OL			3,103,720	380,907				
68713	84-0499703	07/01/1992	Security Life of Denver Ins. Co. (SD35)	CO	YRT/I	OL			3,480,667	110,477				
68713	84-0499703	03/29/1993	Security Life of Denver Ins. Co. (SD37)	CO	YRT/I	OL			3,793,319	163,265				
68713	84-0499703	03/29/1993	Security Life of Denver Ins. Co. (SD41)	CO	YRT/I	OL			140,246	1,963				
68713	84-0499703	07/01/1993	Security Life of Denver Ins. Co. (SD44)	CO	YRT/I	OL			156,653	(28,779)				
68713	84-0499703	07/01/1993	Security Life of Denver Ins. Co. (SD45)	CO	YRT/I	OL			534,646	(260,850)				
68713	84-0499703	03/01/1996	Security Life of Denver Ins. Co. (SD46)	CO	YRT/G	OL			1,886	663				
68713	84-0499703	03/01/1996	Security Life of Denver Ins. Co. (SD46)	CO	YRT/I	OL			1,703,813	94,815				
68713	84-0499703	03/01/1996	Security Life of Denver Ins. Co. (SD63)	CO	YRT/G	OL			320,818	15,794				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
68713	84-0499703	03/01/1996	Security Life of Denver Ins. Co. (SD63)	CO	YRT/I	OL			3,874,988		228,948			
68713	84-0499703	03/01/1996	Security Life of Denver Ins. Co. (SD66)	CO	YRT/I	OL			211,078		21,454			
68713	84-0499703	09/16/1996	Security Life of Denver Ins. Co. (SD73)	CO	YRT/I	OL			1,391,881		100,584			
68713	84-0499703	06/15/1999	Security Life of Denver Ins. Co. (SD83)	CO	CO/I	OL	640,286,069	4,796,916	4,807,689		1,681,675			
68713	84-0499703	06/15/1999	Security Life of Denver Ins. Co. (SD83)	CO	CO/I	XXXL	4,237,080,904	18,299,497	19,115,779		12,541,516			
68713	84-0499703	06/15/1999	Security Life of Denver Ins. Co. (SD83)	CO	YRT/I	OL	2,040,712,468	15,001,273	14,180,958		9,755,809			
68713	84-0499703	10/01/2001	Security Life of Denver Ins. Co. (SDE1)	CO	YRT/G	OL			8,277,651		(580,382)			
68713	84-0499703	10/01/2001	Security Life of Denver Ins. Co. (SDE3)	CO	YRT/G	OL			3,070,662		36,155			
68713	84-0499703	07/01/2002	Security Life of Denver Ins. Co. (SDE4)	CO	YRT/I	OL			95,888		(5,507)			
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ1)	CO	CO/I	XXXL	16,722,272	80,842	74,502		97,863			
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ1)	CO	YRT/I	OL	27,854,130	208,837	198,813		135,350			
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ2)	CO	CO/I	XXXL	33,877,388	163,310	171,759		196,917			
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ2)	CO	YRT/I	OL	57,754,936	258,963	251,485		209,734			
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ3)	CO	CO/I	XXXL	487,080,976	11,144,902	11,765,612		926,059			
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ3)	CO	YRT/I	OL	56,638,609	163,869	149,628		131,748			
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ4)	CO	CO/I	XXXL	128,377,476	9,955,853	9,304,900		259,187			
68713	84-0499703	05/01/2004	Security Life of Denver Ins. Co. (SDJ4)	CO	YRT/I	OL	24,209,653	36,160	33,710		25,889			
68713	84-0499703	01/01/2005	Security Life of Denver Ins. Co. (SDJ5)	CO	CO/I	XXXL	5,469,211	7,297	8,005		20,038			
68713	84-0499703	01/01/2005	Security Life of Denver Ins. Co. (SDJ5)	CO	YRT/I	OL	6,825,798	25,048	29,005		56			
68713	84-0499703	01/01/2005	Security Life of Denver Ins. Co. (SDJ6)	CO	CO/I	XXXL	12,688,406	20,750	27,172		51,501			
68713	84-0499703	01/01/2005	Security Life of Denver Ins. Co. (SDJ6)	CO	YRT/I	OL	23,885,434	97,620	97,296		75,218			
68713	84-0499703	01/01/2005	Security Life of Denver Ins. Co. (SDJ7)	CO	CO/I	XXXL	203,602,153	4,518,727	4,606,548		397,567			
68713	84-0499703	01/01/2005	Security Life of Denver Ins. Co. (SDJ7)	CO	YRT/I	OL	26,313,212	67,098	62,795		50,302			
68713	84-0499703	01/01/2005	Security Life of Denver Ins. Co. (SDJ8)	CO	CO/I	XXXL	54,822,790	3,247,726	3,118,289		104,952			
68713	84-0499703	01/01/2005	Security Life of Denver Ins. Co. (SDJ8)	CO	YRT/I	OL	8,296,265	10,046	9,561		7,507			
68713	84-0499703	11/01/1990	Security Life of Denver Ins. Co. (SL08)	CO	YRT/I	OL			1,820,298		114,056			
68713	84-0499703	03/01/1996	Security Life of Denver Ins. Co. (SL33)	CO	YRT/I	OL			1,951,407		(153,759)			
68713	84-0499703	02/01/1994	Security Life of Denver Ins. Co. (SL34)	CO	YRT/I	OL			6,350		94			
68713	84-0499703	01/01/1992	Security Life of Denver Ins. Co. (SL35)	CO	YRT/G	OL			10,084		1,370			
68713	84-0499703	01/01/1992	Security Life of Denver Ins. Co. (SL35)	CO	YRT/I	OL			66,244		36,729			
68713	84-0499703	09/01/1992	Security Life of Denver Ins. Co. (SL36)	CO	YRT/I	OL			322,273		179,961			
68713	84-0499703	09/01/1992	Security Life of Denver Ins. Co. (SL37)	CO	YRT/I	OL			49,140		2,345			
68713	84-0499703	02/01/1994	Security Life of Denver Ins. Co. (SL38)	CO	YRT/I	OL			16,651		840			
68713	84-0499703	02/01/1994	Security Life of Denver Ins. Co. (SL39)	CO	YRT/I	OL			6,843		(1,876)			
68713	84-0499703	03/01/1996	Security Life of Denver Ins. Co. (SL43)	CO	YRT/I	OL			175,812		35,565			
68713	84-0499703	03/01/1996	Security Life of Denver Ins. Co. (SL44)	CO	YRT/I	OL			3,155,348		95,630			
68713	84-0499703	02/01/1994	Security Life of Denver Ins. Co. (SL59)	CO	YRT/I	OL			3,318		2,134			
68713	84-0499703	02/01/1994	Security Life of Denver Ins. Co. (SL69)	CO	YRT/I	OL			15,269		(5,525)			
68713	84-0499703	09/01/1998	Security Life of Denver Ins. Co. (SL87)	CO	YRT/I	OL			518,290		11,976			
68713	84-0499703	05/01/2001	Security Life of Denver Ins. Co. (SL97)	CO	YRT/I	OL			1,249,726		13,258			
68713	84-0499703	09/16/1996	Security Life of Denver Ins. Co. (SLA1)	CO	YRT/I	OL			742,171		6,859			
68713	84-0499703	03/31/2003	Security Life of Denver Ins. Co. (SLH1)	CO	YRT/I	OL			1,042,880		(3,926)			
82627	06-0839705	11/01/1970	Swiss Re Life & Health America (CG07)	MO	YRT/I	OL	146,267	5,639	9,985		13,786			
82627	06-0839705	11/01/1985	Swiss Re Life & Health America (CG21)	MO	YRT/I	OL	1,177,350	67,368	65,360		68,333			
82627	06-0839705	01/01/1971	Swiss Re Life & Health America (CI21)	MO	YRT/G	OL			2,239,957		1,776,146			
82627	06-0839705	01/01/1971	Swiss Re Life & Health America (CI21)	MO	YRT/I	OL	5,049,448	356,855	363,652		515,968			
82627	06-0839705	01/01/1991	Swiss Re Life & Health America (CI24)	MO	YRT/I	OL	3,673,582	81,860	79,545		88,452			
82627	06-0839705	01/01/1991	Swiss Re Life & Health America (CI25)	MO	YRT/I	OL	5,049,641	11,075	9,497		13,685			
82627	06-0839705	09/08/1997	Swiss Re Life & Health America (LF85)	MO	YRT/I	OL	30,772,327	372,454	358,631		286,925			
82627	06-0839705	08/01/1984	Swiss Re Life & Health America (LF88)	MO	YRT/G	OL	117,248	7,950	7,596		11,240			
82627	06-0839705	08/01/1984	Swiss Re Life & Health America (LF88)	MO	YRT/I	OL	1,999,009	95,687	164,162		155,712			
82627	06-0839705	10/01/1981	Swiss Re Life & Health America (LR10)	MO	YRT/G	OL	50,715	3,166	3,034		4,394			
82627	06-0839705	10/01/1981	Swiss Re Life & Health America (LR10)	MO	YRT/I	OL	6,016,782	217,629	248,525		294,463			
82627	06-0839705	01/01/1984	Swiss Re Life & Health America (LR17)	MO	YRT/G	OL	1,627,744	53,165	58,484		61,560			
82627	06-0839705	01/01/1984	Swiss Re Life & Health America (LR17)	MO	YRT/I	OL	8,988,683	263,373	320,259		178,605			
82627	06-0839705	03/29/1993	Swiss Re Life & Health America (LR38)	MO	YRT/I	OL	389,457,158	3,010,503	3,033,479		2,332,838			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
82627	06-0839705	03/29/1993	Swiss Re Life & Health America (LR42)	MO	YRT/I	OL	10,070,276	113,956	112,176	87,226				
82627	06-0839705	12/01/1993	Swiss Re Life & Health America (LR52)	MO	YRT/I	OL	2,560,636	99,280	110,305	64,658				
82627	06-0839705	09/08/1997	Swiss Re Life & Health America (LR78)	MO	YRT/I	OL	115,650,515	964,686	991,764	611,160				
82627	06-0839705	02/01/1994	Swiss Re Life & Health America (ME38)	MO	YRT/I	OL	3,534,030	11,038	16,651	8,804				
82627	06-0839705	01/01/1992	Swiss Re Life & Health America (ME72)	MO	YRT/I	OL	1,256,679	49,769	47,635	85,980				
82627	06-0839705	02/01/1994	Swiss Re Life & Health America (ME73)	MO	YRT/I	OL	2,019,203	56,088	52,971	74,300				
82627	06-0839705	01/01/1990	Swiss Re Life & Health America (MG29)	MO	YRT/I	OL	1,139,356	53,683	51,282	80,552				
82627	06-0839705	02/01/1994	Swiss Re Life & Health America (NO38)	MO	YRT/I	OL	3,536,908	11,061	16,671	8,820				
82627	06-0839705	02/01/1994	Swiss Re Life & Health America (NO39)	MO	YRT/I	OL	311,634	7,245	6,843	17,043				
82627	06-0839705	01/19/2005	Swiss Re Life & Health America (NO43)	MO	YRT/I	OL			93	13				
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (NO44)	MO	YRT/I	OL	135,450,779	3,198,991	3,155,348	2,500,999				
82627	06-0839705	02/01/1994	Swiss Re Life & Health America (NO45)	MO	YRT/I	OL	7,892,726	191,339	181,185	256,486				
82627	06-0839705	02/01/1994	Swiss Re Life & Health America (NO46)	MO	YRT/I	OL	429,905	2,499	2,340	4,804				
82627	06-0839705	09/01/1994	Swiss Re Life & Health America (NO47)	MO	YRT/I	OL	604,866	5,037	4,699	4,430				
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (NO48)	MO	YRT/I	OL	196,839,488	2,328,605	2,155,299	2,122,554				
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (NO50)	MO	YRT/I	OL	448,412,534	6,126,882	5,927,045	2,892,090				
82627	06-0839705	02/01/1994	Swiss Re Life & Health America (NO59)	MO	YRT/I	OL	166,825	3,473	3,318	9,053				
82627	06-0839705	09/08/1997	Swiss Re Life & Health America (NO85)	MO	YRT/I	OL	23,086,238	279,424	269,044	211,568				
82627	06-0839705	05/01/2001	Swiss Re Life & Health America (NO97)	MO	YRT/I	OL	823,131,833	3,755,516	3,664,659	1,918,064				
82627	06-0839705	09/16/1996	Swiss Re Life & Health America (NOA1)	MO	YRT/I	OL	90,037,825	766,389	745,357	320,151				
82627	06-0839705	04/01/1997	Swiss Re Life & Health America (NOA7)	MO	YRT/I	OL	101,447	2,310	2,171	1,137				
82627	06-0839705	09/01/2001	Swiss Re Life & Health America (NOB2)	MO	YRT/I	OL	792,662,529	21,883,474	19,670,101	9,182,994				
82627	06-0839705	11/19/2001	Swiss Re Life & Health America (NOD1)	MO	YRT/I	OL	134,339,136	2,588,464	2,470,869	798,330				
82627	06-0839705	03/31/2003	Swiss Re Life & Health America (NOH1)	MO	YRT/I	OL	42,057,012	733,113	754,994	321,316				
82627	06-0839705	09/01/2001	Swiss Re Life & Health America (NOWXB)	MO	CO/I	AXXX		40,738,658	38,789,622	548,175				
82627	06-0839705	11/19/2001	Swiss Re Life & Health America (NOWXD)	MO	CO/I	AXXX		153,782,227	148,365,654	1,735,765				
82627	06-0839705	06/01/1974	Swiss Re Life & Health America (NR05)	MO	YRT/I	OL	520,890	34,676	33,907	64,334				
82627	06-0839705	01/01/1990	Swiss Re Life & Health America (NR30)	MO	YRT/I	OL	1,023,910	54,904	53,011	69,926				
82627	06-0839705	12/31/2016	Swiss Re Life & Health America (SR16)	MO	YRT/I	OL	116,754,981	230,662	136,330	161,705				
82627	06-0839705	12/31/2016	Swiss Re Life & Health America (SR16T)	MO	CO/I	XXXL	7,490,327,199	122,866,079	117,209,822	14,179,768	58,693,477	66,030,161		
82627	06-0839705	12/31/2016	Swiss Re Life & Health America (SR16U)	MO	CO/I	AXXX	372,947,590	296,060,495	291,692,413	6,346,204	78,090,657	83,941,542		
82627	06-0839705	12/31/2016	Swiss Re Life & Health America (SR16V)	MO	MCO/I	OL	1,213,588,531			17,925,972	20,199,614	21,557,541	89,462,893	
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (SR59)	MO	YRT/G	OL	11,119,602	163,792	141,830	165,759				
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (SR59)	MO	YRT/I	OL	550,629,410	1,788,904	1,954,709	1,320,143				
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (SR60)	MO	YRT/G	OL	23,184,209	336,957	320,819	384,549				
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (SR60)	MO	YRT/I	OL	420,150,553	3,852,062	3,875,274	4,527,891				
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (SR64)	MO	YRT/G	OL	360,536	48,858	42,409	46,863				
82627	06-0839705	03/01/1996	Swiss Re Life & Health America (SR64)	MO	YRT/I	OL	377,494,065	3,037,705	3,029,660	3,282,307				
82627	06-0839705	01/19/2005	Swiss Re Life & Health America (SR66)	MO	YRT/I	OL	76,856,154	343,974	284,721	227,892				
82627	06-0839705	09/08/1997	Swiss Re Life & Health America (SR77)	MO	YRT/I	OL	88,059,569	730,431	750,212	454,990				
82627	06-0839705	10/18/2003	Swiss Re Life & Health America (SR83)	MO	CO/I	XXXL	312,548,058	970,276	992,232	794,066				
82627	06-0839705	10/18/2003	Swiss Re Life & Health America (SR83)	MO	YRT/I	OL	144,003,984	995,678	936,970	626,365				
82627	06-0839705	01/01/2000	Swiss Re Life & Health America (SR84)	MO	YRT/I	OL	827,353,038	4,037,036	3,954,277	2,137,074				
82627	06-0839705	06/12/2012	Swiss Re Life & Health America (SRB2)	MO	YRT/I	OL	160,338,350	4,671,782	4,026,439	2,811,854				
82627	06-0839705	08/05/2011	Swiss Re Life & Health America (SRB5)	MO	YRT/I	OL	51,389,461	411,128	376,037	203,706				
82627	06-0839705	08/01/2008	Swiss Re Life & Health America (SRB6)	MO	YRT/I	OL	29,197,153	163,373	118,554	75,874				
82627	06-0839705	01/01/2012	Swiss Re Life & Health America (SRB7)	MO	YRT/I	OL	182,075,077	1,537,762	1,232,133	531,696				
82627	06-0839705	09/01/1999	Swiss Re Life & Health America (SRC1)	MO	YRT/I	OL	446,485	4,598	4,209	1,844				
82627	06-0839705	06/12/2012	Swiss Re Life & Health America (SRD1)	MO	YRT/I	OL	278,990,211	4,948,480	4,596,686	1,817,838				
82627	06-0839705	01/01/2018	Swiss Re Life & Health America (SRE0)	MO	YRT/G	OL	51,951,956	86,433		21,665				
82627	06-0839705	10/01/2001	Swiss Re Life & Health America (SRE1)	MO	YRT/G	OL	4,434,112	19,262	29,237	25,446				
82627	06-0839705	05/28/2012	Swiss Re Life & Health America (SRE1B)	MO	YRT/G	OL	2,793,641,739	6,630,761	6,224,919	3,274,580				
82627	06-0839705	05/28/2012	Swiss Re Life & Health America (SRE2B)	MO	YRT/G	OL	5,261,115	21,837	20,403	11,635				
82627	06-0839705	05/28/2012	Swiss Re Life & Health America (SRE3)	MO	YRT/G	OL	473,228,196	1,140,310	1,069,113	561,362				
82627	06-0839705	07/01/2002	Swiss Re Life & Health America (SRE4)	MO	YRT/I	OL	35,314,316	397,931	422,514	169,991				
82627	06-0839705	01/01/2018	Swiss Re Life & Health America (SRE8)	MO	YRT/G	OL	244,759,475	461,728		138,529				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
82627	06-0839705	08/01/2008	Swiss Re Life & Health America (SRH2)	MO	YRT/I	OL	114,531,718	156,992	122,126					
82627	06-0839705	05/23/2005	Swiss Re Life & Health America (SRL1)	MO	CO/I	XXXL	100,113,913	339,828	474,414					
82627	06-0839705	05/23/2005	Swiss Re Life & Health America (SRL1)	MO	YRT/I	OL	175,152,791	1,736,349	1,861,655					
82627	06-0839705	05/23/2005	Swiss Re Life & Health America (SRL2)	MO	CO/I	XXXL	94,734,176	301,800	573,210					
82627	06-0839705	05/23/2005	Swiss Re Life & Health America (SRL2)	MO	YRT/I	OL	51,847,752	225,713	194,566					
82627	06-0839705	05/23/2005	Swiss Re Life & Health America (SRL3)	MO	CO/I	XXXL	9,961,604,241	194,358,676	196,442,043					
82627	06-0839705	05/23/2005	Swiss Re Life & Health America (SRL3)	MO	YRT/I	OL	931,713,147	2,236,459	1,976,919					
82627	06-0839705	05/23/2005	Swiss Re Life & Health America (SRL4)	MO	CO/I	XXXL	1,647,761,883	54,494,449	51,261,237					
82627	06-0839705	05/23/2005	Swiss Re Life & Health America (SRL4)	MO	YRT/I	OL	82,590,255	104,946	94,981					
82627	06-0839705	11/01/2006	Swiss Re Life & Health America (SRL5)	MO	CO/I	XXXL	7,184,515,387	13,629,204	16,805,802					
82627	06-0839705	11/01/2006	Swiss Re Life & Health America (SRL5)	MO	YRT/I	OL	1,782,418,747	3,379,238	2,916,627					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRL6)	MO	CO/I	XXXL	4,811,555,981	6,572,598	6,693,782					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRL6)	MO	YRT/I	OL	668,988,053	1,302,202	1,119,020					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRL7)	MO	CO/I	XXXL	1,410,029,584	5,636,440	4,639,925					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRL7)	MO	YRT/I	OL	117,340,628	132,652	88,047					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRL8)	MO	CO/I	XXXL	26,530,088,026	231,143,437	200,862,667					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRL8)	MO	YRT/I	OL	1,401,587,593	1,862,274	1,548,481					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM2)	MO	YRT/G	OL	5,073,300	1,591	1,773					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM3)	MO	YRT/G	OL	12,313,300	2,490	2,728					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM3)	MO	YRT/I	OL	1,778,565	1,716	1,572					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM4)	MO	YRT/G	OL	3,518,400	782	725					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM4)	MO	YRT/I	OL	49,501	80	80					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM5)	MO	YRT/G	OL	10,139,197	2,749	2,611					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM5)	MO	YRT/I	OL	1,862,387	6,055	5,670					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM6)	MO	YRT/G	OL	290,000	206	186					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM7)	MO	YRT/G	OL	877,710,690	188,156	204,413					
82627	06-0839705	04/01/2005	Swiss Re Life & Health America (SRM8)	MO	YRT/G	OL	12,547,631	7,128	8,310					
82627	06-0839705	04/01/2010	Swiss Re Life & Health America (SRM9)	MO	YRT/G	OL	227,641,982	30,617	31,380					
82627	06-0839705	08/01/2017	Swiss Re Life & Health America (SRN6)	MO	YRT/I	OL	1,735,595,310	2,809,267	926,207					
82627	06-0839705	08/01/2017	Swiss Re Life & Health America (SRN7)	MO	YRT/I	OL	73,154,871	148,896	138,234					
82627	06-0839705	07/01/2012	Swiss Re Life & Health America (SRPB)	MO	YRT/I	OL	1,672,150,000	4,692,497	4,005,971					
82627	06-0839705	08/08/2016	Swiss Re Life & Health America (SRQ0)	MO	CO/I	XXXL	540,454,800	1,382,960	401,967					
82627	06-0839705	03/15/2015	Swiss Re Life & Health America (SRQ4)	MO	CO/I	XXXL	20,025,000	79,247	54,419					
82627	06-0839705	04/01/2016	Swiss Re Life & Health America (SRQ5)	MO	CO/I	XXXL	450,000	826	1,871					
82627	06-0839705	06/29/2015	Swiss Re Life & Health America (SRR1)	MO	YRT/I	OL	6,881,499	3,749	4,076					
82627	06-0839705	12/01/2015	Swiss Re Life & Health America (SRS2)	MO	YRT/G	OL	414,177,953	87,293	56,181					
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT0)	MO	CO/I	XXXL	185,182,622	193,339						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT0)	MO	YRT/I	OL	453,536	227						
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRT1)	MO	CO/I	XXXL	5,226,811,149	13,197,072	6,832,518					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRT1)	MO	YRT/I	OL	113,415,544	138,055	46,616					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRT2)	MO	CO/I	XXXL	13,217,240,649	30,509,447	12,505,605					
82627	06-0839705	08/30/2010	Swiss Re Life & Health America (SRT2)	MO	YRT/I	OL	148,259,936	133,223	32,247					
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT3)	MO	CO/I	XXXL	266,020,322	640,769						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT4)	MO	CO/I	XXXL	76,325,168	116,475						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT5)	MO	CO/I	XXXL	1,563,808,119	1,882,956						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT5)	MO	YRT/I	OL	4,622,072	6,156						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT6)	MO	CO/I	XXXL	671,745,575	506,230						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT6)	MO	YRT/I	OL	1,370,238	678						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT7)	MO	CO/I	XXXL	81,040,376	128,993						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT7)	MO	YRT/I	OL	10,000	30						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT8)	MO	CO/I	XXXL	48,706,890	45,076						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT9)	MO	CO/I	XXXL	272,318,442	330,647						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRT9)	MO	YRT/I	OL	205,263	149						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRTB)	MO	CO/I	XXXL	582,937,763	1,438,531						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRTB)	MO	YRT/I	OL	1,585,261	1,844						
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRTR)	MO	CO/I	XXXL	179,551,285	474,649						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year		
82627	06-0839705	07/07/2018	Swiss Re Life & Health America (SRTR)	MO	YRT/I	OL	3,898,274	2,721		898				
82627	06-0839705	04/15/2017	Swiss Re Life & Health America (SRU1)	MO	CO/I	XXXL	6,915,125	5,766		5,635				
82627	06-0839705	04/15/2017	Swiss Re Life & Health America (SRU2)	MO	CO/I	XXXL	4,333,033	943		3,097				
82627	06-0839705	04/15/2017	Swiss Re Life & Health America (SRU3)	MO	YRT/I	OL	30,813,283	19,838	160	6,462				
82627	06-0839705	04/15/2017	Swiss Re Life & Health America (SRU5)	MO	CO/I	XXXL	3,600,000	3,604		5,982				
82627	06-0839705	04/15/2017	Swiss Re Life & Health America (SRU6)	MO	CO/I	XXXL	333,300	414		598				
82627	06-0839705	05/01/2018	Swiss Re Life & Health America (SRV1)	MO	CO/I	XXXL	58,395,000	73,978		64,322				
82627	06-0839705	05/01/2018	Swiss Re Life & Health America (SRV2)	MO	CO/I	XXXL	50,235,000	53,741		56,115				
82627	06-0839705	05/01/2018	Swiss Re Life & Health America (SRV3)	MO	CO/I	XXXL	266,190,000	225,096		267,394				
82627	06-0839705	05/01/2018	Swiss Re Life & Health America (SRV4)	MO	CO/I	XXXL	181,125,000	141,460		197,020				
70688	36-6071399	05/01/2004	Transamerica Financial Life Ins. Co. (TAJ2)	NY	CO/I	XXXL	7,528,306	36,291	38,168	43,759				
70688	36-6071399	05/01/2004	Transamerica Financial Life Ins. Co. (TAJ2)	NY	YRT/I	OL	12,834,423	57,562	55,885	43,157				
70688	36-6071399	05/01/2004	Transamerica Financial Life Ins. Co. (TAJ3)	NY	CO/I	XXXL	108,240,202	2,476,602	2,614,534	205,791				
70688	36-6071399	05/01/2004	Transamerica Financial Life Ins. Co. (TAJ3)	NY	YRT/I	OL	12,586,333	36,405	33,259	26,733				
70688	36-6071399	05/01/2004	Transamerica Financial Life Ins. Co. (TAJ4)	NY	CO/I	XXXL	28,528,326	2,212,395	2,067,740	57,597				
70688	36-6071399	05/01/2004	Transamerica Financial Life Ins. Co. (TAJ4)	NY	YRT/I	OL	5,379,920	8,032	7,492	5,155				
70688	36-6071399	01/01/2005	Transamerica Financial Life Ins. Co. (TAJ6)	NY	CO/I	XXXL	2,819,646	4,611	6,038	11,445				
70688	36-6071399	01/01/2005	Transamerica Financial Life Ins. Co. (TAJ6)	NY	YRT/I	OL	5,307,877	21,694	21,622	15,865				
70688	36-6071399	01/01/2005	Transamerica Financial Life Ins. Co. (TAJ7)	NY	CO/I	XXXL	45,244,916	1,004,148	1,023,663	88,348				
70688	36-6071399	01/01/2005	Transamerica Financial Life Ins. Co. (TAJ7)	NY	YRT/I	OL	5,847,369	14,910	13,949	10,348				
70688	36-6071399	01/01/2005	Transamerica Financial Life Ins. Co. (TAJ8)	NY	CO/I	XXXL	12,182,842	721,712	692,947	23,323				
70688	36-6071399	01/01/2005	Transamerica Financial Life Ins. Co. (TAJ8)	NY	YRT/I	OL	1,843,615	2,235	2,125	1,496				
70688	36-6071399	05/23/2005	Transamerica Financial Life Ins. Co. (TAL2)	NY	CO/I	XXXL	94,734,142	301,793	573,199	273,367				
70688	36-6071399	05/23/2005	Transamerica Financial Life Ins. Co. (TAL2)	NY	YRT/I	OL	51,847,710	225,713	194,565	150,553				
70688	36-6071399	05/23/2005	Transamerica Financial Life Ins. Co. (TAL3)	NY	CO/I	XXXL	5,803,706,639	111,511,148	111,614,906	8,971,486				
70688	36-6071399	05/23/2005	Transamerica Financial Life Ins. Co. (TAL3)	NY	YRT/I	OL	522,744,790	1,213,907	1,068,572	832,122				
70688	36-6071399	05/23/2005	Transamerica Financial Life Ins. Co. (TAL4)	NY	CO/I	XXXL	550,846,967	18,238,854	17,153,314	895,521				
70688	36-6071399	05/23/2005	Transamerica Financial Life Ins. Co. (TAL4)	NY	YRT/I	OL	27,530,095	34,984	31,664	22,938				
80314	52-0913817	12/31/1994	UniCARE Life & Health Insurance Co. (UN02)	IN	CO/G			8,762,446	9,954,704					
66133	41-1760577	01/01/2014	Wilton Reassurance Co. (WRL4)	MN	YRT/I	OL	899,855	4,674	1,335	8,398				
66133	41-1760577	05/23/2005	Wilton Reassurance Co. (WRL4)	MN	CO/I	XXXL	520,773,702	17,409,728	16,385,594	847,262				
66133	41-1760577	05/23/2005	Wilton Reassurance Co. (WRL4)	MN	YRT/I	OL	27,128,983	34,414	31,113	22,608				
0899999. General Account - Authorized U.S. Non-Affiliates							473,054,255,544	8,137,826,442	7,132,068,642	1,682,427,185	156,983,748	171,529,244	135,939,405	4,098,648,265
1099999. Total General Account - Authorized Non-Affiliates							473,054,255,544	8,137,826,442	7,132,068,642	1,682,427,185	156,983,748	171,529,244	135,939,405	4,098,648,265
1199999. Total General Account Authorized							473,054,255,544	8,137,826,442	7,132,068,642	1,682,427,185	156,983,748	171,529,244	135,939,405	4,098,648,265
1499999. Total General Account - Unauthorized U.S. Affiliates														
1799999. Total General Account - Unauthorized Non-U.S. Affiliates														
1899999. Total General Account - Unauthorized Affiliates														
85090	22-3026145	07/15/1994	Dearborn National Life Insurance Co of New York (FDNY)	NY	CO/G	OL		189,342	204,479					
1999999. General Account - Unauthorized U.S. Non-Affiliates								189,342	204,479					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (FR56)	CYM	YRT/I	OL	70,959	125	344	3,144				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (PH55)	CYM	YRT/I	OL	1,790,676	3,769	3,561	37,106				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (PH56)	CYM	YRT/I	OL	228,148	155	147	1,489				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (PHB1)	CYM	YRT/I	OL	11,320,053	16,851	15,546	122,756				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (PX58)	CYM	YRT/I	OL	580,660	579	539	5,998				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB4)	CYM	YRT/I	OL	634,669,218	192,073	189,839	1,313,164				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (ST85)	CYM	YRT/I	OL	100,995,517	61,289	61,734	392,386				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (ST97)	CYM	YRT/I	OL	160,451,773	47,786	46,092	327,587				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB1)	CYM	YRT/I	OL	62,892,383	70,299	67,605	419,670				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB2)	CYM	YRT/I	OL	86,024,964	207,429	191,252	1,329,509				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB3)	CYM	YRT/I	OL	155,243,200	481,145	486,833	2,843,861				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB4)	CYM	YRT/I	OL	343,469,549	818,590	792,901	10,141,845				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB5)	CYM	YRT/I	OL	26,780,340	25,006	22,746	258,376				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STD1)	CYM	YRT/I	OL	71,654,258	87,877	89,194	363,995				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STD4)	CYM	YRT/I	OL	29,000,327	9,473	8,190	41,905				
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STE4)	CYM	YRT/I	OL	6,843,150	5,689	5,265	30,768				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 1

Reinsurance Ceded Life Insurance, Annuities, Deposit Funds and Other Liabilities Without Life or Disability Contingencies, and Related Benefits Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Amount in Force at End of Year	Reserve Credit Taken		11 Premiums	Outstanding Surplus Relief		14 Modified Coinsurance Reserve	15 Funds Withheld Under Coinsurance	
								9 Current Year	10 Prior Year		12 Current Year	13 Prior Year			
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STH1)	CYM	YRT/I	OL	51,867,303	102,005	92,606	569,403					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM2)	CYM	YRT/G	OL	1,014,660	311	352	2,758					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM3)	CYM	YRT/G	OL	2,492,660	497	543	4,600					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM3)	CYM	YRT/I	OL	355,715	29	26	294					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM5)	CYM	YRT/G	OL	2,009,840	525	502	4,761					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM5)	CYM	YRT/I	OL	372,478	98	94	1,176					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM6)	CYM	YRT/G	OL	58,000	42	38	375					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STN1)	CYM	YRT/I	OL	110,682,674	20,877	20,688	188,717					
2099999. General Account - Unauthorized Non-U.S. Non-Affiliates							1,860,868,505	2,152,519	2,096,637	18,405,643					
2199999. Total General Account - Unauthorized Non-Affiliates							1,860,868,505	2,341,861	2,301,116	18,405,643					
2299999. Total General Account Unauthorized							1,860,868,505	2,341,861	2,301,116	18,405,643					
2599999. Total General Account - Certified U.S. Affiliates															
2899999. Total General Account - Certified Non-U.S. Affiliates															
2999999. Total General Account - Certified Affiliates															
3299999. Total General Account - Certified Non-Affiliates															
3399999. Total General Account Certified															
3499999. Total General Account Authorized, Unauthorized and Certified							474,915,124,049	8,140,168,303	7,134,369,758	1,700,832,828	156,983,748	171,529,244	135,939,405	4,098,648,265	
3799999. Total Separate Accounts - Authorized U.S. Affiliates															
4099999. Total Separate Accounts - Authorized Non-U.S. Affiliates															
4199999. Total Separate Accounts - Authorized Affiliates															
8267	06-0839705	12/31/2016	Swiss Re Life & Health America (SR16V)	MO	MCO/I	OL							468,846,732		
4299999. Separate Accounts - Authorized U.S. Non-Affiliates														468,846,732	
4499999. Total Separate Accounts - Authorized Non-Affiliates														468,846,732	
4599999. Total Separate Accounts Authorized														468,846,732	
4899999. Total Separate Accounts - Unauthorized U.S. Affiliates															
5199999. Total Separate Accounts - Unauthorized Non-U.S. Affiliates															
5299999. Total Separate Accounts - Unauthorized Affiliates															
5599999. Total Separate Accounts - Unauthorized Non-Affiliates															
5699999. Total Separate Accounts Unauthorized															
5999999. Total Separate Accounts - Certified U.S. Affiliates															
6299999. Total Separate Accounts - Certified Non-U.S. Affiliates															
6399999. Total Separate Accounts - Certified Affiliates															
6699999. Total Separate Accounts - Certified Non-Affiliates															
6799999. Total Separate Accounts Certified															
6899999. Total Separate Accounts Authorized, Unauthorized and Certified														468,846,732	
6999999. Total U.S. (Sum of 0399999, 0899999, 1499999, 1999999, 2599999, 3099999, 3799999, 4299999, 4899999, 5399999, 5999999 and 6499999)							473,054,255,544	8,138,015,784	7,132,273,121	1,682,427,185	156,983,748	171,529,244	604,786,137	4,098,648,265	
7099999. Total Non-U.S. (Sum of 0699999, 0999999, 1799999, 2099999, 2899999, 3199999, 4099999, 4399999, 5199999, 5499999, 6299999 and 6599999)							1,860,868,505	2,152,519	2,096,637	18,405,643					
9999999 - Totals							474,915,124,049	8,140,168,303	7,134,369,758	1,700,832,828	156,983,748	171,529,244	604,786,137	4,098,648,265	

43.13

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 3 - SECTION 2

Reinsurance Ceded Accident and Health Insurance Listed by Reinsuring Company as of December 31, Current Year

1 NAIC Company Code	2 ID Number	3 Effective Date	4 Name of Company	5 Domi- ciliary Juris- diction	6 Type of Reinsurance Ceded	7 Type of Business Ceded	8 Premiums	9 Unearned Premiums (Estimated)	10 Reserve Credit Taken Other than for Unearned Premiums	Outstanding Surplus Relief		13 Modified Coinsurance Reserve	14 Funds Withheld Under Coinsurance
										11 Current Year	12 Prior Year		
0399999. Total General Account - Authorized U.S. Affiliates													
0699999. Total General Account - Authorized Non-U.S. Affiliates													
0799999. Total General Account - Authorized Affiliates													
60054	06-6033492	03/22/2017	Aetna Life Insurance Corporation	CT	QA/I	MS	863,800	25,684					
68276	48-1024691	06/01/2000	Employers Reassurance Corporation	KS	QA/I	LTC	83,337,277	13,697,377	2,247,003,979				
60213	25-1800302	07/15/1994	HM Life Insurance Company of New York	NY	QA/G	OH			524,916				
91898	86-0388413	01/01/2018	LifeCare Assurance Company	AZ	QA/I	LTC	817,885	272,628	5,297,087				
88099	75-1608507	05/09/2016	Optimum Re Insurance Corporation	TX	QA/G	OH	101,801						
80314	52-0913817	12/31/1994	UniCARE Life & Health Insurance Company	IN	QA/G	OH	100,197		268,860				
39845	48-0921045	01/01/1993	Westport Insurance Corporation	MO	OTH/I	LTDI			26,177,890				
0899999. General Account - Authorized U.S. Non-Affiliates													
1099999. Total General Account - Authorized Non-Affiliates													
1199999. Total General Account Authorized													
1499999. Total General Account - Unauthorized U.S. Affiliates													
1799999. Total General Account - Unauthorized Non-U.S. Affiliates													
1899999. Total General Account - Unauthorized Affiliates													
91898	86-0388413	01/01/2008	LifeCare Assurance Company	AZ	QA/I	LTC	(102,174,189)						
91898	86-0388413	01/01/2018	LifeCare Assurance Company	AZ	QA/I	LTC	8,346,112						
1999999. General Account - Unauthorized U.S. Non-Affiliates													
2199999. Total General Account - Unauthorized Non-Affiliates													
2299999. Total General Account Unauthorized													
2599999. Total General Account - Certified U.S. Affiliates													
2899999. Total General Account - Certified Non-U.S. Affiliates													
2999999. Total General Account - Certified Affiliates													
3299999. Total General Account - Certified Non-Affiliates													
3399999. Total General Account Certified													
3499999. Total General Account Authorized, Unauthorized and Certified													
3799999. Total Separate Accounts - Authorized U.S. Affiliates													
4099999. Total Separate Accounts - Authorized Non-U.S. Affiliates													
4199999. Total Separate Accounts - Authorized Affiliates													
4499999. Total Separate Accounts - Authorized Non-Affiliates													
4599999. Total Separate Accounts Authorized													
4899999. Total Separate Accounts - Unauthorized U.S. Affiliates													
5199999. Total Separate Accounts - Unauthorized Non-U.S. Affiliates													
5299999. Total Separate Accounts - Unauthorized Affiliates													
5599999. Total Separate Accounts - Unauthorized Non-Affiliates													
5699999. Total Separate Accounts Unauthorized													
5999999. Total Separate Accounts - Certified U.S. Affiliates													
6299999. Total Separate Accounts - Certified Non-U.S. Affiliates													
6399999. Total Separate Accounts - Certified Affiliates													
6699999. Total Separate Accounts - Certified Non-Affiliates													
6799999. Total Separate Accounts Certified													
6899999. Total Separate Accounts Authorized, Unauthorized and Certified													
6999999. Total U.S. (Sum of 0399999, 0899999, 1499999, 1999999, 2599999, 3099999, 3799999, 4299999, 4899999, 5399999, 5999999 and 6499999)													
7099999. Total Non-U.S. (Sum of 0699999, 0999999, 1799999, 2099999, 2899999, 3199999, 4099999, 4399999, 5199999, 5499999, 6299999 and 6599999)													
9999999 - Totals													

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 4

Reinsurance Ceded to Unauthorized Companies

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
NAIC Company Code	ID Number	Effective Date	Name of Reinsurer	Reserve Credit Taken	Paid and Unpaid Losses Recoverable (Debit)	Other Debits	Total (Cols.5+6+7)	Letters of Credit	Issuing or Confirming Bank Reference Number (a)	Trust Agreements	Funds Deposited by and Withheld from Reinsurers	Other	Miscellaneous Balances (Credit)	Sum of Cols. 9+11+12+13 +14 but not in Excess of Col. 8
0399999			Total General Account - Life and Annuity U.S. Affiliates						XXX					
0699999			Total General Account - Life and Annuity Non-U.S. Affiliates						XXX					
0799999			Total General Account - Life and Annuity Affiliates						XXX					
85090	22-3026145	07/15/1994	Dearborn National Life Ins Co of NY	189,342			189,342							
0899999			General Account - Life and Annuity U.S. Non-Affiliates	189,342			189,342		XXX					
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (FR56)	125			125			116			1,057	125
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (PH55)	3,769			3,769			3,489			12,499	3,769
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (PH56)	155			155			143			496	155
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (PHB1)	16,851			16,851			15,600			42,339	16,851
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (PX58)	579			579			536			2,089	579
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (ST84)	192,073	277,345	2,191	471,609			436,600			443,031	471,609
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (ST85)	61,289			61,289			56,739			132,653	61,289
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (ST97)	47,786	97,768	772	146,326			135,464			110,943	146,326
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB1)	70,299	15,670	124	86,093			79,702			143,198	86,093
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB2)	207,429	566,216	4,473	778,118			720,356			434,573	778,118
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB3)	481,145	3,413,503	26,967	3,921,615			3,630,499			950,804	3,921,615
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB4)	818,590	4,386,508	34,653	5,239,751			4,850,786			3,464,357	5,239,751
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STB5)	25,006	24,018	190	49,214			45,560			88,988	49,214
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STD1)	87,877	370,970	2,931	461,778			427,498			124,878	461,778
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STD4)	9,473			9,473			8,770			15,100	9,473
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STE4)	5,689			5,689			5,267			10,642	5,689
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STH1)	102,005	50,898	402	153,305			141,925			196,886	153,305
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM2)	311			311			288			939	311
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM3)	526			526			487			1,543	526
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM5)	623			623			577			2,004	623
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STM6)	42			42			39			128	42
00000	AA-3770192	06/01/2016	Scottish Annuity & Life Ins Co. (Cayman) LTD (STN1)	20,877	200,943	1,587	223,407			206,823			63,917	223,407
0999999			General Account - Life and Annuity Non-U.S. Non-Affiliates	2,152,519	9,403,839	74,290	11,630,648		XXX	10,767,264			6,243,064	11,630,648
1099999			Total General Account - Life and Annuity Non-Affiliates	2,341,861	9,403,839	74,290	11,819,990		XXX	10,767,264			6,243,064	11,630,648
1199999			Total General Account Life and Annuity	2,341,861	9,403,839	74,290	11,819,990		XXX	10,767,264			6,243,064	11,630,648
1499999			Total General Account - Accident and Health U.S. Affiliates						XXX					
1799999			Total General Account - Accident and Health Non-U.S. Affiliates						XXX					
1899999			Total General Account - Accident and Health Affiliates						XXX					
2199999			Total General Account - Accident and Health Non-Affiliates						XXX					
2299999			Total General Account Accident and Health						XXX					
2399999			Total General Account	2,341,861	9,403,839	74,290	11,819,990		XXX	10,767,264			6,243,064	11,630,648
2699999			Total Separate Accounts - U.S. Affiliates						XXX					
2999999			Total Separate Accounts - Non-U.S. Affiliates						XXX					
3099999			Total Separate Accounts - Affiliates						XXX					
3399999			Total Separate Accounts - Non-Affiliates						XXX					
3499999			Total Separate Accounts						XXX					
3599999			Total U.S. (Sum of 0399999, 0899999, 1499999, 1999999, 2699999 and 3199999)	189,342			189,342		XXX					
3699999			Total Non-U.S. (Sum of 0699999, 0999999, 1799999, 2099999, 2999999 and 3299999)	2,152,519	9,403,839	74,290	11,630,648		XXX	10,767,264			6,243,064	11,630,648
9999999			Totals	2,341,861	9,403,839	74,290	11,819,990		XXX	10,767,264			6,243,064	11,630,648

(a)	Issuing or Confirming Bank Reference Number	Letters of Credit Code	American Bankers Association (ABA) Routing Number	Issuing or Confirming Bank Name	Letters of Credit Amount
				NONE	

Schedule S - Part 5

NONE

Schedule S - Part 5 - Bank Footnote

NONE

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE S - PART 6

Five Year Exhibit of Reinsurance Ceded Business
(\$000 Omitted)

	1 2018	2 2017	3 2016	4 2015	5 2014
A. OPERATIONS ITEMS					
1. Premiums and annuity considerations for life and accident and health contracts	1,692,226	4,970,357	1,329,486	819,218	771,523
2. Commissions and reinsurance expense allowances	183,575	129,972	398,451	110,106	108,676
3. Contract claims	731,949	658,178	565,785	594,097	472,230
4. Surrender benefits and withdrawals for life contracts	42,694	35,441	121	317	527
5. Dividends to policyholders	503	518	518	688	724
6. Reserve adjustments on reinsurance ceded	(120,339)	3,723	82,715	16,029	21,072
7. Increase in aggregate reserve for life and accident and health contracts	1,535,207	4,410,673	684,665	482,566	297,242
B. BALANCE SHEET ITEMS					
8. Premiums and annuity considerations for life and accident and health contracts deferred and uncollected	226,050	186,621	161,386	94,993	87,581
9. Aggregate reserves for life and accident and health contracts	10,433,437	8,898,230	4,487,557	3,802,892	3,320,326
10. Liability for deposit-type contracts					
11. Contract claims unpaid	131,699	134,449	108,752	149,963	93,184
12. Amounts recoverable on reinsurance	72,096	30,663	41,664	45,319	35,049
13. Experience rating refunds due or unpaid	81	117	108	113	114
14. Policyholders' dividends (not included in Line 10)	546	535	592	668	733
15. Commissions and reinsurance expense allowances due	29,496	24,140	(9,911)	23,408	21,562
16. Unauthorized reinsurance offset	189	204			
17. Offset for reinsurance with Certified Reinsurers					
C. UNAUTHORIZED REINSURANCE (DEPOSITS BY AND FUNDS WITHHELD FROM)					
18. Funds deposited by and withheld from (F)					
19. Letters of credit (L)					
20. Trust agreements (T)	10,767	6,429	6,272		
21. Other (O)			227	229	235
D. REINSURANCE WITH CERTIFIED REINSURERS (DEPOSITS BY AND FUNDS WITHHELD FROM)					
22. Multiple Beneficiary Trust					
23. Funds deposited by and withheld from (F)					
24. Letters of credit (L)					
25. Trust agreements (T)					
26. Other (O)					

SCHEDULE S - PART 7

Restatement of Balance Sheet to Identify Net Credit for Ceded Reinsurance

	1 As Reported (net of ceded)	2 Restatement Adjustments	3 Restated (gross of ceded)
ASSETS (Page 2, Col. 3)			
1. Cash and invested assets (Line 12)	171,235,903,363		171,235,903,363
2. Reinsurance (Line 16)	103,112,242	(103,112,242)	
3. Premiums and considerations (Line 15)	896,903,597	226,050,191	1,122,953,788
4. Net credit for ceded reinsurance	XXX	10,438,309,134	10,438,309,134
5. All other admitted assets (balance)	6,932,827,033		6,932,827,033
6. Total assets excluding Separate Accounts (Line 26)	179,168,746,235	10,561,247,083	189,729,993,318
7. Separate Account assets (Line 27)	64,478,100,585		64,478,100,585
8. Total assets (Line 28)	243,646,846,820	10,561,247,083	254,208,093,903
LIABILITIES, CAPITAL AND SURPLUS (Page 3)			
9. Contract reserves (Lines 1 and 2)	121,977,874,715	10,433,436,718	132,411,311,433
10. Liability for deposit-type contracts (Line 3)	14,369,907,287		14,369,907,287
11. Claim reserves (Line 4)	436,347,902	131,698,595	568,046,497
12. Policyholder dividends/reserves (Lines 5 through 7)	1,712,720,567	546,086	1,713,266,653
13. Premium & annuity considerations received in advance (Line 8)	32,700,041	895,683	33,595,724
14. Other contract liabilities (Line 9)	27,636,661	(6,764,453)	20,872,208
15. Reinsurance in unauthorized companies (Line 24.02 minus inset amount)	189,342	(189,342)	
16. Funds held under reinsurance treaties with unauthorized reinsurers (Line 24.03 minus inset amount)			
17. Reinsurance with Certified Reinsurers (Line 24.02 inset amount)			
18. Funds held under reinsurance treaties with Certified Reinsurers (Line 24.03 inset amount)			
19. All other liabilities (balance)	25,001,583,051	1,623,796	25,003,206,847
20. Total liabilities excluding Separate Accounts (Line 26)	163,558,959,566	10,561,247,083	174,120,206,649
21. Separate Account liabilities (Line 27)	64,478,100,585		64,478,100,585
22. Total liabilities (Line 28)	228,037,060,151	10,561,247,083	238,598,307,234
23. Capital & surplus (Line 38)	15,609,786,669	XXX	15,609,786,669
24. Total liabilities, capital & surplus (Line 39)	243,646,846,820	10,561,247,083	254,208,093,903
NET CREDIT FOR CEDED REINSURANCE			
25. Contract reserves	10,433,436,718		
26. Claim reserves	131,698,595		
27. Policyholder dividends/reserves	546,086		
28. Premium & annuity considerations received in advance	895,683		
29. Liability for deposit-type contracts			
30. Other contract liabilities	(6,764,453)		
31. Reinsurance ceded assets	103,112,242		
32. Other ceded reinsurance recoverables			
33. Total ceded reinsurance recoverables	10,662,924,871		
34. Premiums and considerations	226,050,191		
35. Reinsurance in unauthorized companies	189,342		
36. Funds held under reinsurance treaties with unauthorized reinsurers			
37. Reinsurance with Certified Reinsurers			
38. Funds held under reinsurance treaties with Certified Reinsurers			
39. Other ceded reinsurance payables/offsets	(1,623,796)		
40. Total ceded reinsurance payable/offsets	224,615,737		
41. Total net credit for ceded reinsurance	10,438,309,134		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
SCHEDULE T - PREMIUMS AND ANNUITY CONSIDERATIONS (b)

Allocated by States and Territories

States, Etc.	1	Life Contracts		Direct Business Only			7	
		2	3	4	5	6		
	Active Status (a)	Life Insurance Premiums	Annuity Considerations	Accident and Health Insurance Premiums, Including Policy, Membership and Other Fees	Other Considerations	Total Columns 2 through 5	Deposit-Type Contracts	
1. Alabama	AL	L	42,718,219	35,054,424	6,703,394	20,458,554	104,934,591	80,809,395
2. Alaska	AK	L	2,045,388	6,057,609	362,526	4,634,207	13,099,730	1,951,238
3. Arizona	AZ	L	61,215,971	104,218,171	10,333,658	22,722,117	198,489,917	46,835,204
4. Arkansas	AR	L	44,346,953	19,927,624	2,352,188	1,733,065	68,359,830	7,498,873
5. California	CA	L	638,161,480	693,553,858	61,252,257	665,933,760	2,058,901,355	571,515,140
6. Colorado	CO	L	92,809,828	81,381,488	10,916,330	11,139,018	196,246,664	48,451,411
7. Connecticut	CT	L	176,518,494	110,948,442	19,841,020	233,398,514	540,706,470	41,380,560
8. Delaware	DE	L	114,958,464	111,599,220	1,667,866	150,184,084	378,409,634	531,914,925
9. District of Columbia	DC	L	23,516,885	3,966,825	3,895,427	35,835,446	67,214,583	10,253,564
10. Florida	FL	L	416,327,793	360,310,910	32,012,773	472,836,447	1,281,487,923	304,537,328
11. Georgia	GA	L	223,377,445	117,137,313	23,877,544	189,534,045	553,926,347	75,326,901
12. Hawaii	HI	L	20,432,704	22,816,407	3,063,914	8,605,161	54,918,186	17,223,583
13. Idaho	ID	L	24,153,729	15,219,024	1,477,180	11,674,639	52,524,572	10,933,697
14. Illinois	IL	L	224,817,500	223,873,679	25,585,564	475,124,137	949,400,880	69,215,347
15. Indiana	IN	L	96,417,846	73,720,918	9,668,252	53,780,939	233,587,955	54,678,146
16. Iowa	IA	L	43,872,265	18,219,077	3,862,059	32,056,188	98,009,589	56,458,169
17. Kansas	KS	L	40,051,752	21,623,891	5,626,461	60,872,813	128,174,917	13,359,987
18. Kentucky	KY	L	31,617,741	114,557,681	5,236,398	22,708,915	174,120,735	47,341,330
19. Louisiana	LA	L	102,704,287	40,519,833	6,136,794	29,592,913	178,953,827	49,726,698
20. Maine	ME	L	21,962,096	22,064,439	2,580,631	29,052,136	75,659,302	11,430,479
21. Maryland	MD	L	131,419,051	71,050,629	27,948,077	135,176,273	365,594,030	64,398,346
22. Massachusetts	MA	L	204,455,315	476,141,855	33,157,578	1,110,297,276	1,824,052,024	341,671,701
23. Michigan	MI	L	113,364,742	244,871,247	14,367,320	269,244,468	641,847,777	118,077,395
24. Minnesota	MN	L	62,301,903	76,420,116	9,346,174	326,550,068	474,618,261	205,415,483
25. Mississippi	MS	L	67,652,532	34,595,773	10,404,965	3,062,381	115,715,651	16,848,069
26. Missouri	MO	L	73,358,033	112,306,195	10,903,550	119,970,137	316,537,915	39,856,727
27. Montana	MT	L	12,005,200	4,471,299	1,378,029	4,632,793	22,487,321	8,483,626
28. Nebraska	NE	L	43,140,408	19,167,510	5,766,960	183,547,528	251,622,406	17,176,874
29. Nevada	NV	L	33,103,007	27,103,069	3,365,986	72,717,262	136,289,324	20,532,158
30. New Hampshire	NH	L	32,641,856	46,557,903	4,773,900	598,436,172	682,409,831	25,830,044
31. New Jersey	NJ	L	418,318,157	195,206,892	40,340,818	380,560,405	1,034,426,272	171,769,609
32. New Mexico	NM	L	20,558,002	21,031,215	2,269,406	3,002,190	46,860,813	16,650,685
33. New York	NY	L	1,166,538,969	598,836,812	85,192,527	927,350,540	2,777,918,848	361,541,840
34. North Carolina	NC	L	153,030,130	137,178,241	30,195,016	112,534,865	432,938,252	119,810,400
35. North Dakota	ND	L	14,564,371	10,079,156	649,680	16,177,905	41,471,112	24,760,894
36. Ohio	OH	L	130,255,098	330,200,900	16,616,058	238,053,694	715,125,750	91,918,231
37. Oklahoma	OK	L	103,292,601	25,531,738	7,728,989	82,403,220	218,956,548	27,827,319
38. Oregon	OR	L	34,579,211	47,212,004	4,859,966	34,399,649	121,050,830	46,583,544
39. Pennsylvania	PA	L	282,329,186	279,934,984	40,613,153	362,053,556	964,930,879	42,429,601
40. Rhode Island	RI	L	25,636,740	31,295,960	3,230,773	49,640,813	109,804,286	11,548,391
41. South Carolina	SC	L	77,506,805	58,991,816	15,099,714	28,881,429	180,479,764	81,480,363
42. South Dakota	SD	L	8,365,953	4,433,356	664,333	2,125,773	15,589,415	6,545,504
43. Tennessee	TN	L	100,131,764	84,739,731	18,326,810	188,487,960	391,686,265	45,894,596
44. Texas	TX	L	382,565,406	297,113,743	48,071,907	207,210,938	934,961,994	281,439,192
45. Utah	UT	L	42,850,794	34,240,061	4,118,878	15,936,704	97,146,437	52,098,817
46. Vermont	VT	L	22,568,828	12,778,361	1,477,611	14,009,623	50,834,423	4,632,482
47. Virginia	VA	L	202,020,717	144,639,973	30,242,340	288,231,516	665,134,546	89,725,510
48. Washington	WA	L	66,475,122	58,877,681	10,994,820	69,260,763	205,608,386	32,228,932
49. West Virginia	WV	L	16,286,041	21,810,162	1,482,210	19,660,306	59,238,719	33,384,647
50. Wisconsin	WI	L	51,506,506	97,595,590	6,503,272	66,361,937	221,967,305	22,645,142
51. Wyoming	WY	L	6,397,518	4,550,269	615,162	511,395	12,074,344	11,181,535
52. American Samoa	AS	N						
53. Guam	GU	N	1,500	1,375	9,950		12,825	60,214
54. Puerto Rico	PR	L	74,680,575	9,222,245	9,203,380	22,108,191	115,214,391	661,037
55. U.S. Virgin Islands	VI	N	14,704	212,792	18,852	65	246,413	35,630
56. Northern Mariana Islands	MP	N						
57. Canada	CAN	N	2,237,053	235,866	126,462	3,390	2,602,771	51,175
58. Aggregate Other Alien	OT	XXX	17,798,469	1,474,998	585,573	111,177,000	131,036,040	
59. Subtotal	XXX		6,635,979,107	5,816,882,350	737,102,435	8,595,655,283	21,785,619,175	4,486,037,688
90. Reporting entity contributions for employee benefits plans	XXX							
91. Dividends or refunds applied to purchase paid-up additions and annuities	XXX		1,318,055,749	2,037,882			1,320,093,631	
92. Dividends or refunds applied to shorten endowment or premium paying period	XXX							
93. Premium or annuity considerations waived under disability or other contract provisions	XXX		26,201,088		12,014,157		38,215,245	
94. Aggregate or other amounts not allocable by State	XXX		39,232,307				39,232,307	
95. Totals (Direct Business)	XXX		8,019,468,251	5,818,920,232	749,116,592	8,595,655,283	23,183,160,358	4,486,037,688
96. Plus reinsurance assumed	XXX		50,300,249	20,549,500		1,260,592,891	1,331,442,640	1,534,300,591
97. Totals (All Business)	XXX		8,069,768,500	5,839,469,732	749,116,592	9,856,248,174	24,514,602,998	6,020,338,279
98. Less reinsurance ceded	XXX		968,304,842	650,892,238	(5,664,034)		1,613,533,046	
99. Totals (All Business) less Reinsurance Ceded	XXX		7,101,463,658	5,188,577,494	(c) 754,780,626	9,856,248,174	22,901,069,952	6,020,338,279
DETAILS OF WRITE-INS								
58001. HKG Hong Kong	XXX		262,578				262,578	
58002. ZZZ Other Alien	XXX		17,535,891	1,474,998	585,573	111,177,000	130,773,462	
58003.	XXX							
58998. Summary of remaining write-ins for Line 58 from overflow page	XXX							
58999. Totals (Lines 58001 through 58003 plus 58998)(Line 58 above)	XXX		17,798,469	1,474,998	585,573	111,177,000	131,036,040	
9401. Reinvested Net Nonforfeiture Option Proceeds	XXX		39,232,307				39,232,307	
9402.	XXX							
9403.	XXX							
9498. Summary of remaining write-ins for Line 94 from overflow page	XXX							
9499. Totals (Lines 9401 through 9403 plus 9498)(Line 94 above)	XXX		39,232,307				39,232,307	

(a) Active Status Counts:

L - Licensed or Chartered - Licensed insurance carrier or domiciled RRG 52 R - Registered - Non-domiciled RRGs
E - Eligible - Reporting entities eligible or approved to write surplus lines in the state Q - Qualified - Qualified or accredited reinsurer
N - None of the above - Not allowed to write business in the state 5

(b) Explanation of basis of allocation by states, etc., of premiums and annuity considerations

Individual insurance premiums and annuity considerations - allocated to the states in which the policyholder resides (based on Company records when the premium is received). Group premiums - allocated consistent with the 500 lives rule.

(c) Column 4 should balance with Exhibit 1, Lines 6.4, 10.4, and 16.4, Cols. 8, 9, 10, or with Schedule H, Part 1, Line 1, indicate which: Exhibit 1, Lines 6.4, 10.4, and 16.4, Cols. 8, 9, 10.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE T - PART 2
INTERSTATE COMPACT - EXHIBIT OF PREMIUMS WRITTEN

Allocated by States and Territories

		Direct Business Only					
		1	2	3	4	5	6
States, Etc.		Life (Group and Individual)	Annuities (Group and Individual)	Disability Income (Group and Individual)	Long-Term Care (Group and Individual)	Deposit-Type Contracts	Totals
1. Alabama	AL	42,718,219	35,054,424	5,111,984	1,540,077	80,809,395	165,234,099
2. Alaska	AK	2,045,388	6,057,609	323,059	39,467	1,951,238	10,416,761
3. Arizona	AZ	61,215,971	104,218,171	6,972,455	3,309,456	46,835,204	222,551,257
4. Arkansas	AR	44,346,953	19,927,624	1,943,641	408,547	7,498,873	74,125,638
5. California	CA	638,161,480	693,553,858	39,094,444	22,148,993	571,515,140	1,964,473,915
6. Colorado	CO	92,809,828	81,381,488	6,661,152	4,255,178	48,451,411	233,559,057
7. Connecticut	CT	176,518,494	110,948,442	15,041,733	4,796,828	41,380,560	348,686,057
8. Delaware	DE	114,958,464	111,599,220	1,173,401	494,465	531,914,925	760,140,475
9. District of Columbia	DC	23,516,885	3,966,825	2,796,127	1,099,300	10,253,564	41,632,701
10. Florida	FL	416,327,793	360,310,910	18,259,041	13,744,229	304,537,328	1,113,179,301
11. Georgia	GA	223,377,445	117,137,313	16,564,554	7,214,416	75,326,901	439,620,629
12. Hawaii	HI	20,432,704	22,816,407	1,695,741	1,368,173	17,223,583	63,536,608
13. Idaho	ID	24,153,729	15,219,024	972,759	504,421	10,933,697	51,783,630
14. Illinois	IL	224,817,500	223,873,679	19,251,726	6,271,291	69,215,347	543,429,543
15. Indiana	IN	96,417,846	73,720,918	7,740,137	1,903,532	54,678,146	234,460,579
16. Iowa	IA	43,872,265	18,219,077	2,191,517	1,633,036	56,458,169	122,374,064
17. Kansas	KS	40,051,752	21,623,891	3,960,989	1,615,550	13,359,987	80,612,169
18. Kentucky	KY	31,617,741	114,557,681	3,764,725	1,415,999	47,341,330	198,697,476
19. Louisiana	LA	102,704,287	40,519,833	4,807,304	1,329,490	49,726,698	199,087,612
20. Maine	ME	21,962,096	22,064,439	1,610,322	961,498	11,430,479	58,028,834
21. Maryland	MD	131,419,051	71,050,629	17,438,225	10,476,311	64,398,346	294,782,562
22. Massachusetts	MA	204,455,315	476,141,855	21,906,073	11,245,064	341,671,701	1,055,420,008
23. Michigan	MI	113,364,742	244,871,247	8,884,320	5,430,794	118,077,395	490,628,498
24. Minnesota	MN	62,301,903	76,420,116	6,137,987	3,205,865	205,415,483	353,481,354
25. Mississippi	MS	67,652,532	34,595,773	8,276,955	2,107,378	16,848,069	129,480,707
26. Missouri	MO	73,358,033	112,306,195	8,111,115	2,791,735	39,856,727	236,423,805
27. Montana	MT	12,005,200	4,471,299	966,794	367,262	8,483,626	26,294,181
28. Nebraska	NE	43,140,408	19,167,510	2,902,646	2,839,240	17,176,874	85,226,678
29. Nevada	NV	33,103,007	27,103,069	2,505,676	860,310	20,532,158	84,104,220
30. New Hampshire	NH	32,641,856	46,557,903	2,738,750	2,035,150	25,830,044	109,803,703
31. New Jersey	NJ	418,318,157	195,206,892	28,445,504	11,828,829	171,769,609	825,568,991
32. New Mexico	NM	20,558,002	21,031,215	1,339,404	930,002	16,650,685	60,509,308
33. New York	NY	1,166,538,969	598,836,812	61,971,526	23,179,756	361,541,840	2,212,068,903
34. North Carolina	NC	153,030,130	137,178,241	20,806,645	9,271,671	119,810,400	440,097,087
35. North Dakota	ND	14,564,371	10,079,156	495,383	154,297	24,760,894	50,054,101
36. Ohio	OH	130,255,098	330,200,900	11,460,035	5,006,980	91,918,231	568,841,244
37. Oklahoma	OK	103,292,601	25,531,738	5,213,835	2,513,123	27,827,319	164,378,616
38. Oregon	OR	34,579,211	47,212,004	3,324,075	1,535,891	46,583,544	133,234,725
39. Pennsylvania	PA	282,329,186	279,934,984	27,057,520	13,496,020	42,429,601	645,247,311
40. Rhode Island	RI	25,636,740	31,295,960	2,207,052	1,023,721	11,548,391	71,711,864
41. South Carolina	SC	77,506,805	58,991,816	10,018,341	5,051,471	81,480,363	233,048,796
42. South Dakota	SD	8,365,953	4,433,356	394,691	269,643	6,545,504	20,009,147
43. Tennessee	TN	100,131,764	84,739,731	12,592,941	5,697,743	45,894,596	249,056,775
44. Texas	TX	382,565,406	297,113,743	31,966,741	15,951,771	281,439,192	1,009,036,853
45. Utah	UT	42,850,794	34,240,061	3,124,024	994,854	52,098,817	133,308,550
46. Vermont	VT	22,568,828	12,778,361	939,139	538,473	4,632,482	41,457,283
47. Virginia	VA	202,020,717	144,639,973	18,400,139	11,840,305	89,725,510	466,626,644
48. Washington	WA	66,475,122	58,877,681	6,959,694	4,034,995	32,228,932	168,576,424
49. West Virginia	WV	16,286,041	21,810,162	962,616	519,586	33,384,647	72,963,052
50. Wisconsin	WI	51,506,506	97,595,590	4,221,263	2,257,803	22,645,142	178,226,304
51. Wyoming	WY	6,397,518	4,550,269	377,672	237,491	11,181,535	22,744,485
52. American Samoa	AS						
53. Guam	GU	1,500	1,375	9,950		60,214	73,039
54. Puerto Rico	PR	74,680,575	9,222,245	7,385,103	1,818,277	661,037	93,767,237
55. U.S. Virgin Islands	VI	14,704	212,792	18,852		35,630	281,978
56. Northern Mariana Islands	MP						
57. Canada	CAN	2,237,053	235,866	126,462		51,175	2,650,556
58. Aggregate Other Alien	OT	17,798,469	1,474,998	510,883	74,686		19,859,036
59. Total		6,635,979,107	5,816,882,350	500,134,842	235,640,443	4,486,037,688	17,674,674,430

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP

PART 1 – ORGANIZATIONAL CHART

The following entities are general partner level or above of **Massachusetts Mutual Life Insurance Company** (Parent)

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
MASSACHUSETTS MUTUAL LIFE INSURANCE COMPANY	04-1590850	65935	Massachusetts
Direct & Indirect Owned Subsidiaries:			
C.M. Life Insurance Company	06-1041383	93432	Connecticut
MML Bay State Life Insurance Company	43-0581430	70416	Connecticut
CML Mezzanine Investor, LLC	06-1041383		Delaware
CML Mezzanine Investor L, LLC	06-1041383		Delaware
CML Mezzanine Investor III, LLC	06-1041383		Delaware
CML Special Situations Investor LLC	None		Delaware
MML Mezzanine Investor L, LLC	04-1590850		Delaware
Berkshire Way LLC	04-1590850		Delaware
MML Special Situations Investor LLC	None		Delaware
Timberland Forest Holding LLC	47-5322979		Delaware
Lyme Adirondack Forest Company, LLC	None		Delaware
Lyme Adirondack Timber Sales, Inc.	20-5305426		New York
Lyme Adirondack Timberlands I, LLC	None		Delaware
Lyme Adirondack Timberlands II, LLC	None		Delaware
MSP-SC, LLC	04-1590850		Delaware
Country Club Office Plaza LLC*	27-1435692		Delaware
Insurance Road LLC	04-1590850		Delaware
MassMutual Trad Private Equity LLC	04-1590850		Delaware
MassMutual Intellectual Property LLC	04-1590850		Delaware
Trad Investments I LLC	None		Delaware
EM Opportunities LLC	None		Delaware
Jefferies Finance LLC	27-0105644		Delaware
JFIN GP Adviser LLC	None		Delaware
JFIN Revolver Fund, L.P.	None		Delaware
JFIN Fund III LLC	None		Delaware
JFIN Asset Management LLC	None		Delaware
JFAM GP LLC	None		Delaware
JFAM GP LP	None		Delaware
JFAM Loan Fund, LP	None		Delaware
JFIN Revolver Holdings LLC	None		Delaware
JFIN Revolver Holdings II LLC	None		Delaware
JFIN Co-Issuer Corporation	None		Delaware
JFIN Europe GP, S.a.r.l.	None		Luxembourg
Jefferies Finance Europe, SCSp	None		Luxembourg
Jefferies Finance Business Credit LLC	None		Delaware
JFIN Business Credit Fund I LLC	None		Delaware
JFIN High Yield Investments LLC	None		Delaware
JFIN High Yield Investments LLC	None		Delaware

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP
 PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
JFIN LC Fund LLC	None		Delaware
JFIN Revolver CLO Holdings LLC	None		Delaware
JFIN CLO 2007 Ltd.	None		Cayman Islands
JFIN CLO 2012 Ltd.	None		Cayman Islands
JFIN CLO 2013 Ltd.	None		Cayman Islands
JFIN CLO 2014 Ltd.	None		Cayman Islands
JFIN CLO 2014-II Ltd.	None		Cayman Islands
JFIN MM CLO 2014 Ltd.*	None		Cayman Islands
JFIN CLO 2015 Ltd.*	None		Cayman Islands
Apex Credit CLO 2015-II Ltd.*	None		Cayman Islands
JFIN Revolver CLO 2014 Ltd.	None		Cayman Islands
JFIN Revolver CLO 2015 Ltd.	None		Cayman Islands
JFIN Revolver CLO 2017 Ltd.	None		Cayman Islands
JFIN Revolver CLO 2017-II Ltd.	None		Cayman Islands
JFIN Revolver CLO 2017-III Ltd.	None		Cayman Islands
JFIN Revolver CLO 2018 Ltd.	None		Cayman Islands
Apex Credit CLO 2016 Ltd.	None		Cayman Islands
Apex Credit CLO 2017 Ltd.	None		Cayman Islands
Apex Credit CLO 2017-II Ltd.	None		Cayman Islands
Apex Credit CLO 2018-II Ltd.	None		Cayman Islands
MassMutual Mortgage Lending LLC	None		Delaware
MassMutual Retirement Services, LLC	04-1590850		Delaware
MM Copper Hill Road LLC	04-1590850		Delaware
MML Distributors LLC*	04-3356880		Massachusetts
MML Investment Advisers, LLC	None		Delaware
MML Mezzanine Investor, LLC	04-1590850		Delaware
MML Strategic Distributors, LLC	46-3238013		Delaware
The MassMutual Trust Company, FSB	06-1563535		Connecticut
MassMutual Asset Finance LLC*	26-0073611		Delaware
MMAF Equipment Finance LLC 2009-A	27-1379258		Delaware
MMAF Equipment Finance LLC 2011-A	45-2589019		Delaware
MML Private Placement Investment Company I, LLC	04-1590850		Delaware
MML Private Equity Fund Investor LLC	04-1590850		Delaware
MM Private Equity Intercontinental LLC	04-1590850		Delaware
Pioneers Gate LLC	45-2738137		Delaware
MassMutual Holding LLC	04-2854319		Delaware
Fern Street LLC	37-1732913		Delaware
Haven Life Insurance Agency, LLC	46-2252944		Delaware
MassMutual Assignment Company	06-1597528		North Carolina

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP

PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
MassMutual Capital Partners LLC	04-1590850		Delaware
MassMutual Ventures Holding LLC	None		Delaware
Crane Venture Partners LLP	None		United Kingdom
MassMutual Ventures Management LLC	None		Delaware
MassMutual Ventures SEA Management Private Limited	None		Singapore
MassMutual Ventures Southeast Asia I LLC	None		Delaware
MassMutual Ventures UK LLC	None		Delaware
MassMutual Ventures US I LLC	47-1296410		Delaware
MassMutual Ventures US II LLC	None		Delaware
MM Rothesay Holdco US LLC	04-1590850		Delaware
MML Investors Services, LLC	04-1590850		Massachusetts
MML Insurance Agency, LLC	04-1590850		Massachusetts
MMLISI Financial Alliances, LLC	41-2011634		Delaware
LifeScore Labs, LLC	47-1466022		Massachusetts
MM Asset Management Holding LLC	45-4000072		Delaware
Barings LLC	51-0504477		Delaware
Baring Asset Management (Asia) Holdings Limited	98-0524271		Hong Kong, Special Administrative Region of China
Baring International Fund Managers (Bermuda) Limited	98-0457465		Bermuda
Baring Asset Management (Asia) Limited	98-0457463		Hong Kong, Special Administrative Region of China
Baring Asset Management Korea Limited	None		Korea
Baring Investment Management (Shanghai) Limited	None		Hong Kong, Special Administrative Region of China
Barings Overseas Investment Fund Management (Shanghai) Limited	None		Hong Kong, Special Administrative Region of China
Baring SICE (Taiwan) Limited	98-0457707		Taiwan ROC
Barings Japan Limited	98-0236449		Japan
Baring Asset Management (Australia) Pty Limited	98-0457456		Australia
Barings Investment Advisors (Hong Kong) Limited	None		Hong Kong, Special Administrative Region of China
Barings Australia Holding Company Pty Ltd	None		Australia
Barings Australia Pty Ltd	98-0457456		Australia
Barings Finance LLC	80-0875475		Delaware
BCF Europe Funding Limited	None		Ireland
BCF Senior Funding I LLC	None		Delaware
BCF Senior Funding I Designated Activity Company	None		Ireland
Barings Securities LLC	04-3238351		Delaware
Barings Guernsey Limited	98-0437588		Guernsey
Barings Europe Limited	None		United Kingdom
Barings Real Estate UK Holdings Limited	None		Delaware
BREAE AIFM LLP	None		United Kingdom
Barings Real Estate Advisers (Continental Europe) Limited	98-0654401		United Kingdom
Barings Real Estate Advisers Europe LLP	98-0654388		United Kingdom
Barings Real Estate Advisers Europe Finance LLP	98-0654412		United Kingdom

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP

PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
Barings Real Estate Advisers GmbH	98-1194368		Germany
Baring Asset Management Limited	98-0241935		United Kingdom
Barings Global Advisors Limited	98-1012393		United Kingdom
BCGSS 2 GP LLP	None		United Kingdom
Barings European Direct Lending 1 GP LLP	None		United Kingdom
Baring International Investment Limited	98-0457328		United Kingdom
Baring International Investment Management Holdings	98-0457587		United Kingdom
Baring Asset Management UK Holdings Limited	98-0457576		United Kingdom
Baring Asset Management GmbH	98-0465031		Germany
Baring International Fund Managers (Ireland) Limited	98-0524272		Ireland
Baring Asset Management Switzerland Sàrl	None		Switzerland
Baring France SAS	98-0497550		France
Baring Fund Managers Limited	98-0457586		United Kingdom
Baring Pension Trustees Limited	98-0457574		United Kingdom
Baring Investment Services Limited	98-0457578		United Kingdom
Barings Investment Fund (LUX) GP S.à. r.l.	None		Luxembourg
Barings GPC GP S.à. r.l.	None		Luxembourg
Almack Mezzanine GP III Limited	None		United Kingdom
Almack Holding Partnership GP Limited	None		United Kingdom
Almack Mezzanine Fund Limited	None		United Kingdom
Almack Mezzanine Fund II Limited	None		United Kingdom
Barings (U.K.) Limited	98-0432153		United Kingdom
Barings Multifamily Capital Holdings LLC	None		Delaware
Barings Multifamily Capital LLC	None		Michigan
Barings Multifamily Capital Corporation	None		Delaware
Barings Real Estate Advisers Inc.	04-3238351		California
MassMutual Baring Holding LLC	04-1590850		Delaware
MassMutual Holdings (Bermuda) Limited	None		Bermuda
Chassis Acquisition Holding LLC	81-2244465		Delaware
CRA Aircraft Holding LLC*	81-4258759		Delaware
Aland Royalty Holdings LP	None		Delaware
Engs Holdings Inc.	None		Delaware
Intermodal Holding II LLC	46-2344300		Delaware
Milestone Acquisition Holding, LLC.	47-3055009		Delaware
Novation Companies, Inc.	None		Maryland
Red Lake Ventures, LLC	46-5460309		Delaware
Remington L & W Holdings LLC*	81-4065378		Connecticut
EIP Holdings I, LLC	None		Delaware
Tamiami Citrus, LLC	None		Delaware
Teaktree Acquisition, LLC	None		Delaware
U.S. Pharmaceuticals Holdings I, LLC	46-0687392		Delaware

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP
 PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
U.S. Pharmaceuticals Holdings II, LLC	47-5436800		Delaware
Validus Pharmaceuticals LLC	None		Delaware
VGS Acquisition Holding, LLC	None		Delaware
Aland Royalty GP, LLC	None		Delaware
BAI Funds SLP, LLC	None		Delaware
BAI GP, LLC	None		Delaware
Barings Alternative Investments SLP, LLC	None		Delaware
Baring Asset-Based Income Fund (US) GP, LLC	None		Delaware
Barings Global Investment Funds (U.S.) Management LLC	04-1590850		Delaware
Babson Global Loan Feeder Management, LLC	None		Delaware
Baring North America LLC	98-0241935		Massachusetts
Barings ABIF SLP, LLC	None		Delaware
Barings CLO Investment Partners GP, LLC	None		Delaware
Barings Core Property Fund GP LLC	None		Delaware
Barings Direct Lending GP Ltd.	None		Cayman Islands
Barings Global Energy Infrastructure Advisors, LLC	None		Delaware
Barings Global Real Assets Fund GP, LLC	None		Delaware
Barings Multi Asset Income Fund	None		Hong Kong
Barings North American Private Loan Fund Management, LLC	None		Delaware
Barings/LAZ Parking Fund GP LLC	None		Delaware
Benton Street Advisors, Inc.	98-0536233		Cayman Islands
BREBF I GP LLC	None		Delaware
BRECS VII GP LLC	None		Delaware
CCM Fund I REIT Manager LLC	None		Delaware
CCM Venture I GP LLC	None		Delaware
CCM Venture I REIT Manager LLC	None		Delaware
CEMF I GP LLC	None		Delaware
CHY Venture GP LLC	None		Delaware
CREF X GP LLC	None		Delaware
CREF VIII GP, LLC	None		Delaware
Great Lakes III GP, LLC	04-1590850		Delaware
Lake Jackson LLC	None		Delaware
Loan Strategies Management LLC	04-1590850		Delaware
Mezzco LLC	04-1590850		Delaware
Mezzco II LLC	02-0767001		Delaware
Mezzco III LLC	41-2280126		Delaware
Mezzco IV LLC	80-0920285		Delaware
Mezzco Australia LLC	90-0666326		Delaware
Mezzco Australia II LLC	None		Delaware
RECSA-NY GP LLC	None		Delaware

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP
 PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
Somerset Special Opportunities Management LLC	04-1590850		Delaware
Oppenheimer Acquisition Corp.	84-1149206		Delaware
OppenheimerFunds, Inc.	13-2527171		Colorado
OppenheimerFunds Distributor, Inc.	13-2953455		New York
Oppenheimer Real Asset Management, Inc.	84-1106295		Delaware
OFI Global Institutional, Inc	13-4160541		New York
HarbourView Asset Management Corporation	22-2697140		New York
OC Private Capital, LLC	None		Delaware
OFI Global Trust Company	13-3459790		New York
OFI International, Ltd.	None		United Kingdom
SNW Asset Management Corporation	None		Delaware
Seattle Northwest Asset Management LLC	None		Washington
Trinity Investment Management Corporation	25-1951632		Pennsylvania
OFI SteelPath, Inc.	84-1128397		Delaware
Shareholder Services, Inc.	84-1066811		Colorado
OFI Advisors, LLC	None		Delaware
Index Management Solutions, LLC	None		Pennsylvania
OFI Global Asset Management, Inc.	84-0765063		Delaware
OFI Private Investments Inc.	91-2036414		New York
Tremont Group Holdings, LLC	62-1210532		New York
Tremont Partners, LLC	06-1121864		Connecticut
Tremont GP, LLC	20-8215352		Delaware
Settlement Agent, LLC	90-0874510		Delaware
Tremont (Bermuda) Limited	None		Bermuda
MassMutual International LLC	04-3313782		Delaware
Yunfeng Financial Group Limited	None		Hong Kong
MML Management Corporation	04-2443240		Massachusetts
MassMutual International Holding MSC, Inc.	04-3548444		Massachusetts
MassMutual Holding MSC, Inc.	04-3341767		Massachusetts
MML Mezzanine Investor II, LLC	04-1590850		Delaware
MML Mezzanine Investor III, LLC	04-1590850		Delaware
MassMutual External Benefits Group LLC	27-3576835		Delaware
Cornerstone Global REIT Corporation	20-8730751		Delaware
Other Affiliates & Funds:			
100 w. 3 rd Street LLC	04-1590850		Delaware
300 South Tryon Hotel LLC	82-2432216		Delaware
300 South Tryon LLC	04-1590850		Delaware
54 West Capital LLC	20-3887968		Delaware
Almack Mezzanine Fund I LP*	None		United Kingdom
Almack Mezzanine Fund II Unleveraged LP	None		United Kingdom
Almack Mezzanine Fund III LP*	None		United Kingdom

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP

PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
Barings Asset-Based Income Fund (US) LP	36-4868350		Delaware
Barings Emerging Markets Corporate Bond Fund	None		Ireland
Babson Capital Global Special Situation Credit Fund 2*	98-1206017		Delaware
Babson Capital Loan Strategies Fund, L.P.*	37-1506417		Delaware
Barings US High Yield Bond Fund*	None		Ireland
Babson CLO Ltd. 2012-II	None		Cayman Islands
Babson CLO Ltd. 2013-I	None		Cayman Islands
Babson CLO Ltd. 2014-I	None		Cayman Islands
Babson CLO Ltd. 2015-I	None		Cayman Islands
Babson CLO Ltd. 2015-II	None		Cayman Islands
Babson CLO Ltd. 2016-I	None		Cayman Islands
Babson CLO Ltd. 2016-II	None		Cayman Islands
Barings CLO Ltd. 2017-I	None		Cayman Islands
Barings CLO 2018-III	None		Cayman Islands
Barings CLO 2018-IV	None		Cayman Islands
Babson Euro CLO 2014-I BV	None		Netherlands
Babson Euro CLO 2014-II BV	None		Netherlands
Babson Euro CLO 2015-I BV	None		Netherlands
Babson Euro CLO 2016-I BV	None		Netherlands
Barings Euro Equity Income Fund	None		Hong Kong
Barings Global Em. Markets Equity Fund	82-5330194		North Carolina
Barings Global Energy Infrastructure Fund I LP	98-1332384		Cayman Islands
Barings Global Inv. Grade Strat Fund	None		Ireland
Barings Global Private Loan Fund	None		Luxembourg
Barings Global Real Assets Fund LP	82-3867745		Delaware
Barings Global Special Situations Credit Fund 3	None		Ireland
Barings Middle Market CLO 2017-I Ltd & LLC	None		Cayman Islands
Barings Middle Market CLO 2018-I	None		Cayman Islands
Barings North American Private Loan Fund LP	38-4010344		Delaware
Barings RE Credit Strategies VII LP	98-1332384		Delaware
Baring International Small Cap Equity Fund	26-4142796		Delaware
Barings CLO Investment Partners LP	81-0841854		Delaware
Barings Real Estate European Value Add I SCSp*	None		United Kingdom
Braemar Energy Ventures I, L.P. *	None		Delaware
Barings European Core Property Fund SCSp	None		Luxembourg
Benchmark 2018-B2 Mortgage Trust	38-4059932		New York
Benchmark 2018-B4	None		New York
Cornerstone Global Real Estate LP*	20-8730751		Delaware
Cornerstone High Yield Venture LP	36-4770946		Delaware
Barings/LAZ Parking Fund LP	46-5437441		Delaware

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP
 PART 1 – ORGANIZATIONAL CHART

51.7

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
Barings Core Property Fund LP	20-5578089		Delaware
Cornerstone Real Estate Fund VIII LP	27-0547156		Delaware
Cornerstone Real Estate Fund X LP	46-5432619		Delaware
Duchess VII CLO B.V.	None		United Kingdom
E-Wise Land Venture LLC	20-3887968		Delaware
Gateway Mezzanine Partners I LP	80-0691253		Delaware
Gillem GA Industrial LLC	04-1590850		Delaware
Great Lakes III, L.P.	37-1708623		Delaware
JPMCC Commercial Mortgage Securities Trust 2017-JP7	38-4041011; 38-4041012		New York
JPMDB Commercial Mortgage Securities Trust 2017-C5	38-4032059		New York
Kazwell Realty Partners LLC	20-3887968		Delaware
KKR-MM Vector LP	82-1512591		Delaware
Marco Hotel LLC	46-425307		Delaware
HB Naples Golf Owner LLC	45-3623262		Delaware
MM Debt Participations LLC	81-3000420		Delaware
Oakley Grove Development LLC	20-3887968		Delaware
Old Pasco Properties LLC	20-3887968		Delaware
RB Apartments LLC	82-4411267		Delaware
Reston Arboretum LLC	75-2901061		Delaware
Riva Portland LLC	30-0713071		Delaware
Rockall CLO B.V.	None		United Kingdom
Rockville Town Center LLC	54-2055778		Virginia
Somerset Special Opportunities Fund L.P.*	20-8856877		Delaware
South Pasco Properties LLC	20-3887968		Delaware
Ten Fan Pier Boulevard LLC	35-2553915		Delaware
Tower Square Capital Partners II, L.P.*	30-0336246		Delaware
Tower Square Capital Partners II-A, L.P.	32-0160190		Delaware
Tower Square Capital Partners III, L.P.	41-2280127		Delaware
Tower Square Capital Partners IIIA, L.P.	41-2280129		Delaware
Tower Square Capital Partners IV-A, L.P.	80-0920367		Delaware
West 46 th Street Hotel LLC	05-1590850		Delaware
Barings Affiliates & Funds:			
Barings Emerging Markets Debt Blended Total Return Fund	None		Ireland
Barings Emerging Markets Debt Short Duration Fund	None		Ireland
Barings Emerging Markets Sovereign Debt Fund	None		Ireland
Babson Capital Loan Strategies Master Fund LP	None		Cayman Islands
Barings Emerging Markets Debt Blended Total Return Fund	47-3758432		Massachusetts
Barings Global High Yield Fund	47-3790192		Massachusetts
Baring Greater China Equity Fund	None		Hong Kong

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP

PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
Barings Total Return Bond Fund	47-3734770		Massachusetts
Barings U.S. High Yield Fund	47-3801860		Massachusetts
Great Lakes II LLC*	71-1018134		Delaware
Somerset Special Opportunities Master Fund LP	None		Cayman Islands
Barings Real Estate Affiliates & Funds:			
Wood Creek Venture Fund LLC	04-1590850		Delaware
50 Liberty LLC*	36-4823011		Delaware
One Harbor Shore LLC*	80-0948028		Delaware
Budapester Strasse LLC	81-4382111		Delaware
Calgary Railway Holding LLC*	82-2285211		Delaware
Cornbrook PRS Holdings LLC	82-3307907		Delaware
Cornerstone California Mortgage Fund I LLC	95-4207717		California
Cornerstone California Mortgage Fund II LLC	95-4207717		California
Cornerstone California Mortgage Fund III LLC	95-4207717		California
Cornerstone Fort Pierce Development LLC*	56-2630592		Delaware
Cornerstone Permanent Mortgage Fund	45-2632610		Massachusetts
Cornerstone Permanent Mortgage Fund II	61-1750537		Massachusetts
Cornerstone Permanent Mortgage Fund III	35-2531693		Massachusetts
Cornerstone Permanent Mortgage Fund IV	61-1793735		Massachusetts
CREA Madison Member LLC	81-0890084		Delaware
CCB Montford Park LLC*	82-1563809		Delaware
Danville Riverwalk Venture, LLC	82-2783393		Delaware
Fan Pier Development LLC*	20-3347091		Delaware
Farringdon London Holdings LLC*	46-3880526		Delaware
Johnston Groves LLC	20-4819358		Delaware
Landmark Manchester Holdings LLC	81-5360103		Delaware
MM Island Member LLC	04-1590850		Delaware
NoHo West Venture LLC	83-0881588		Delaware
PACO France Logistics LLC	04-1590850		Delaware
PACO France Logistics 2 LLC	04-1590850		Delaware
PACO France Logistics 3 LLC	04-1590850		Delaware
Portland 400 Sixth Manager LLC	82-3393166		Delaware
Salomon Brothers Commercial Mortgage Trust 2001-MM	None		Delaware
Sawgrass Village Shopping Center LLC*	27-2977720		Delaware
Spain Avalon Holding LLC	04-1590850		Delaware
Three PW Office Holding LLC	81-5273574		Delaware
Twenty Two Liberty LLC*	35-2484550		Massachusetts
UK LIW Manager LLC	45-4606547		Delaware
UK LIW Member LLC	45-4606547		Delaware
Unna, Dortmund Holding LLC	82-3250684		Delaware
Via Ceresio Milan LLC	82-3281588		Delaware

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP
 PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
Washington Gateway Apartments Venture LLC*	45-5401109		Delaware
Waterloo London Holdings LLC	47-1993493		Delaware
WeHo Domain LLC*	46-3122029		Delaware
Ygnatio Valley Funding	20-5481477		Delaware
MassMutual Premier Funds:			
MassMutual Barings Dynamic Allocation Fund	45-3168892		Massachusetts
MassMutual Premier Focused International Fund	02-0754273		Massachusetts
MassMutual Premier Main Street Fund	51-0529328		Massachusetts
MassMutual Premier Strategic Emerging Markets Fund	26-3229251		Massachusetts
MassMutual Premier Value Fund	04-3277550		Massachusetts
MassMutual Select Funds:			
MassMutual Select Diversified International Fund	14-1980900		Massachusetts
MassMutual Select Diversified Value Fund	01-0821120		Massachusetts
MassMutual Select Fundamental Growth Fund	04-3512593		Massachusetts
MassMutual Select Large Cap Value Fund	04-3513019		Massachusetts
MassMutual Select Mid-Cap Value Fund	42-1710935		Massachusetts
MassMutual Select Small Capital Value Equity Fund	02-0769954		Massachusetts
MassMutual Select Small Company Value Fund	04-3584140		Massachusetts
MassMutual Select T. Rowe Price Retirement 2005 Fund	82-3347422		Massachusetts
MassMutual Select T. Rowe Price Retirement 2010 Fund	82-3355639		Massachusetts
MassMutual Select T. Rowe Price Retirement 2015 Fund	82-3382389		Massachusetts
MassMutual Select T. Rowe Price Retirement 2020 Fund	82-3396442		Massachusetts
MassMutual Select T. Rowe Price Retirement 2025 Fund	82-3417420		Massachusetts
MassMutual Select T. Rowe Price Retirement 2030 Fund	82-3430358		Massachusetts
MassMutual Select T. Rowe Price Retirement 2035 Fund	82-3439837		Massachusetts
MassMutual Select T. Rowe Price Retirement 2040 Fund	82-3451779		Massachusetts
MassMutual Select T. Rowe Price Retirement 2045 Fund	82-3472295		Massachusetts
MassMutual Select T. Rowe Price Retirement 2050 Fund	82-3481715		Massachusetts
MassMutual Select T. Rowe Price Retirement 2055 Fund	82-3502011		Massachusetts
MassMutual Select T. Rowe Price Retirement 2060 Fund	82-3525148		Massachusetts
MassMutual Select T. Rowe Price Retirement Balanced Fund	82-3533944		Massachusetts
MML Series Investment Funds:			
MML Series International Equity Fund	46-4257056		Massachusetts
MML Series Investment Funds II:			
MML Series II Asset Momentum Fund	47-3517233		Massachusetts
MML Series II Dynamic Bond Fund	47-3529636		Massachusetts
MML Series II Equity Rotation Fund	47-3544629		Massachusetts
MML Series II Special Situations Fund	47-3559064		Massachusetts
MassMutual RetireSMART Funds:			
MassMutual RetireSMART 2055 Fund	46-3289207		Massachusetts
MassMutual RetireSMART 2060 Fund	47-5326235		Massachusetts

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

SCHEDULE Y – INFORMATION CONCERNING ACTIVITIES OF INSURER MEMBERS OF A HOLDING COMPANY GROUP
 PART 1 – ORGANIZATIONAL CHART

	<u>Federal Tax ID</u>	<u>NAIC Co Code</u>	<u>State of Domicile</u>
MassMutual RetireSMART Conservative Fund	45-1618155		Massachusetts
MassMutual RetireSMART Growth Fund	45-1618222		Massachusetts
MassMutual RetireSMART Moderate Fund	45-1618262		Massachusetts
MassMutual RetireSMART Moderate Growth Fund	45-1618046		Massachusetts
Oppenheimer Funds:			
OFI Pictet Global Environmental Solution Fund	81-5311583		Delaware
Oppenheimer Developing Markets Fund	93-6305075		Delaware
Oppenheimer Developing Markets Equity UCITS	None		Ireland
Oppenheimer Emerging Markets Innovators UCITS	None		Ireland
Oppenheimer Emerging Markets Local Debt UCITS	3440740DH		Ireland
Oppenheimer Emerging Markets Revenue ETF	46-2984739		Delaware
Oppenheimer Emerging Markets Ultra Dividend Revenue ETF	82-2237734		Delaware
Oppenheimer ESG Revenue ETF	81-3492794		Delaware
Oppenheimer Global ILS Fund LP	83-1689208		New York
Oppenheimer Global ESG Revenue ETF	81-3480754		Delaware
Oppenheimer Global Equity UCITS	None		Ireland
Oppenheimer Global Multi-Asset Growth Fund	47-3676235		Delaware
Oppenheimer Global Real Estate Fund	46-1604428		Delaware
Oppenheimer Global Revenue ETF	81-5010075		Delaware
Oppenheimer Global Value Equity UCITS	None		Ireland
Oppenheimer Global Unconstrained Bond Fund	82-2693880		Delaware
Oppenheimer International Revenue ETF	81-4969331		Delaware
Oppenheimer International Ultra Dividend Revenue ETF	82-2271542		Delaware
Oppenheimer Preferred Securities & Income Fund	82-3462739		Delaware
Oppenheimer Russell 2000 Dynamic Multifactor ETF	82-2794856		Delaware
Oppenheimer Russell 1000 Momentum Factor ETF	82-2716323		Delaware
Oppenheimer Russell 1000 Value Factor ETF	82-2759921		Delaware
Oppenheimer Russell 1000 Low Volatility Factor ETF	82-2701797		Delaware
Oppenheimer Russell 1000 Size Factor ETF	82-2740997		Delaware
Oppenheimer Russell 1000 Quality Factor ETF	82-2732571		Delaware
Oppenheimer Russell 1000 Yield Factor ETF	82-2768498		Delaware
Oppenheimer SteelPath MLP & Energy Infrastructure Fund	82-2222426		Delaware

51.10

*This entity is owned by another or multiple entities in the group. Please refer to Sch Y Part 1A for the ownership and percentage information.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0435	Massachusetts Mut Life Ins Co	65935	04-1590850	3848388			Massachusetts Mutual Life Insurance Company (MMLIC)	MA	RE	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0435	CM Life Ins Co	93432	06-1041383				C.M. Life Insurance Company	CT	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0435	MML Baystate Life Ins Co	70416	43-0581430				MML Bay State Life Insurance Company	CT	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			06-1041383				CML Mezzanine Investor, LLC	DE	DS	C.M. Life Insurance Company	Ownership	100.000	MMLIC		
.0000			06-1041383				CML Mezzanine Investor L, LLC	DE	DS	C.M. Life Insurance Company	Ownership	100.000	MMLIC		
.0000			06-1041383				CML Mezzanine Investor III, LLC	DE	DS	C.M. Life Insurance Company	Ownership	100.000	MMLIC		
.0000							CML Special Situations Investor LLC	DE	DS	C.M. Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Mezzanine Investor L, LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000							MML Special Situations Investor LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			47-5322979				Timberland Forest Holding LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			47-5322979				Timberland Forest Holding LLC	DE	DS	C.M. Life Insurance Company	Ownership	0.000	MMLIC		
.0000			47-5322979				Timberland Forest Holding LLC	DE	DS	Wood Creek Capital Management LLC	Management		MMLIC		
.0000							Lyme Adirondack Forest Company, LLC	DE	DS	Timberland Forest Holding LLC	Ownership	100.000	MMLIC		
.0000			20-5305426				Lyme Adirondack Timber Sales, Inc.	NY	DS	Timberland Forest Holding LLC	Ownership	100.000	MMLIC		
.0000							Lyme Adirondack Timberlands I, LLC	DE	DS	Timberland Forest Holding LLC	Ownership	100.000	MMLIC		
.0000							Lyme Adirondack Timberlands II, LLC	DE	DS	Timberland Forest Holding LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				Berkshire Way LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MSP-SC, LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			27-1435692				Country Club Office Plaza LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	88.100	MMLIC		
.0000			27-1435692				Country Club Office Plaza LLC	DE	DS	C.M. Life Insurance Company	Ownership	11.900	MMLIC		
.0000							EM Opportunities LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				Insurance Road LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MassMutual Trad Private Equity LLC	DE	NIA	Insurance Road LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				MassMutual Intellectual Property LLC	DE	NIA	Insurance Road LLC	Ownership	100.000	MMLIC		
.0000							Trad Investments I LLC	DE	NIA	Insurance Road LLC	Ownership	100.000	MMLIC		
.0000			27-0105644				Jefferies Finance LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	50.000	MMLIC		1
.0000							MassMutual Mortgage Lending LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000							JFIN GP Adviser LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver Fund, L.P.	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Fund III LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Asset Management LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFAM GP LLC	DE	NIA	JFIN Asset Management, LLC	Ownership	100.000	MMLIC		
.0000							JFAM GP LP	DE	NIA	JFIN Asset Management, LLC	Ownership	100.000	MMLIC		
.0000							JFAM Loan Fund, LP	DE	NIA	JFIN Asset Management, LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver Holdings LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver Holdings II LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Co-Issuer Corporation	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Europe GP, S.a.r.l.	LUX	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							Jefferies Finance Europe, SCSp	LUX	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							Jefferies Finance Business Credit LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Business Credit Fund I LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN High Yield Investments LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000							JFIN LC Fund LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver CLO Holdings LLC	DE	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN CLO 2007 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN CLO 2012 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN CLO 2013 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN CLO 2014 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	70.000	MMLIC		
.0000							JFIN CLO 2014 Ltd.	CYM	NIA	Apex Credit Partners LLC	Ownership	30.000	MMLIC		
.0000							JFIN CLO 2014-II Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN MM CLO 2014 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN CLO 2015 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	44.000	MMLIC		
.0000							JFIN CLO 2015 Ltd.	CYM	NIA	Apex Credit Partners LLC	Ownership	56.000	MMLIC		
.0000							Apex Credit CLO 2015-II Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	33.000	MMLIC		
.0000							Apex Credit CLO 2015-II Ltd.	CYM	NIA	Apex Credit Partners LLC	Ownership	53.000	MMLIC		
.0000							JFIN Revolver CLO 2014 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver CLO 2015 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver CLO 2017 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver CLO 2017-II Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver CLO 2017-III Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							JFIN Revolver CLO 2018 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							Apex Credit CLO 2016 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							Apex Credit CLO 2017 Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000							Apex Credit CLO 2017-II Ltd.	CYM	NIA	Jefferies Finance LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				MassMutual Retirement Services, LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MM Copper Hill Road LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-3356880				MML Distributors LLC	MA	DS	Massachusetts Mutual Life Insurance Company	Ownership	99.000	MMLIC		
.0000			04-3356880				MML Distributors LLC	MA	DS	MassMutual Holding LLC	Ownership	1.000	MMLIC		
.0000							MML Investment Advisers, LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Mezzanine Investor, LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			46-3238013				MML Strategic Distributors, LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			06-1563535	2881445			The MassMutual Trust Company, FSB	CT	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC	Y	
.0000			26-0073611				MassMutual Asset Finance LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	99.600	MMLIC		
.0000			26-0073611				MassMutual Asset Finance LLC	DE	DS	C.M. Life Insurance Company	Ownership	0.400	MMLIC		
.0000			27-1379258				MMAF Equipment Finance LLC 2009-A	DE	DS	MassMutual Asset Finance LLC	Ownership	100.000	MMLIC		
.0000			45-2589019				MMAF Equipment Finance LLC 2011-A	DE	DS	MassMutual Asset Finance LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Private Placement Investment Company I, LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Private Equity Fund Investor LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Private Equity Fund Investor LLC	DE	NIA	Baring Asset Management Limited	Management		MMLIC		
.0000			04-1590850				MM Private Equity Intercontinental LLC	DE	NIA	MML Private Equity Fund Investor LLC	Ownership	100.000	MMLIC		
.0000			45-2738137				Pioneers Gate LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-2854319	2392316			MassMutual Holding LLC	DE	DS	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC	Y	
.0000			06-1597528				MassMutual Assignment Company	NC	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000			37-1732913				Fern Street LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		

52.1

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			46-2252944				Haven Life Insurance Agency, LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				MassMutual Capital Partners LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000							MassMutual Ventures Holding LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000							Crane Venture Partners LLP	GBR	DS	MassMutual Holding LLC	Ownership	33.000	MMLIC		
.0000							MassMutual Ventures Management LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000							MassMutual Ventures SEA Management Private Limited	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000							MassMutual Ventures Southeast Asia I LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000							MassMutual Ventures UK LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000			47-1296410				MassMutual Ventures US I LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000							MassMutual Ventures US II LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				MM Rothesay Holdco US LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000			47-1466022				LifeScore Labs, LLC	MA	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Investors Services, LLC	MA	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Insurance Agency, LLC	MA	DS	MML Investors Services, LLC	Ownership	100.000	MMLIC		
.0000			41-2011634				MMLISI Financial Alliances, LLC	DE	DS	MML Investors Services, LLC	Ownership	100.000	MMLIC		
.0000			45-4000072				MM Asset Management Holding LLC	DE	DS	MassMutual Holding LLC	Ownership	100.000	MMLIC		
.0000			51-0504477				Barings LLC	DE	DS	MassMutual Asset Management Holding LLC	Ownership	100.000	MMLIC		
.0000							Baring Asset Management (Asia) Holdings Limited	HKG	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Baring International Fund Managers (Bermuda) Limited	BMU	DS	Baring Asset Management (Asia) Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0457465				Baring Asset Management (Asia) Holdings Limited	HKG	DS	Baring Asset Management (Asia) Holdings Limited	Ownership	100.000	MMLIC		
.0000							Baring Asset Management Korea Limited	KOR	DS	Baring Asset Management (Asia) Limited	Ownership	100.000	MMLIC		
.0000							Barings Investment Management (Shanghai) Limited	HKG	DS	Baring Asset Management (Asia) Limited	Ownership	100.000	MMLIC		
.0000							Barings Overseas Investment Fund Management (Shanghai) Limited	HKG	DS	Baring Asset Management (Asia) Limited	Ownership	100.000	MMLIC		
.0000			98-0457707				Baring SICE (Taiwan) Limited	TWN	DS	Baring Asset Management (Asia) Holdings Limited	Ownership	100.000	MMLIC		
.0000							Barings Japan Limited	JPN	DS	Baring Asset Management (Asia) Holdings Limited	Ownership	100.000	MMLIC		
.0000							Baring Asset Management (Australia) Pty Limited	AUS	DS	Baring Asset Management (Asia) Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0457456				Barings Investment Advisors (Hong Kong) Limited	HKG	DS	Baring Asset Management (Asia) Holdings Limited	Ownership	100.000	MMLIC		
.0000							Barings Australia Holding Company Pty Ltd	AUS	DS	Baring Asset Management (Asia) Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0457456				Barings Australia Pty Ltd	AUS	DS	Baring Australia Holding Company Pty Ltd	Ownership	100.000	MMLIC		
.0000			80-0875475				Barings Finance LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							BCF Europe Funding Limited	IRL	DS	Barings Finance LLC	Ownership	100.000	MMLIC		
.0000							BCF Senior Funding I LLC	DE	DS	Barings Finance LLC	Ownership	100.000	MMLIC		
.0000							BCF Senior Funding I Designated Activity Company	IRL	DS	Barings Finance LLC	Ownership	100.000	MMLIC		
.0000			04-3238351				Barings Securities LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			98-0437588				Barings Guernsey Limited	GGY	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Europe Limited	GBR	DS	Barings Guernsey Limited	Ownership	100.000	MMLIC		
.0000							Barings Real Estate UK Holdings Limited	DE	DS	Barings Europe Limited	Ownership	100.000	MMLIC		
.0000							BREA E AIFM LLP	GBR	DS	Barings Real Estate UK Holdings Limited	Ownership	100.000	MMLIC		
.0000							Barings Real Estate Advisers (Continental Europe) Limited	GBR	DS	Barings Real Estate UK Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0654401				Barings Real Estate Advisers Europe LLP	GBR	DS	Barings Real Estate UK Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0654388												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			98-0654412				Barings Real Estate Advisers Europe Finance LLP	.GBR	.DS	Barings Real Estate UK Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-1194368				Barings Real Estate Advisers GmbH	.DEU	.DS	Barings Real Estate UK Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0241935				Baring Asset Management Limited	.GBR	.DS	MassMutual Holdings (Bermuda) Limited	Ownership	100.000	MMLIC		
.0000			98-1012393				Barings Global Advisors Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000							BCGSS 2 GP LLP	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000							Barings European Direct Lending 1 GP LLP	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000			98-0457328				Baring International Investment Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000			98-0457587				Baring International Investment Management Holdings	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000			98-0457576				Baring Asset Management UK Holdings Limited	.GBR	.DS	Baring International Investment Management Holdings	Ownership	100.000	MMLIC		
.0000			98-0465031				Baring Asset Management GmbH	.DEU	.DS	Baring Asset Management UK Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0524272				Baring International Fund Managers (Ireland) Limited	.IRL	.DS	Baring Asset Management UK Holdings Limited	Ownership	100.000	MMLIC		
.0000							Baring Asset Management Switzerland Sarl	.CHE	.DS	Baring Asset Management UK Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0497550				Baring France SAS	.FRA	.DS	Baring Asset Management UK Holdings Limited	Ownership	100.000	MMLIC		
.0000			98-0457586				Baring Fund Managers Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000			98-0457574				Baring Pension Trustees Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000			98-0457578				Baring Investment Services Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000							Barings GPC S.à. r.l	.LUX	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000							Barings Investment Fund (LUX) GP S.à. r.l	.LUX	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000							Almack Mezzanine GP III Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000							Almack Holding Partnership GP Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000							Almack Mezzanine Fund Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000							Almack Mezzanine Fund II Limited	.GBR	.DS	Baring Asset Management Limited	Ownership	100.000	MMLIC		
.0000			98-0432153				Barings (U.K.) Limited	.GBR	.DS	Barings Guernsey Limited	Ownership	100.000	MMLIC		
.0000							Barings Multifamily Capital Holdings LLC	.DE	.DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Multifamily Capital LLC	.MI	.DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Multifamily Capital Corporation	.DE	.DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			04-3238351	3456895			Barings Real Estate Advisers Inc.	.CA	.DS	Barings Real Estate Advisers LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				MassMutual Baring Holding LLC	.DE	.DS	MassMutual Asset Management Holding LLC	Ownership	100.000	MMLIC		
.0000							MassMutual Holdings (Bermuda) Limited	.BMU	.DS	MassMutual Baring Holding LLC	Ownership	100.000	MMLIC		
.0000							Massachusetts Mutual Life Insurance Company								
.0000			81-2244465				Chassis Acquisition Holding LLC	.DE	.NIA	Company	Ownership/Influence	30.000	MMLIC		
.0000			81-2244465				Chassis Acquisition Holding LLC	.DE	.NIA	Barings LLC	Influence		MMLIC		
.0000							Massachusetts Mutual Life Insurance Company								
.0000			81-4258759				CRA Aircraft Holding LLC	.DE	.NIA	Company	Ownership/Influence	40.000	MMLIC		
.0000			81-4258759				CRA Aircraft Holding LLC	.DE	.NIA	Barings LLC	Influence		MMLIC		
.0000							Massachusetts Mutual Life Insurance Company								
.0000			83-0560183				Aland Royalty Holdings LP	.DE	.NIA	Company	Ownership	26.700	MMLIC		
.0000			83-0560183				Aland Royalty Holdings LP	.DE	.NIA	Barings LLC	Management		MMLIC		
.0000							Massachusetts Mutual Life Insurance Company								
.0000							Engs Holdings Inc.	.DE	.NIA	Company	Ownership	21.700	MMLIC		
.0000							Massachusetts Mutual Life Insurance Company								
.0000			46-2344300				Intermodal Holdings II LLC	.DE	.NIA	Company	Ownership	18.000	MMLIC		
.0000			47-3055009				Milestone Acquisition Holding, LLC.	.DE	.NIA	MassMutual Holding LLC	Ownership/Influence	18.300	MMLIC		
.0000			47-3055009				Milestone Acquisition Holding, LLC.	.DE	.NIA	Barings LLC	Influence		MMLIC		
.0000							Massachusetts Mutual Life Insurance Company								
.0000							Novation Companies, Inc.	.MD	.NIA	Company	Ownership	21.100	MMLIC		

52.3

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			46-5460309				Red Lake Ventures, LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	31.500	MMLIC		
.0000			46-5460309				Red Lake Ventures, LLC	DE	NIA	Barings LLC	Influence		MMLIC		
.0000			81-4065378				Remington L & W Holdings LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	66.700	MMLIC		
.0000			81-4065378				Remington L & W Holdings LLC	DE	NIA	Barings LLC	Influence		MMLIC		
.0000							Tamiami Citurus, LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	15.700	MMLIC		
.0000							Teaktree Acquisition, LLC	DE	NIA	MassMutual Holding LLC	Ownership/Influence	14.700	MMLIC		
.0000							Teaktree Acquisition, LLC	DE	NIA	Barings LLC	Influence		MMLIC		
.0000			46-0687392				US Pharmaceutical Holdings I, LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Management		MMLIC		
.0000			20-2970495				US Pharmaceutical Holdings II, LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	42.400	MMLIC		
.0000			20-2970495				US Pharmaceutical Holdings II, LLC	DE	NIA	Barings LLC	Influence		MMLIC		
.0000							EIP Holdings I, LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	28.900	MMLIC		
.0000							EIP Holdings I, LLC	DE	NIA	Barings LLC	Management		MMLIC		
.0000							Validus Pharmaceuticals LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	100.000	MMLIC		
.0000							VGS Acquisition Holding, LLC	DE	NIA	MassMutual Holding LLC	Ownership/Influence	33.300	MMLIC		
.0000							VGS Acquisition Holding, LLC	DE	NIA	Barings LLC	Management		MMLIC		
.0000							Aland Royalty GP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							BAI GP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							BAI Funds SLP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Alternative Investments SLP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Asset-Based Income Fund (US) GP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				Barings Global Investment Funds (U.S.) Management LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			98-0241935				Babson Global Loan Feeder Management, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings North America LLC	MA	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings ABIF SLP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings CLO Investment Partners GP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Core Property Fund GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Direct Lending GP Ltd.	CYM	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Global Energy Infrastructure Advisors, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Multi Asset Income Fund	HKG	DS	Barings LLC	Ownership	0.000	MMLIC		
.0000							Barings North American Private Loan Fund Management, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings Global Real Assets Fund GP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Barings/LAZ Parking Fund GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			98-0536233				Benton Street Advisors, Inc.	CYM	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							BREBF I GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							BRECS VII GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							CCM Fund I REIT Manager LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							CCM Venture I GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							CCM Venture I REIT Manager LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							CEMF I GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							CHY Venture GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							CREF X GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							CREF VIII GP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				Great Lakes III GP, LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Lake Jackson LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			04-1590850				Loan Strategies Management LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				Mezzco LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			02-0767001				Mezzco II LLC	DE	DS	Barings LLC	Ownership	98.400	MMLIC		
.0000			41-2280126				Mezzco III LLC	DE	DS	Barings LLC	Ownership	99.300	MMLIC		
.0000			80-0920285				Mezzco IV LLC	DE	DS	Barings LLC	Ownership	99.300	MMLIC		
.0000			90-0666326				Mezzco Australia LLC	DE	DS	Barings LLC	Ownership	72.000	MMLIC		
.0000							Mezzco Australia II LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							RECSA-NY GP LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000							Somerset Special Opportunities Management LLC	DE	DS	Barings LLC	Ownership	100.000	MMLIC		
.0000			04-1590850				Oppenheimer Acquisition Corp.	DE	DS	MassMutual Asset Management Holding LLC	Ownership	96.600	MMLIC		
.0000			84-1149206	2897101			OppenheimerFunds, Inc.	CO	DS	Oppenheimer Acquisition Corp.	Ownership	100.000	MMLIC		
.0000			13-2527171	2679183			OppenheimerFunds Distributor, Inc.	NY	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000			13-2953455				Oppenheimer Real Asset Management, Inc.	DE	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000			84-1106295				OFI Global Institutional, Inc.	NY	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000			13-4160541	3458125			HarbourView Asset Management Corporation	NY	DS	OFI Institutional Asset Management, Inc.	Ownership	100.000	MMLIC		
.0000			22-2697140				OC Private Capital, LLC	DE	DS	OFI Institutional Asset Management, Inc.	Ownership	51.000	MMLIC		
.0000			13-3459790	2914875			OFI Global Trust Company	NY	DS	OFI Institutional Asset Management, Inc.	Ownership	100.000	MMLIC		
.0000							OFI International, Ltd.	GBR	DS	OFI Institutional Asset Management, Inc.	Ownership	100.000	MMLIC		
.0000							SNW Asset Management Corporation	DE	DS	OFI Institutional Asset Management, Inc.	Ownership	100.000	MMLIC		
.0000			60-2233720				Seattle Northwest Asset Management LLC	WA	DS	OFI Institutional Asset Management, Inc.	Ownership	100.000	MMLIC		
.0000			25-1951632				Trinity Investment Management Corporation	PA	DS	OFI Institutional Asset Management, Inc.	Ownership	100.000	MMLIC		
.0000			84-1128397				OFI SteelPath, Inc.	DE	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000			84-1066811				Shareholder Services, Inc.	CO	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000							OFI Advisors, LLC	DE	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000							Index Management Solutions, LLC	PA	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000			84-0765063				OFI Global Asset Management, Inc.	DE	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000			91-2036414				OFI Private Investments Inc.	NY	DS	OppenheimerFunds, Inc.	Ownership	100.000	MMLIC		
.0000			62-1210532				Tremont Group Holdings, LLC	NY	DS	Oppenheimer Acquisition Corp.	Ownership	100.000	MMLIC		
.0000			06-1121864				Tremont Partners, LLC	CT	DS	Tremont Group Holdings, Inc.	Ownership	100.000	MMLIC		
.0000			20-8215352				Tremont GP, LLC	DE	DS	Tremont Group Holdings, Inc.	Ownership	100.000	MMLIC		
.0000			90-0874510				Settlement Agent, LLC	DE	DS	Tremont GP	Ownership	100.000	MMLIC		
.0000							Tremont (Bermuda) Limited	BMU	DS	Tremont Group Holdings, Inc.	Ownership	100.000	MMLIC		
.0000			04-3313782				MassMutual International LLC	DE	DS	Company	Ownership	100.000	MMLIC	Y	
.0000							Yunfeng Financial Group Limited	HKG	DS	MassMutual International LLC	Ownership	24.800	MMLIC		
.0000							MML Management Corporation	MA	DS	Company	Ownership	100.000	MMLIC	Y	
.0000			04-2443240				MassMutual International Holding MSC, Inc.	MA	DS	MML Management Corporation	Ownership	100.000	MMLIC		
.0000			04-3548444				MassMutual Holding MSC, Inc.	MA	DS	MML Management Corporation	Ownership	100.000	MMLIC		
.0000			04-3341767				Massachusetts Mutual Life Insurance Company			Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Mezzanine Investor II, LLC	DE	DS	Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MML Mezzanine Investor III, LLC	DE	DS	Company	Ownership	100.000	MMLIC		
.0000			27-3576835				MassMutual External Benefits Group LLC	DE	DS	Company	Ownership	100.000	MMLIC		
.0000			20-8730751				Cornerstone Global REIT Corporation	DE	DS	Company	Ownership	100.000	MMLIC		
.0000			04-1590850				100 w. 3rd Street LLC	DE	NIA	Company	Ownership	100.000	MMLIC		
.0000			82-2432216				300 South Tryon Hotel LLC	DE	NIA	Company	Ownership	100.000	MMLIC		
.0000			04-1590850				300 South Tryon LLC	DE	NIA	Company	Ownership	100.000	MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			20-3887968				54 West Capital LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000							Almack Mezzanine Fund I LP	GBR	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	41.400	MMLIC		
.0000							Almack Mezzanine Fund I LP	GBR	NIA	C.M. Life Insurance Company	Ownership	4.600	MMLIC		
.0000							Almack Mezzanine Fund II Unleveraged LP	GBR	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	72.900	MMLIC		
.0000							Almack Mezzanine Fund III LP	GBR	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	34.200	MMLIC		
.0000							Almack Mezzanine Fund III LP	GBR	NIA	C.M. Life Insurance Company	Ownership	3.800	MMLIC		
.0000							Almack Mezzanine Fund III LP	GBR	NIA	Barings (U.K.) Limited	Management		MMLIC		
.0000			36-4868350				Barings Asset-Based Income Fund (US) LP	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	24.200	MMLIC		
.0000			36-4868350				Barings Asset-Based Income Fund (US) LP	DE	NIA	C.M. Life Insurance Company	Ownership/Influence	2.400	MMLIC		
.0000			36-4868350				Barings Asset-Based Income Fund (US) LP	DE	NIA	Barings LLC	Management		MMLIC		
.0000							Barings Emerging Markets Corporate Bond Fund	IRL	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	91.400	MMLIC		
.0000							Barings Emerging Markets Corporate Bond Fund	IRL	NIA	Barings LLC	Management		MMLIC		
.0000			98-1206017				Babson Capital Global Special Situation Credit Fund 2	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	23.700	MMLIC		
.0000			98-1206017				Babson Capital Global Special Situation Credit Fund 2	DE	NIA	C.M. Life Insurance Company	Ownership	1.500	MMLIC		
.0000			98-1206017				Babson Capital Global Special Situation Credit Fund 2	DE	NIA	Barings LLC	Management		MMLIC		
.0000			37-1506417				Babson Capital Loan Strategies Fund, L.P.	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	77.100	MMLIC		
.0000			37-1506417				Babson Capital Loan Strategies Fund, L.P.	DE	NIA	C.M. Life Insurance Company	Ownership	3.700	MMLIC		
.0000			37-1506417				Babson Capital Loan Strategies Fund, L.P.	DE	NIA	Barings LLC	Management		MMLIC		
.0000							Barings US High Yield Bond Fund	IRL	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	43.200	MMLIC		
.0000							Barings US High Yield Bond Fund	IRL	NIA	Barings LLC	Ownership	17.300	MMLIC		
.0000							Barings US High Yield Bond Fund	IRL	NIA	Barings LLC	Management		MMLIC		
.0000							Babson CLO Ltd. 2013-I	CYM	NIA	Barings LLC	Influence		MMLIC		3
.0000							Babson CLO Ltd. 2014-I	CYM	NIA	Barings LLC	Influence		MMLIC		2
.0000							Babson CLO Ltd. 2015-I	CYM	NIA	Barings LLC	Influence		MMLIC		5
.0000							Babson CLO Ltd. 2015-II	CYM	NIA	Barings LLC	Influence		MMLIC		6
.0000							Babson CLO Ltd. 2016-I	CYM	NIA	Barings LLC	Influence		MMLIC		
.0000							Babson CLO Ltd. 2016-II	CYM	NIA	Barings LLC	Influence		MMLIC		
.0000							Barings CLO Ltd. 2017-I	CYM	NIA	Barings LLC	Influence		MMLIC		
.0000							Barings CLO 2018-III	CYM	NIA	Barings LLC	Influence		MMLIC		
.0000							Barings CLO 2018-IV	CYM	NIA	Barings LLC	Influence		MMLIC		
.0000							Babson Euro CLO 2014-I BV	NLD	NIA	Barings LLC	Influence		MMLIC		
.0000							Babson Euro CLO 2014-II BV	NLD	NIA	Barings LLC	Influence		MMLIC		
.0000							Babson Euro CLO 2015-I BV	NLD	NIA	Barings LLC	Influence		MMLIC		
.0000							Babson Euro CLO 2016-I BV	NLD	NIA	Barings LLC	Influence		MMLIC		
.0000							Barings Euro Equity Income Fund	HKG	NIA	Barings Asset Management Limited	Ownership/Influence	0.000	MMLIC		
.0000			81-0841854				Barings CLO Investment Partners LP	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	99.300	MMLIC		
.0000			81-0841854				Barings CLO Investment Partners LP	DE	NIA	Barings LLC	Management		MMLIC		
.0000							Barings Real Estate European Value Add I SCSp	GBR	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	53.800	MMLIC		
.0000							Barings Real Estate European Value Add I SCSp	GBR	NIA	C.M. Life Insurance Company	Ownership	6.000	MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000							Barings Real Estate European Value Add I SCSp	.GBR	NIA	Barings LLC	Management		MMLIC		
.0000			82-5330194				Barings Global Em. Markets Equity Fund	.NC	NIA	Barings LLC	Management		MMLIC		
.0000			98-1332384				Barings Global Energy Infrastructure Fund I LP	.CYM	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	95.700	MMLIC		
.0000			98-1332384				Barings Global Energy Infrastructure Fund I LP	.CYM	NIA	Baring Asset Management Limited	Management		MMLIC		
.0000							Barings Global Inv. Grade Strat Fund	.IRL	NIA	Barings LLC	Management		MMLIC		
.0000							Barings Global Private Loan Fund	.LUX	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	11.500	MMLIC		
.0000							Barings Global Private Loan Fund	.LUX	NIA	Barings LLC	Management		MMLIC		
.0000			82-3867745				Barings Global Real Assets Fund LP	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	57.700	MMLIC		
.0000			82-3867745				Barings Global Real Assets Fund LP	.DE	NIA	C.M. Life Insurance Company	Ownership	10.200	MMLIC		
.0000			82-3867745				Barings Global Real Assets Fund LP	.DE	NIA	Barings LLC	Management		MMLIC		
.0000							Barings Global Special Situations Credit Fund 3	.IRL	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	30.300	MMLIC		
.0000							Barings Global Special Situations Credit Fund 3	.IRL	NIA	Barings LLC	Management		MMLIC		
.0000							Barings Middle Market CLO 2017-I Ltd & LLC	.CYM	NIA	Barings LLC	Influence		MMLIC		
.0000							Barings Middle Market CLO 2018-I	.CYM	NIA	Barings LLC	Influence		MMLIC		
.0000			38-4010344				Barings North American Private Loan Fund LP	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	48.300	MMLIC		
.0000			38-4010344				Barings North American Private Loan Fund LP	.DE	NIA	Baring Asset Management Limited	Management		MMLIC		
.0000			98-1332384				Barings RE Credit Strategies VII LP	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	38.600	MMLIC		
.0000			98-1332384				Barings RE Credit Strategies VII LP	.DE	NIA	Baring Asset Management Limited	Management		MMLIC		
.0000			26-4142796				Baring International Small Cap Equity Fund	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	11.000	MMLIC		
.0000			26-4142796				Baring International Small Cap Equity Fund	.DE	NIA	Baring Asset Management Limited	Management		MMLIC		
.0000							Braemar Energy Ventures I, L.P.	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	88.000	MMLIC		
.0000							Braemar Energy Ventures I, L.P.	.DE	NIA	C.M. Life Insurance Company	Ownership	1.300	MMLIC		
.0000							Braemar Energy Ventures I, L.P.	.DE	NIA	Barings LLC	Management		MMLIC		
.0000							Barings European Core Property Fund SCSp	.LUX	NIA	MassMutual Holding LLC	Ownership/Influence	16.800	MMLIC		
.0000							Barings European Core Property Fund SCSp	.LUX	NIA	C.M. Life Insurance Company	Ownership	1.100	MMLIC		
.0000							Barings European Core Property Fund SCSp	.LUX	NIA	Barings Real Estate Advisers LLC	Management		MMLIC		
.0000			38-4059932				Benchmark 2018-B2 Mortgage Trust	.NY	NIA	Barings LLC	Influence		MMLIC		
.0000							Benchmark 2018-B4	.NY	NIA	Barings LLC	Influence		MMLIC		
.0000			20-8730751				Cornerstone Global Real Estate LP	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	92.300	MMLIC		
.0000			20-8730751				Cornerstone Global Real Estate LP	.DE	NIA	C.M. Life Insurance Company	Ownership	7.600	MMLIC		
.0000			20-8730751				Cornerstone Global Real Estate LP	.DE	NIA	Barings Real Estate Advisers LLC	Management		MMLIC		
.0000			36-4770946				Cornerstone High Yield Venture LP	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	49.700	MMLIC		
.0000			36-4770946				Cornerstone High Yield Venture LP	.DE	NIA	Barings Real Estate Advisers LLC	Management		MMLIC		
.0000			20-5578089				Barings Core Property Fund LP	.DE	NIA	MassMutual Holding LLC	Ownership/Influence	13.000	MMLIC		
.0000			20-5578089				Barings Core Property Fund LP	.DE	NIA	Barings Real Estate Advisers LLC	Management		MMLIC		
.0000			46-5432619				Cornerstone Real Estate Fund X LP	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	24.900	MMLIC		
.0000			46-5432619				Cornerstone Real Estate Fund X LP	.DE	NIA	C.M. Life Insurance Company	Ownership	2.800	MMLIC		
.0000			46-5432619				Cornerstone Real Estate Fund X LP	.DE	NIA	Barings Real Estate Advisers LLC	Management		MMLIC		
.0000			46-5437441				Barings/LAZ Parking Fund LP	.DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	99.800	MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			46-5437441				Barings/LAZ Parking Fund LP	DE	NIA	Barings Real Estate Advisers LLC	Management		MMLIC		
.0000				4007502			Duchess VII CLO B.V.	GBR	NIA	Barings LLC	Influence		MMLIC		
.0000			20-3887968				E-Wise Land Venture LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			80-0691253				Gateway Mezzanine Partners I, L.P.	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	71.600	MMLIC		
.0000			37-1708623				Great Lakes III, L.P.	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	38.800	MMLIC		
.0000			37-1708623				Great Lakes III, L.P.	DE	NIA	Barings LLC	Management		MMLIC		
.0000			04-1590850				Gillem GA Industrial LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			38-4041011				JPMCC Commercial Mortgage Securities Trust 2017-JP7	NY	NIA	Barings LLC	Management		MMLIC		
.0000			38-4032059				JPMDB Commercial Mortgage Securities Trust 2017-C5	NY	NIA	Barings LLC	Management		MMLIC		
.0000			20-3887968				Kazwell Realty Partners LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			82-1512591				KKR-MM Vector LP	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	52.300	MMLIC		
.0000			46-4255307				Marco Hotel LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			45-3623262				HB Naples Golf Owner LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			81-3000420				MM Debt Participations LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	100.000	MMLIC		
.0000			81-3000420				MM Debt Participations LLC	DE	NIA	Barings LLC	Management		MMLIC		
.0000			20-3887968				Oakley Grove Development LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			20-3887968				Old Pasco Properties LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			82-4411267				RB Apartments LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			75-2901061				Reston Arboretum LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			30-0713071				Riva Portland LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000							Rockall CLO B.V.	GBR	NIA	Barings LLC	Influence		MMLIC		
.0000			54-2055778				Rockville Town Center LLC	VA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			20-8856877				Somerset Special Opportunities Fund L.P.	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	58.500	MMLIC		
.0000			20-8856877				Somerset Special Opportunities Fund L.P.	DE	NIA	C.M. Life Insurance Company	Ownership	2.900	MMLIC		
.0000			20-3887968				South Pasco Properties LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			35-2553915				Ten Fan Pier Boulevard LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			30-0336246				Tower Square Capital Partners II, L.P.	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	22.400	MMLIC		
.0000			30-0336246				Tower Square Capital Partners II, L.P.	DE	NIA	C.M. Life Insurance Company	Ownership	3.900	MMLIC		
.0000			32-0160190				Tower Square Capital Partners II-A, L.P.	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	85.000	MMLIC		
.0000			41-2280127				Tower Square Capital Partners III, L.P.	DE	NIA	Barings LLC	Management		MMLIC		
.0000			41-2280127				Tower Square Capital Partners III, L.P.	DE	NIA	MassMutual Holding LLC	Ownership/Influence	15.500	MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			41-2280129				Tower Square Capital Partners IIIA, L.P.	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	95.000	MMLIC		
.0000			41-2280129				Tower Square Capital Partners IIIA, L.P.	DE	NIA	Barings LLC	Management		MMLIC		
.0000			80-0920367				Tower Square Capital Partners IV-A, L.P.	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership/Influence	21.300	MMLIC		
.0000			04-1590850				West 46th Street Hotel LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000							Barings Emerging Markets Debt Blended Total Return Fund	IRL	NIA	Barings LLC	Management		MMLIC		
.0000							Barings Emerging Markets Debt Short Duration Fund	IRL	NIA	Barings LLC	Management		MMLIC		
.0000							Barings Emerging Markets Sovereign Debt Fund	IRL	NIA	Barings LLC	Management		MMLIC		
.0000							Babson Capital Loan Strategies Master Fund LP	IRL	NIA	Barings LLC	Management		MMLIC		
.0000							Barings Emerging Markets Debt Blended Total Return Fund	CYM	NIA	Barings LLC	Management		MMLIC		
.0000			47-3758432				Barings Global High Yield Fund	MA	NIA	Barings LLC	Management		MMLIC		
.0000			47-3790192				Barings Greater China Equity Fund	MA	NIA	Barings LLC	Management		MMLIC		
.0000			47-3734770				Barings Total Return Bond Fund	HKG	NIA	Barings Asset Management Limited	Management		MMLIC		
.0000			47-3801860				Barings U.S. High Yield Fund	MA	NIA	Barings LLC	Management		MMLIC		
.0000			71-1018134				Great Lakes II LLC	MA	NIA	Barings LLC	Management		MMLIC		
.0000			71-1018134				Great Lakes II LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	11.200	MMLIC		
.0000							Somerset Special Opportunities Master Fund LP	DE	NIA	C.M. Life Insurance Company	Ownership	1.000	MMLIC		
.0000								CYM	NIA	Barings LLC	Management		MMLIC		
.0000			04-1590850				Wood Creek Venture Fund LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	40.000	MMLIC		
.0000			36-4823011				50 Liberty LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	59.100	MMLIC		
.0000			36-4823011				50 Liberty LLC	DE	NIA	C.M. Life Insurance Company	Ownership	5.800	MMLIC		
.0000			80-0948028				One Harbor Shore LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	49.900	MMLIC		
.0000			80-0948028				One Harbor Shore LLC	DE	NIA	C.M. Life Insurance Company	Ownership	4.900	MMLIC		
.0000			81-4382111				Budapester Strasse LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			82-2285211				Calgary Railway Holding LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	90.000	MMLIC		
.0000			82-2285211				Calgary Railway Holding LLC	DE	NIA	C.M. Life Insurance Company	Ownership	10.000	MMLIC		
.0000			82-3307907				Cornbrook PRS Holdings LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			95-4207717				Cornerstone California Mortgage Fund I LLC	CA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			95-4207717				Cornerstone California Mortgage Fund II LLC	CA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			95-4207717				Cornerstone California Mortgage Fund III LLC	CA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			56-2630592				Cornerstone Fort Pierce Development LLC	CA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			56-2630592				Cornerstone Fort Pierce Development LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	84.400	MMLIC		
.0000			45-2632610				Cornerstone Permanent Mortgage Fund	DE	NIA	C.M. Life Insurance Company	Ownership	5.600	MMLIC		
.0000			45-2632610				Cornerstone Permanent Mortgage Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	98.100	MMLIC		
.0000							Cornerstone Permanent Mortgage Fund	MA	NIA	Barings LLC	Management		MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			61-1750537				Cornerstone Permanent Mortgage Fund II	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	98.600	MMLIC		
.0000			61-1750537				Cornerstone Permanent Mortgage Fund II	MA	NIA	Barings LLC	Management		MMLIC		
.0000			61-1793735				Cornerstone Permanent Mortgage Fund IV	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			81-0890084				CREA Madison Member LLC	DE	NIA	C.M. Life Insurance Company	Ownership	100.000	MMLIC		
.0000			82-1563809				CCB Montford Park LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	75.200	MMLIC		
.0000			82-1563809				CCB Montford Park LLC	DE	NIA	C.M. Life Insurance Company	Ownership	4.800	MMLIC		
.0000			82-2783393				Danville Riverwalk Venture, LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			20-3347091				Fan Pier Development LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	59.300	MMLIC		
.0000			20-3347091				Fan Pier Development LLC	DE	NIA	C.M. Life Insurance Company	Ownership	5.900	MMLIC		
.0000			46-3880526				Farringdon London Holdings LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	94.500	MMLIC		
.0000			46-3880526				Farringdon London Holdings LLC	DE	NIA	C.M. Life Insurance Company	Ownership	5.500	MMLIC		
.0000			20-4819358				Johnston Groves LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	57.200	MMLIC		
.0000			81-5360103				Landmark Manchester Holdings LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				MM Island Member LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	49.000	MMLIC		
.0000			83-0881588				NoHo West Venture LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	95.000	MMLIC		
.0000			04-1590850				PACO France Logistics LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				PACO France Logistics 2 LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			04-1590850				PACO France Logistics 3 LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			82-3393166				Portland 400 Sixth Manager LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	95.000	MMLIC		
.0000							Salomon Brothers Commercial Mortgage Trust 2001-MM	DE	NIA	Barings Real Estate Advisers LLC	Influence		MMLIC		
.0000			27-2977720				Sawgrass Village Shopping Center LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	84.200	MMLIC		
.0000			27-2977720				Sawgrass Village Shopping Center LLC	DE	NIA	C.M. Life Insurance Company	Ownership	15.800	MMLIC		
.0000			04-1590850				Spain Avalon Holding LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			81-5273574				Three PW Office Holding LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	95.000	MMLIC		
.0000			35-2484550				Twenty Two Liberty LLC	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	59.200	MMLIC		
.0000			35-2484550				Twenty Two Liberty LLC	MA	NIA	C.M. Life Insurance Company	Ownership	5.900	MMLIC		
.0000			45-4606547				UK LIW Manager LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	1.000	MMLIC		
.0000			45-4606547				UK LIW Member LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	99.000	MMLIC		
.0000			82-3250684				Unna, Dortmund Holding LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			82-3281588				Via Ceresio Milan LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		

52.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			45-5401109				Washington Gateway Apartments Venture LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	92.000	MMLIC		
.0000			45-5401109				Washington Gateway Apartments Venture LLC	DE	NIA	C.M. Life Insurance Company	Ownership	4.800	MMLIC		
.0000			47-1993493				Waterloo London Holdings LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			46-3122029				WeHo Domain LLC	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	77.400	MMLIC		
.0000			46-3122029				WeHo Domain LLC	DE	NIA	C.M. Life Insurance Company	Ownership	12.600	MMLIC		
.0000			20-5481477				Ygnatio Valley Funding	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	90.000	MMLIC		
.0000			45-3168892				MassMutual Barings Dynamic Allocation Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			51-0529328		0000927972	OQ	MassMutual Premier Main Street Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	16.100	MMLIC		
.0000			26-3229251		0000927972	OQ	MassMutual Premier Strategic Emerging Markets Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	2.300	MMLIC		
.0000			04-3277550		0000927972	OQ	MassMutual Premier Value Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			14-1980900		0000916053	OQ	MassMutual Select Diversified International Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			01-0821120		0000916053	OQ	MassMutual Select Diversified Value Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	1.600	MMLIC		
.0000			04-3512593		0000916053	OQ	MassMutual Select Fundamental Growth Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			04-3513019		0000916053	OQ	MassMutual Select Large Cap Value Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			42-1710935		0000916053	OQ	MassMutual Select Mid-Cap Value Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	17.200	MMLIC		
.0000			02-0769954		0000916053	OQ	MassMutual Select Small Capital Value Equity Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			04-3584140		0000916053	OQ	MassMutual Select Small Company Value Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	10.500	MMLIC		
.0000			82-3347422		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2005 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	10.700	MMLIC		
.0000			82-3355639		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2010 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3382389		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2015 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3396442		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2020 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3417420		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2025 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3430358		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2030 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3439837		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2035 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3451779		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2040 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3472295		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2045 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3481715		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2050 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3502011		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2055 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			82-3525148		0000916053	OQ	MassMutual Select T. Rowe Price Retirement 2060 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			82-3533944		0000916053	OQ	MassMutual Select T. Rowe Price Retirement Balanced Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			46-4257056				MML Series International Equity Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			47-3517233				MML Series II Asset Momentum Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			47-3529636				MML Series II Dynamic Bond Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			47-3544629				MML Series II Equity Rotation Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	95.000	MMLIC		
.0000			47-3559064				MML Series II Special Situations Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	97.300	MMLIC		
.0000			27-1933828		0000916053	OQ	MassMutual RetireSMART 2015 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	100.000	MMLIC		
.0000			27-1933389		0000916053	OQ	MassMutual RetireSMART 2035 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	72.100	MMLIC		
.0000			27-1932769		0000916053	OQ	MassMutual RetireSMART 2045 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	65.300	MMLIC		
.0000			46-3289207		0000916053	OQ	MassMutual RetireSMART 2055 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	16.400	MMLIC		
.0000			47-5326235		0000916053	OQ	MassMutual RetireSMART 2060 Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	79.600	MMLIC		
.0000			45-1618155		0000916053	OQ	MassMutual RetireSMART Conservative Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			45-1618222		0000916053	OQ	MassMutual RetireSMART Growth Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			45-1618262		0000916053	OQ	MassMutual RetireSMART Moderate Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			45-1618046		0000916053	OQ	MassMutual RetireSMART Moderate Growth Fund	MA	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			81-5311583				OFI Pictet Global Environmental Solution Fund	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			93-6305075				Oppenheimer Developing Markets Fund	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000							Oppenheimer Developing Markets Equity UCITS	IRL	NIA	Massachusetts Mutual Life Insurance Company	Ownership	77.800	MMLIC		
.0000							Oppenheimer Developing Markets Equity UCITS	IRL	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000							Oppenheimer Emerging Markets Innovators UCITS	IRL	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000							Oppenheimer Emerging Markets Local Debt UCITS	IRL	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			34-407400H				Oppenheimer Emerging Markets Revenue ETF	IRL	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			46-2984739				Oppenheimer Emerging Markets Ultra Dividend Revenue ETF	IRL	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2237734				Oppenheimer ESG Revenue ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			81-3492794				Oppenheimer Global Equity UCITS	IRL	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			81-3480754				Oppenheimer Global ESG Revenue ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			83-1689208				Oppenheimer Global ILS Fund LP	NY	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			46-1604428		0001562689	OQ	Oppenheimer Global Real Estate Fund	DE	NIA	Massachusetts Mutual Life Insurance Company	Ownership	0.000	MMLIC		
.0000			47-3676235				Oppenheimer Global Multi-Asset Growth Fund	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			81-5010075				Oppenheimer Global Revenue ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 1A - DETAIL OF INSURANCE HOLDING COMPANY SYSTEM

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Group Code	Group Name	NAIC Company Code	ID Number	Federal RSSD	CIK	Name of Securities Exchange if Publicly Traded (U.S. or International)	Names of Parent, Subsidiaries Or Affiliates	Domiciliary Location	Relationship to Reporting Entity	Directly Controlled by (Name of Entity/Person)	Type of Control (Ownership, Board, Management, Attorney-in-Fact, Influence, Other)	If Control is Ownership Provide Percentage	Ultimate Controlling Entity(ies)/Person(s)	Is an SCA Filing Required? (Y/N)	*
.0000			82-2693880				Oppenheimer Global Value Equity UCITS	IRL	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			81-4969331				Oppenheimer Global Unconstrained Bond Fund	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2271542				Oppenheimer International Revenue ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-3462739				Oppenheimer International Ultra Dividend Revenue ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2794856				Oppenheimer Preferred Securities & Income Fund	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2716323				Oppenheimer Russell 2000 Dynamic Multifactor ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2759921				Oppenheimer Russell 1000 Momentum Factor ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2701797				Oppenheimer Russell 1000 Value Factor ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2740997				Oppenheimer Russell 1000 Low Volatility Factor ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2732571				Oppenheimer Russell 1000 Size Factor ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2768498				Oppenheimer Russell 1000 Quality Factor ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2768498				Oppenheimer Russell 1000 Yield Factor ETF	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		
.0000			82-2222426				Oppenheimer SteelPath MLP & Energy Infrastructure Fund	DE	NIA	OppenheimerFunds, Inc.	Management		MMLIC		

Asterisk	Explanation
1	Massachusetts Mutual Life Insurance Company owns 6.09% of the affiliated debt of Jefferies Finance LLC
2	Debt investors own 6.7% and includes only Great Lakes III, L.P.
3	Debt investors own 9.6% and includes only Babson Capital Loan Strategies Fund, L.P.
4	Debt investors own 5.9% and includes only Great Lakes III, L.P.
5	Debt investors own 7.5% and includes only Great Lakes III, L.P.

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 2 - SUMMARY OF INSURER'S TRANSACTIONS WITH ANY AFFILIATES

1	2	3	4	5	6	7	8	9	10	11	12	13
NAIC Company Code	ID Number	Names of Insurers and Parent, Subsidiaries or Affiliates	Shareholder Dividends	Capital Contributions	Purchases, Sales or Exchanges of Loans, Securities, Real Estate, Mortgage Loans or Other Investments	Income/ (Disbursements) Incurred in Connection with Guarantees or Undertakings for the Benefit of any Affiliate(s)	Management Agreements and Service Contracts	Income/ (Disbursements) Incurred Under Reinsurance Agreements	*	Any Other Material Activity Not in the Ordinary Course of the Insurer's Business	Totals	Reinsurance Recoverable/ (Payable) on Losses and/or Reserve Credit Taken/(Liability)
65935	04-1590850	Massachusetts Mutual Life Insurance Company (MMLIC)	916,308,240	1,081,021,918	(236,795,000)						1,760,535,158	(32,735,718)
93432	06-1041383	C.M. Life Insurance Company	554,219	13,675,125							14,229,344	28,237,757
70416	43-0581430	MML Bay State Life Insurance Company										4,497,961
	80-0875475	Barings Finance LLC			236,795,000						236,795,000	
		EM Opportunities LLC		175,677,879							175,677,879	
	83-0881588	NoHo West Venture LLC		74,192,704							74,192,704	
	35-2531693	Cornerstone Permanent Mortgage Fund III		70,265,210							70,265,210	
		Ten Fan Pier Boulevard LLC		56,469,242							56,469,242	
	61-1750537	Cornerstone Permanent Mortgage Fund II		46,977,496							46,977,496	
		Spain Avalon Holding LLC		45,079,597							45,079,597	
	82-3867745	Barings Global Special Situations Credit 3										
				43,214,990							43,214,990	
	36-4868350	Barings Asset-Based Income Fund (US) LP		41,005,241							41,005,241	
	82-3867745	Barings Global Real Assets Fund LP		39,301,391							39,301,391	
		PACO France Logistics 2 LLC		32,718,579							32,718,579	
		MM Mortgage Lending LLC		31,483,096							31,483,096	
	95-4207717	Cornerstone California Mortgage Fund I LLC										
				28,711,429							28,711,429	
	82-2783393	Danville Riverwalk Venture, LLC		26,550,613							26,550,613	
	95-4207717	Cornerstone California Mortgage Fund III LLC										
				19,746,124							19,746,124	
	81-2244465	Chassis Acquisition Holding LLC		18,000,000							18,000,000	
	81-0841854	Barings CLO Investment Partners LP		16,112,065							16,112,065	
	82-3307907	Cornbrook PRS Holdings LLC		15,373,125							15,373,125	
	95-4207717	Cornerstone California Mortgage Fund II LLC										
				14,704,737							14,704,737	
		EIP Holdings I LLC		14,482,759							14,482,759	
		Aland Royalty Holdings LP		13,702,220							13,702,220	
	04-1590850	MM Island Member LLC		13,220,127							13,220,127	
	81-5360103	Landmark Manchester Holdings LLC		11,169,441							11,169,441	
	98-1332384	Barings Real Estate Credit Strategies VII LP										
				11,031,144							11,031,144	
	38-4010344	Barings North American Private Loan Fund LP										
				9,916,974							9,916,974	
	82-1563809	CCB Montford Park LLC		9,558,524							9,558,524	
	04-1590850	MML Private Equity Fund Investor LLC		9,505,142							9,505,142	
		PACO France Logistics LLC		9,293,105							9,293,105	
	04-1590850	MM Copper Hill Road LLC		8,644,391							8,644,391	
	61-1793735	Cornerstone Permanent Mortgage Fund IV		6,438,185							6,438,185	
	47-1993493	Waterloo London Holdings LLC		3,202,256							3,202,256	
	46-5432619	Cornerstone Real Estate Fund X LP		2,329,524							2,329,524	
	82-3281588	Via Ceresio Milan LLC		1,412,300							1,412,300	
	81-5273574	Three PW Office Holding LLC		1,268,424							1,268,424	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 2 - SUMMARY OF INSURER'S TRANSACTIONS WITH ANY AFFILIATES

1	2	3	4	5	6	7	8	9	10	11	12	13
NAIC Company Code	ID Number	Names of Insurers and Parent, Subsidiaries or Affiliates	Shareholder Dividends	Capital Contributions	Purchases, Sales or Exchanges of Loans, Securities, Real Estate, Mortgage Loans or Other Investments	Income/ (Disbursements) Incurred in Connection with Guarantees or Undertakings for the Benefit of any Affiliate(s)	Management Agreements and Service Contracts	Income/ (Disbursements) Incurred Under Reinsurance Agreements	*	Any Other Material Activity Not in the Ordinary Course of the Insurer's Business	Totals	Reinsurance Recoverable/ (Payable) on Losses and/or Reserve Credit Taken/(Liability)
	82-2285211	Calgary Railway Holding LLC		917,028							917,028	
	04-1590850	Berkshire Way LLC		500,000							500,000	
		Tamiami Citrus, LLC		470,820							470,820	
		Braemar Energy Ventures I, L.P.		284,722							284,722	
	56-2630592	Cornerstone Fort Pierce Development LLC		250,921							250,921	
	46-3123110	Sweet Tree Holdings 1, LLC		114,983							114,983	
		PACO France Logistics 3 LLC		420							420	
	04-3584140	MassMutual Select Small Company Value Fund	(1)								(1)	
	51-0529328	MassMutual Premier Main Street Fund	(936)								(936)	
	47-3055009	Milestone Acquisition Holding, LLC		(1,602)							(1,602)	
	14-1980900	MassMutual Select Diversified International Fund	(1,763)								(1,763)	
		Barings US Loan Fund Series		(2,073)							(2,073)	
	42-1710935	MassMutual Select Mid-Cap Value Fund	(3,962)								(3,962)	
	04-3277550	MassMutual Premier Value Fund	(4,138)								(4,138)	
	04-3513019	MassMutual Select Large Cap Value Fund	(6,035)								(6,035)	
		Alchemy Copyrights LLC		(7,683)							(7,683)	
	47-3559064	MML Series II Special Situations Fund	(37,933)								(37,933)	
	46-3289207	MassMutual RetireSMART 2055 Fund	(66,021)								(66,021)	
		Baring Investment Series LLC		(111,299)							(111,299)	
	06-1041383	CML Mezzanine Investor L, LLC		(164,959)							(164,959)	
	45-4606547	UK LIW Manager LLC		(167,863)							(167,863)	
	20-2970495	US Pharmaceutical Holdings II, LLC		(254,281)							(254,281)	
		Barings European Core Property Fund SCSp		(308,045)							(308,045)	
	81-3000420	MM Debt Participations LLC		(325,000)							(325,000)	
		Barings Affordable Housing Mortgage Fund I LLC		(355,980)							(355,980)	
	46-5491311	Seattle 1415 Hotel Owner LLC		(367,108)							(367,108)	
		OPPENHEIMERFUNDS ICAV	(404,612)								(404,612)	
	81-4258759	CRA Aircraft Holding LLC		(480,000)							(480,000)	
	06-1041383	CML Mezzanine Investor, LLC		(547,449)							(547,449)	
	80-0691253	Gateway Mezzanine Partners I, L.P.		(641,178)							(641,178)	
	71-1018134	Great Lakes II LLC		(849,114)							(849,114)	
	20-4819358	Johnston Groves LLC		(954,687)							(954,687)	
	04-1590850	Cambridge Hotel LLC		(1,274,263)							(1,274,263)	
	27-0547156	Cornerstone Real Estate Fund VIII LP		(1,334,200)							(1,334,200)	
	46-2344300	Intermodal Holdings II LLC		(1,415,700)							(1,415,700)	
	20-2970495	Waterford Development Associates		(1,428,898)							(1,428,898)	
	04-1590850	MML Mezzanine Investor L, LLC		(1,484,635)							(1,484,635)	
	06-1041383	CML Mezzanine Investor III, LLC		(1,495,397)							(1,495,397)	
	35-2484550	Twenty Two Liberty LLC		(1,950,000)							(1,950,000)	
	81-4382111	Budapester Strasse LLC		(1,960,595)							(1,960,595)	
	30-0336246	Tower Square Capital Partners II, L.P.		(2,009,574)							(2,009,574)	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 2 - SUMMARY OF INSURER'S TRANSACTIONS WITH ANY AFFILIATES

1	2	3	4	5	6	7	8	9	10	11	12	13
NAIC Company Code	ID Number	Names of Insurers and Parent, Subsidiaries or Affiliates	Shareholder Dividends	Capital Contributions	Purchases, Sales or Exchanges of Loans, Securities, Real Estate, Mortgage Loans or Other Investments	Income/ (Disbursements) Incurred in Connection with Guarantees or Undertakings for the Benefit of any Affiliate(s)	Management Agreements and Service Contracts	Income/ (Disbursements) Incurred Under Reinsurance Agreements	*	Any Other Material Activity Not in the Ordinary Course of the Insurer's Business	Totals	Reinsurance Recoverable/ (Payable) on Losses and/or Reserve Credit Taken/(Liability)
	16-1720387	Alexandria Towers Investors LLC		(2,396,120)							(2,396,120)	
	45-3751572	Cornerstone Enhanced Mortgage Fund I LP		(2,446,842)							(2,446,842)	
	06-1563535	The MassMutual Trust Company, FSB	(2,500,000)								(2,500,000)	
	45-5401109	Washington Gateway Apartments Venture LLC										
				(2,519,912)							(2,519,912)	
		CML Special Situations Investor LLC		(2,607,906)							(2,607,906)	
	47-3517233	MML Series II Asset Momentum Fund	(2,967,885)								(2,967,885)	
	46-3122029	WeHo Domain LLC		(2,974,321)							(2,974,321)	
	27-2977720	Sawgrass Village Shopping Center LLC		(3,324,993)							(3,324,993)	
	04-1590850	Wood Creek Venture Fund LLC		(3,328,920)							(3,328,920)	
	47-3544629	MML Series II Equity Rotation Fund	(3,360,067)								(3,360,067)	
	81-1552222	Willowood Lakeside Master LLC		(4,210,080)							(4,210,080)	
	46-5437441	Barings/LAZ Parking Fund LP		(4,747,473)							(4,747,473)	
	04-1590850	MML Mezzanine Investor, LLC		(4,927,037)							(4,927,037)	
	46-3880526	Farringdon London Holdings LLC		(4,941,880)							(4,941,880)	
	45-2632610	Cornerstone Permanent Mortgage Fund		(5,333,156)							(5,333,156)	
	98-1332384	Barings Global Energy Infrastructure Fund I LP		(5,706,215)							(5,706,215)	
	82-1512591	KKR MM Project Vector LP		(5,881,034)							(5,881,034)	
	26-4441097	WP-SC, LLC		(6,948,079)							(6,948,079)	
		OPPENHEIMER GLOBAL REAL ESTATE FD	(7,509,106)								(7,509,106)	
	32-0160190	Tower Square Capital Partners II-A, L.P.		(7,645,202)							(7,645,202)	
	04-1590850	MML Mezzanine Investor II, LLC		(8,788,710)							(8,788,710)	
	26-1611591	Fallon Cornerstone One MPD LLC		(10,126,558)							(10,126,558)	
	37-1708623	Great Lakes III, L.P.		(13,058,261)							(13,058,261)	
	04-1590850	MML Mezzanine Investor III, LLC		(13,458,577)							(13,458,577)	
	90-0991195	Gateway Mezzanine Partners II LP		(16,367,279)							(16,367,279)	
	45-4606547	UK LIW Member LLC		(16,487,566)							(16,487,566)	
	20-0348173	CREA/PPC Venture LLC		(23,437,699)							(23,437,699)	
	36-4770946	Cornerstone High Yield Venture LP		(23,537,615)							(23,537,615)	
		Barings Real Estate European Value Add I SCSp		(25,069,876)							(25,069,876)	
		Baring Investment Series LLC		(25,418,967)							(25,418,967)	
		Barings Global Private Loan Fund		(26,096,288)							(26,096,288)	
	20-3347091	Fan Pier Development LLC		(29,353,835)							(29,353,835)	
	41-2280129	Tower Square Capital Partners IIIA, L.P.		(39,412,688)							(39,412,688)	
	27-0105644	Jefferies Finance LLC		(40,000,000)							(40,000,000)	
		MML Special Situations Investor LLC		(40,857,186)							(40,857,186)	
	82-3393166	Portland 400 Sixth Manager LLC		(41,559,148)							(41,559,148)	
	81-4065378	Remington L & W Holdings LLC		(46,461,590)							(46,461,590)	
	47-5322979	Timberland Forest Holding LLC		(55,556,468)							(55,556,468)	
	82-3250684	Unna, Dortmund Holding LLC		(63,551,310)							(63,551,310)	
		MML Investment Advisers, LLC		(71,684,844)							(71,684,844)	
	36-4823011	50 Liberty LLC		(94,880,035)							(94,880,035)	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE Y

PART 2 - SUMMARY OF INSURER'S TRANSACTIONS WITH ANY AFFILIATES

1	2	3	4	5	6	7	8	9	10	11	12	13
NAIC Company Code	ID Number	Names of Insurers and Parent, Subsidiaries or Affiliates	Shareholder Dividends	Capital Contributions	Purchases, Sales or Exchanges of Loans, Securities, Real Estate, Mortgage Loans or Other Investments	Income/ (Disbursements) Incurred in Connection with Guarantees or Undertakings for the Benefit of any Affiliate(s)	Management Agreements and Service Contracts	Income/ (Disbursements) Incurred Under Reinsurance Agreements	*	Any Other Material Activity Not in the Ordinary Course of the Insurer's Business	Totals	Reinsurance Recoverable/ (Payable) on Losses and/or Reserve Credit Taken/(Liability)
	04-1590850	Insurance Road LLC		(177,754,582)							(177,754,582)	
	04-2854319	MassMutual Holding LLC	(900,000,000)	343,488,638							(556,511,362)	
	04-3313782	MassMutual International LLC		(1,368,732,774)							(1,368,732,774)	
9999999	Control Totals								XXX			

SUPPLEMENTAL EXHIBITS AND SCHEDULES INTERROGATORIES

The following supplemental reports are required to be filed as part of your statement filing unless specifically waived by the domiciliary state. However, in the event that your domiciliary state waives the filing requirement, your response of WAIVED to the specific interrogatory will be accepted in lieu of filing a "NONE" report and a bar code will be printed below. If the supplement is required of your company but is not being filed for whatever reason enter SEE EXPLANATION and provide an explanation following the interrogatory questions.

	Responses
MARCH FILING	
1. Will the Supplemental Compensation Exhibit be filed with the state of domicile by March 1?	YES
2. Will the confidential Risk-based Capital Report be filed with the NAIC by March 1?	YES
3. Will the confidential Risk-based Capital Report be filed with the state of domicile, if required, by March 1?	YES
4. Will an actuarial opinion be filed by March 1?	YES
APRIL FILING	
5. Will Management's Discussion and Analysis be filed by April 1?	YES
6. Will the Life, Health & Annuity Guaranty Association Model Act Assessment Base Reconciliation Exhibit be filed with the state of domicile and the NAIC by April 1?	YES
7. Will the Adjustments to the Life, Health & Annuity Guaranty Association Model Act Assessment Base Reconciliation Exhibit (if required) be filed with the state of domicile and the NAIC by April 1?	YES
8. Will the Supplemental Investment Risks Interrogatories be filed by April 1?	YES
JUNE FILING	
9. Will an audited financial report be filed by June 1?	YES
10. Will Accountant's Letter of Qualifications be filed with the state of domicile and electronically with the NAIC by June 1?	YES
AUGUST FILING	
11. Will the regulator-only (non-public) Communication of Internal Control Related Matters Noted in Audit be filed with the state of domicile and electronically with the NAIC (as a regulator-only non-public document) by August 1?	YES

The following supplemental reports are required to be filed as part of your annual statement filing **if your company is engaged in the type of business covered by the supplement. However, in the event that your company does not transact the type of business for which the special report must be filed, your response of NO to the specific interrogatory will be accepted in lieu of filing a "NONE" report and a bar code will be printed below.** If the supplement is required of your company but is not being filed for whatever reason enter SEE EXPLANATION and provide an explanation following the interrogatory questions.

MARCH FILING	
12. Will Schedule SIS (Stockholder Information Supplement) be filed with the state of domicile by March 1?	NO
13. Will the Medicare Supplement Insurance Experience Exhibit be filed with the state of domicile and the NAIC by March 1?	YES
14. Will the Trusteed Surplus Statement be filed with the state of domicile and the NAIC by March 1?	NO
15. Will the actuarial opinion on participating and non-participating policies as required in Interrogatories 1 and 2 to Exhibit 5 be filed with the state of domicile and electronically with the NAIC by March 1?	YES
16. Will the actuarial opinion on non-guaranteed elements as required in interrogatory #3 to Exhibit 5 be filed with the state of domicile and electronically with the NAIC by March 1?	YES
17. Will the actuarial opinion on X-Factors be filed with the state of domicile and electronically with the NAIC by March 1?	YES
18. Will the actuarial opinion on Separate Accounts Funding Guaranteed Minimum Benefit be filed with the state of domicile and electronically with the NAIC by March 1?	NO
19. Will the actuarial opinion on Synthetic Guaranteed Investment Contracts be filed with the state of domicile and electronically with the NAIC by March 1?	NO
20. Will the Reasonableness of Assumptions Certification required by Actuarial Guideline XXXV be filed with the state of domicile and electronically with the NAIC by March 1?	NO
21. Will the Reasonableness and Consistency of Assumptions Certification required by Actuarial Guideline XXXV be filed with the state of domicile and electronically with the NAIC by March 1?	NO
22. Will the Reasonableness of Assumptions Certification for Implied Guaranteed Rate Method required by Actuarial Guideline XXXVI be filed with the state of domicile and electronically with the NAIC by March 1?	NO
23. Will the Reasonableness and Consistency of Assumptions Certification required by Actuarial Guideline XXXVI (Updated Average Market Value) be filed with the state of domicile and electronically with the NAIC by March 1?	NO
24. Will the Reasonableness and Consistency of Assumptions Certification required by Actuarial Guideline XXXVI (Updated Market Value) be filed with the state of domicile and electronically with the NAIC by March 1?	NO
25. Will the C-3 RBC Certifications required under C-3 Phase I be filed with the state of domicile and electronically with the NAIC by March 1?	YES
26. Will the C-3 RBC Certifications required under C-3 Phase II be filed with the state of domicile and electronically with the NAIC by March 1?	YES

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
SUPPLEMENTAL EXHIBITS AND SCHEDULES INTERROGATORIES

- 27. Will the Actuarial Certifications Related to Annuity Nonforfeiture Ongoing Compliance for Equity Indexed Annuities be filed with the state of domicile and electronically with the NAIC by March 1? NO
- 28. Will the actuarial opinion required by the Modified Guaranteed Annuity Model Regulation be filed with the state of domicile and electronically with the NAIC by March 1? NO
- 29. Will the Actuarial Certifications Related to Hedging required by Actuarial Guideline XLIII be filed with the state of domicile and electronically with the NAIC by March 1? YES
- 30. Will the Financial Officer Certification Related to Clearly Defined Hedging Strategy required by Actuarial Guideline XLIII be filed with the state of domicile and electronically with the NAIC by March 1? YES
- 31. Will the Management Certification That the Valuation Reflects Management's Intent required by Actuarial Guideline XLIII be filed with the state of domicile and electronically with the NAIC by March 1? YES
- 32. Will the Actuarial Certification Related to the Reserves required by Actuarial Guideline XLIII be filed with the state of domicile and electronically with the NAIC by March 1? YES
- 33. Will the Actuarial Certification regarding the use of 2001 Preferred Class Tables required by the Model Regulation Permitting the Recognition of Preferred Mortality Tables for Use in Determining Minimum Reserve Liabilities be filed with the state of domicile and electronically with the NAIC by March 1? YES
- 34. Will the Worker's Compensation Carve-Out Supplement be filed by March 1? NO
- 35. Will Supplemental Schedule O be filed with the state of domicile and the NAIC by March 1? YES
- 36. Will the Medicare Part D Coverage Supplement be filed with the state of domicile and the NAIC by March 1? NO
- 37. Will an approval from the reporting entity's state of domicile for relief related to the five-year rotation requirement for lead audit partner be filed electronically with the NAIC by March 1? NO
- 38. Will an approval from the reporting entity's state of domicile for relief related to the one-year cooling off period for independent CPA be filed electronically with the NAIC by March 1? NO
- 39. Will an approval from the reporting entity's state of domicile for relief related to the Requirements for Audit Committees be filed electronically with the NAIC by March 1? NO
- 40. Will the VM-20 Reserves Supplement be filed with the state of domicile and the NAIC by March 1? YES

APRIL FILING

- 41. Will the confidential Regulatory Asset Adequacy Issues Summary (RAAIS) required by the Valuation Manual be filed with the state of domicile by April 1? YES
- 42. Will the Long-Term Care Experience Reporting Forms be filed with the state of domicile and the NAIC by April 1? YES
- 43. Will the Interest-Sensitive Life Insurance Products Report Forms be filed with the state of domicile and the NAIC by April 1? YES
- 44. Will the Credit Insurance Experience Exhibit be filed with the state of domicile and the NAIC by April 1? NO
- 45. Will the Accident and Health Policy Experience Exhibit be filed by April 1? YES
- 46. Will the Analysis of Annuity Operations by Lines of Business be filed with the state of domicile and the NAIC by April 1? YES
- 47. Will the Analysis of Increase in Annuity Reserves During the Year be filed with the state of domicile and the NAIC by April 1? YES
- 48. Will the Supplemental Health Care Exhibit (Parts 1, 2 and 3) be filed with the state of domicile and the NAIC by April 1? NO
- 49. Will the regulator only (non-public) Supplemental Health Care Exhibit's Expense Allocation Report be filed with the state of domicile and the NAIC by April 1? NO
- 50. Will the confidential Actuarial Memorandum required by Actuarial Guideline XXXVIII 8D be filed with the state of domicile by April 30? NO
- 51. Will the Supplemental Term and Universal Life Insurance Reinsurance Exhibit be filed with the state of domicile and the NAIC by April 1? YES
- 52. Will the Variable Annuities Supplement be filed with the state of domicile and the NAIC by April 1? YES

AUGUST FILING

- 53. Will Management's Report of Internal Control Over Financial Reporting be filed with the state of domicile by August 1? YES

Explanations:

- 12. As a mutual company this is not required.
- 14. Not required.
- 18. Not required.
- 19. Not required.
- 20. Not required.
- 21. Not required.
- 22. Not required.
- 23. Not required.
- 24. Not required.
- 27. Not required.
- 28. Not required.
- 34. This line of business is not written by the company.
- 36. This line of business is not written by the company.
- 37. Not required.
- 38. Not required.
- 39. Not required.
- 44. This line of business is not written by the company.
- 48. Not required.
- 49. No expenses were allocated to these lines of business.
- 50. Not required.

Bar Codes:

- 12. SIS Stockholder Information Supplement [Document Identifier 420]



- 14. Trusteed Surplus Statement [Document Identifier 490]



- 18. Actuarial Opinion on Separate Accounts Funding Guaranteed Minimum Benefit [Document Identifier 443]



- 19. Actuarial Opinion on Synthetic Guaranteed Investment Contracts [Document Identifier 444]



- 20. Reasonableness of Assumptions Certification required by Actuarial Guideline XXXV [Document Identifier 445]



- 21. Reasonableness and Consistency of Assumptions Certification required by Actuarial Guideline XXXV [Document Identifier 446]



- 22. Reasonableness of Assumptions Certification for Implied Guaranteed Rate Method required by Actuarial Guideline XXXVI [Document Identifier 447]



- 23. Reasonableness and Consistency of Assumptions Certification required by Actuarial Guideline XXXVI [Document Identifier 448]



- 24. Reasonableness and Consistency of Assumptions Certification required by Actuarial Guideline XXXVI (Updated Market Value) [Document Identifier 449]



SUPPLEMENTAL EXHIBITS AND SCHEDULES INTERROGATORIES

27. Actuarial Certifications Related to Annuity Nonforfeiture Ongoing Compliance for Equity Indexed Annuities [Document Identifier 452]



28. Modified Guaranteed Annuity Model Regulation [Document Identifier 453]



34. Workers' Compensation Carve-Out Supplement [Document Identifier 495]



36. Medicare Part D Coverage Supplement [Document Identifier 365]



37. Relief from the five-year rotation requirement for lead audit partner [Document Identifier 224]



38. Relief from the one-year cooling off period for independent CPA [Document Identifier 225]



39. Relief from the Requirements for Audit Committees [Document Identifier 226]



44. Credit Insurance Experience Exhibit [Document Identifier 230]



48. Supplemental Health Care Exhibit (Parts 1, 2 and 3) [Document Identifier 216]



49. Supplemental Health Care Exhibit's Expense Allocation Report [Document Identifier 217]



50. Actuarial Memorandum Required by Actuarial Guideline XXXVIII 8D [Document Identifier 435]



OVERFLOW PAGE FOR WRITE-INS

Additional Write-ins for Assets Line 25

	Current Year			Prior Year
	1 Assets	2 Nonadmitted Assets	3 Net Admitted Assets (Cols. 1 - 2)	4 Net Admitted Assets
2504. Cash advances to agents	245,007,193	245,007,193		
2505. Fully refundable deposits, prepayments and miscellaneous assets	259,995,039	237,903,620	22,091,419	282,561,096
2506. Pension plan asset	727,193,552	727,193,552		
2507. Disallowed interest maintenance reserve	562,688,196	562,688,196		
2508. Intangible assets	91,769,205	91,769,205		
2509. Commissions and expenses on long-term lease	50,722,875	50,722,875		
2510. Bills receivable	438,399	438,399		
2597. Summary of remaining write-ins for Line 25 from overflow page	1,937,814,459	1,915,723,040	22,091,419	282,561,096

Additional Write-ins for Liabilities Line 25

	1 Current Year	2 Prior Year
2504. Funds awaiting escheat and other miscellaneous	78,826,501	70,738,008
2505. Deferred income	15,151,127	15,798,281
2597. Summary of remaining write-ins for Line 25 from overflow page	93,977,628	86,536,289

Additional Write-ins for Summary of Operations Line 8.3

	1 Current Year	2 Prior Year
08.304. Change in corporate owned life insurance	10,599,028	138,163,589
08.305. Miscellaneous	15,704,499	16,360,786
08.397. Summary of remaining write-ins for Line 8.3 from overflow page	26,303,527	154,524,375

Additional Write-ins for Summary of Operations Line 27

	1 Current Year	2 Prior Year
2704. Market value adjustment transfer	(2,947,226)	(15,508,211)
2705. Ceded income on funds withheld	200,347,847	
2706. Miscellaneous charges to operations	15,536,263	9,219,616
2797. Summary of remaining write-ins for Line 27 from overflow page	212,936,884	(6,288,595)

Additional Write-ins for Exhibit of Nonadmitted Assets Line 25

	1 Current Year Total Nonadmitted Assets	2 Prior Year Total Nonadmitted Assets	3 Change in Total Nonadmitted Assets (Col. 2 - Col. 1)
2504. Fully refundable deposits, prepayments and miscellaneous assets	237,903,620	85,546,127	(152,357,493)
2505. Intangible assets	91,769,205	105,157,019	13,387,814
2506. Commissions and expenses on long-term lease	50,722,875	32,636,693	(18,086,182)
2507. Bills receivable	438,399	406,189	(32,210)
2508. Employee insurance plan advances	14,113	32,787	18,674
2597. Summary of remaining write-ins for Line 25 from overflow page	380,848,212	223,778,815	(157,069,397)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
OVERFLOW PAGE FOR WRITE-INS

Additional Write-ins for Analysis of Operations Line 8.3

	1 Total	2 Industrial Life	Ordinary			6 Credit Life (Group and Individual)	Group		Accident and Health			12 Aggregate of All Other Lines of Business
			3 Life Insurance	4 Individual Annuities	5 Supplementary Contracts		7 Life Insurance (a)	8 Annuities	9 Group	10 Credit (Group and Individual)	11 Other	
08.304. Change in corporate owned life insurance	10,599,028		4,958,735	2,300,348	74,451		1,534,657	1,384,877	1		345,959	
08.305. Miscellaneous	15,704,499		6,023,273	305,440	337,008		1,348,592	10,895,029	(1,415)		(3,203,428)	
08.397. Summary of remaining write-ins for Line 8.3 from overflow page	26,303,527		10,982,008	2,605,788	411,459		2,883,249	12,279,906	(1,414)		(2,857,469)	

Additional Write-ins for Analysis of Operations Line 27

	1 Total	2 Industrial Life	Ordinary			6 Credit Life (Group and Individual)	Group		Accident and Health			12 Aggregate of All Other Lines of Business
			3 Life Insurance	4 Individual Annuities	5 Supplementary Contracts		7 Life Insurance (a)	8 Annuities	9 Group	10 Credit (Group and Individual)	11 Other	
2704. Market value adjustment transfer	(2,947,226)							(2,947,226)				
2705. Ceded income on funds withheld	200,347,847		624,980				199,722,867					
2706. Miscellaneous	15,536,263		14,049,232	1,133,906	27,286		680,992	(742,057)	211		386,693	
2797. Summary of remaining write-ins for Line 27 from overflow page	212,936,884		14,674,212	1,133,906	27,286		200,403,859	(3,689,283)	211		386,693	

SUMMARY INVESTMENT SCHEDULE

Investment Categories	Gross Investment Holdings		Admitted Assets as Reported in the Annual Statement			
	1 Amount	2 Percentage	3 Amount	4 Securities Lending Reinvested Collateral Amount	5 Total (Col. 3 + 4) Amount	6 Percentage
1. Bonds:						
1.1 U.S. treasury securities	5,683,207,391	3.319	5,683,207,391		5,683,207,391	3.319
1.2 U.S. government agency obligations (excluding mortgage-backed securities):						
1.21 Issued by U.S. government agencies	45,831,792	0.027	45,831,792		45,831,792	0.027
1.22 Issued by U.S. government sponsored agencies	1,785,490,623	1.043	1,785,490,623		1,785,490,623	1.043
1.3 Non-U.S. government (including Canada, excluding mortgaged-backed securities)	1,486,656,955	0.868	1,486,656,955		1,486,656,955	0.868
1.4 Securities issued by states, territories, and possessions and political subdivisions in the U.S. :						
1.41 States, territories and possessions general obligations	613,530,542	0.358	613,530,542		613,530,542	0.358
1.42 Political subdivisions of states, territories and possessions and political subdivisions general obligations	547,158,041	0.320	547,158,041		547,158,041	0.320
1.43 Revenue and assessment obligations	3,501,589,400	2.045	3,501,589,400		3,501,589,400	2.045
1.44 Industrial development and similar obligations		0.000				0.000
1.5 Mortgage-backed securities (includes residential and commercial MBS):						
1.51 Pass-through securities:						
1.511 Issued or guaranteed by GNMA	73,974,079	0.043	73,974,079		73,974,079	0.043
1.512 Issued or guaranteed by FNMA and FHLMC	322,133,413	0.188	322,133,413		322,133,413	0.188
1.513 All other	9,206,519	0.005	9,206,519		9,206,519	0.005
1.52 CMOs and REMICs:						
1.521 Issued or guaranteed by GNMA, FNMA, FHLMC or VA	369,126,906	0.216	369,126,906		369,126,906	0.216
1.522 Issued by non-U.S. Government issuers and collateralized by mortgage-backed securities issued or guaranteed by agencies shown in Line 1.521		0.000				0.000
1.523 All other	2,860,232,634	1.670	2,860,232,634		2,860,232,634	1.670
2. Other debt and other fixed income securities (excluding short-term):						
2.1 Unaffiliated domestic securities (includes credit tenant loans and hybrid securities)	41,093,754,276	23.998	41,093,754,276		41,093,754,276	23.998
2.2 Unaffiliated non-U.S. securities (including Canada)	31,161,213,436	18.198	31,161,213,436		31,161,213,436	18.198
2.3 Affiliated securities	7,526,017,124	4.395	7,526,017,124		7,526,017,124	4.395
3. Equity interests:						
3.1 Investments in mutual funds	313,450,294	0.183	313,450,294		313,450,294	0.183
3.2 Preferred stocks:						
3.21 Affiliated		0.000				0.000
3.22 Unaffiliated	744,092,065	0.435	744,092,065		744,092,065	0.435
3.3 Publicly traded equity securities (excluding preferred stocks):						
3.31 Affiliated		0.000				0.000
3.32 Unaffiliated	193,850,249	0.113	193,850,249		193,850,249	0.113
3.4 Other equity securities:						
3.41 Affiliated	12,013,931,427	7.016	12,013,931,427		12,013,931,427	7.016
3.42 Unaffiliated	306,143,181	0.179	306,143,181		306,143,181	0.179
3.5 Other equity interests including tangible personal property under lease:						
3.51 Affiliated		0.000				0.000
3.52 Unaffiliated		0.000				0.000
4. Mortgage loans:						
4.1 Construction and land development	740,821,868	0.433	740,821,868		740,821,868	0.433
4.2 Agricultural		0.000				0.000
4.3 Single family residential properties	1,266,688,652	0.740	1,266,688,652		1,266,688,652	0.740
4.4 Multifamily residential properties		0.000				0.000
4.5 Commercial loans	21,546,327,608	12.583	21,546,327,608		21,546,327,608	12.583
4.6 Mezzanine real estate loans	69,969,403	0.041	69,969,403		69,969,403	0.041
5. Real estate investments:						
5.1 Property occupied by company	195,523,677	0.114	195,523,677		195,523,677	0.114
5.2 Property held for production of income (including \$0 of property acquired in satisfaction of debt)	272,704,758	0.159	272,704,758		272,704,758	0.159
5.3 Property held for sale (including \$0 property acquired in satisfaction of debt)	20,078,118	0.012	20,078,118		20,078,118	0.012
6. Contract loans	13,873,247,826	8.102	13,873,247,826		13,873,247,826	8.102
7. Derivatives	8,741,308,632	5.105	8,741,308,632		8,741,308,632	5.105
8. Receivables for securities	941,182,855	0.550	941,182,855		941,182,855	0.550
9. Securities Lending (Line 10, Asset Page reinvested collateral)		0.000		XXX	XXX	XXX
10. Cash, cash equivalents and short-term investments	4,318,003,746	2.522	4,318,003,746		4,318,003,746	2.522
11. Other invested assets	8,599,455,873	5.022	8,599,455,873		8,599,455,873	5.022
12. Total invested assets	171,235,903,363	100.000	171,235,903,363		171,235,903,363	100.000

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE A - VERIFICATION BETWEEN YEARS

Real Estate

1.	Book/adjusted carrying value, December 31 of prior year	857,001,296
2.	Cost of acquired:	
2.1	Actual cost at time of acquisition (Part 2, Column 6)	57,671,139
2.2	Additional investment made after acquisition (Part 2, Column 9)	152,570,868
		210,242,007
3.	Current year change in encumbrances:	
3.1	Totals, Part 1, Column 13	(386,999,179)
3.2	Totals, Part 3, Column 11	(386,999,179)
4.	Total gain (loss) on disposals, Part 3, Column 18	170,141,914
5.	Deduct amounts received on disposals, Part 3, Column 15	275,807,610
6.	Total foreign exchange change in book/adjusted carrying value:	
6.1	Totals, Part 1, Column 15	
6.2	Totals, Part 3, Column 13	
7.	Deduct current year's other than temporary impairment recognized:	
7.1	Totals, Part 1, Column 12	
7.2	Totals, Part 3, Column 10	2,208,173
		2,208,173
8.	Deduct current year's depreciation:	
8.1	Totals, Part 1, Column 11	84,063,702
8.2	Totals, Part 3, Column 9	84,063,702
9.	Book/adjusted carrying value at the end of current period (Lines 1+2+3+4-5+6-7-8)	488,306,553
10.	Deduct total nonadmitted amounts	
11.	Statement value at end of current period (Line 9 minus Line 10)	488,306,553

SCHEDULE B - VERIFICATION BETWEEN YEARS

Mortgage Loans

1.	Book value/recorded investment excluding accrued interest, December 31 of prior year	22,579,846,619
2.	Cost of acquired:	
2.1	Actual cost at time of acquisition (Part 2, Column 7)	3,229,830,662
2.2	Additional investment made after acquisition (Part 2, Column 8)	468,570,683
		3,698,401,345
3.	Capitalized deferred interest and other:	
3.1	Totals, Part 1, Column 12	30,794,182
3.2	Totals, Part 3, Column 11	8,222,868
		39,017,050
4.	Accrual of discount	4,764,878
5.	Unrealized valuation increase (decrease):	
5.1	Totals, Part 1, Column 9	
5.2	Totals, Part 3, Column 8	
6.	Total gain (loss) on disposals, Part 3, Column 18	(1,214,062)
7.	Deduct amounts received on disposals, Part 3, Column 15	2,574,815,338
8.	Deduct amortization of premium and mortgage interest points and commitment fees	(2,704,349)
9.	Total foreign exchange change in book value/recorded investment excluding accrued interest:	
9.1	Totals, Part 1, Column 13	(127,115,913)
9.2	Totals, Part 3, Column 13	2,218,601
		(124,897,312)
10.	Deduct current year's other than temporary impairment recognized:	
10.1	Totals, Part 1, Column 11	
10.2	Totals, Part 3, Column 10	
11.	Book value/recorded investment excluding accrued interest at end of current period (Lines 1+2+3+4+5+6-7-8+9-10)	23,623,807,529
12.	Total valuation allowance	
13.	Subtotal (Line 11 plus 12)	23,623,807,529
14.	Deduct total nonadmitted amounts	
15.	Statement value of mortgages owned at end of current period (Line 13 minus Line 14)	23,623,807,529

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - VERIFICATION BETWEEN YEARS

Other Long-Term Invested Assets

1.	Book/adjusted carrying value, December 31 of prior year	7,722,717,021
2.	Cost of acquired:	
2.1	Actual cost at time of acquisition (Part 2, Column 8)	1,841,133,266
2.2	Additional investment made after acquisition (Part 2, Column 9)	2,020,426,390
		3,861,559,656
3.	Capitalized deferred interest and other:	
3.1	Totals, Part 1, Column 16	
3.2	Totals, Part 3, Column 12	
4.	Accrual of discount	
5.	Unrealized valuation increase (decrease):	
5.1	Totals, Part 1, Column 13	445,047,118
5.2	Totals, Part 3, Column 9	207,869,678
		652,916,795
6.	Total gain (loss) on disposals, Part 3, Column 19	5,542,359
7.	Deduct amounts received on disposals, Part 3, Column 16	3,509,181,095
8.	Deduct amortization of premium and depreciation	567,724
9.	Total foreign exchange change in book/adjusted carrying value:	
9.1	Totals, Part 1, Column 17	(65,538,793)
9.2	Totals, Part 3, Column 14	4,905,265
		(60,633,528)
10.	Deduct current year's other than temporary impairment recognized:	
10.1	Totals, Part 1, Column 15	28,922,557
10.2	Totals, Part 3, Column 11	108,900
		29,031,457
11.	Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5+6-7-8+9-10)	8,643,322,029
12.	Deduct total nonadmitted amounts	43,866,156
13.	Statement value at end of current period (Line 11 minus Line 12)	8,599,455,873

SCHEDULE D - VERIFICATION BETWEEN YEARS

Bonds and Stocks

1.	Book/adjusted carrying value, December 31 of prior year	106,837,837,246
2.	Cost of bonds and stocks acquired, Part 3, Column 7	28,933,190,148
3.	Accrual of discount	277,958,552
4.	Unrealized valuation increase (decrease):	
4.1	Part 1, Column 12	(14,724,907)
4.2	Part 2, Section 1, Column 15	(109,830)
4.3	Part 2, Section 2, Column 13	(22,670,706)
4.4	Part 4, Column 11	1,477,633,326
		1,440,127,883
5.	Total gain (loss) on disposals, Part 4, Column 19	72,777,254
6.	Deduction consideration for bonds and stocks disposed of, Part 4, Column 7	24,859,504,095
7.	Deduct amortization of premium	134,973,241
8.	Total foreign exchange change in book/adjusted carrying value:	
8.1	Part 1, Column 15	(556,013,801)
8.2	Part 2, Section 1, Column 19	(6,846,400)
8.3	Part 2, Section 2, Column 16	(7,641,483)
8.4	Part 4, Column 15	(3,155,787)
		(573,657,471)
9.	Deduct current year's other than temporary impairment recognized:	
9.1	Part 1, Column 14	60,671,325
9.2	Part 2, Section 1, Column 17	
9.3	Part 2, Section 2, Column 14	4,511,274
9.4	Part 4, Column 13	1,326,928,798
		1,392,111,397
10.	Total investment income recognized as a result of prepayment penalties and/or acceleration fees, Notes 5R, Line 5R(2)	48,945,474
11.	Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9+10)	110,650,590,353
12.	Deduct total nonadmitted amounts	
13.	Statement value at end of current period (Line 11 minus Line 12)	110,650,590,353

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - SUMMARY BY COUNTRY

Long-Term Bonds and Stocks OWNED December 31 of Current Year

Description		1 Book/Adjusted Carrying Value	2 Fair Value	3 Actual Cost	4 Par Value of Bonds
BONDS					
Governments (Including all obligations guaranteed by governments)	1. United States	5,854,233,643	6,193,428,881	5,315,447,402	6,348,360,553
	2. Canada	97,197,755	112,259,434	102,099,232	91,204,000
	3. Other Countries	1,389,459,200	1,368,722,853	1,402,671,270	1,350,421,477
	4. Totals	7,340,890,598	7,674,411,168	6,820,217,904	7,789,986,030
U.S. States, Territories and Possessions (Direct and guaranteed)	5. Totals	613,530,542	646,576,739	629,453,151	594,043,545
U.S. Political Subdivisions of States, Territories and Possessions (Direct and guaranteed)	6. Totals	547,158,041	571,557,369	553,343,454	559,543,611
U.S. Special Revenue and Special Assessment Obligations and all Non- Guaranteed Obligations of Agencies and Authorities of Governments and their Political Subdivisions	7. Totals	5,927,223,718	6,420,868,455	5,261,802,692	6,892,559,488
Industrial and Miscellaneous, SVO Identified Funds, Bank Loans and Hybrid Securities (unaffiliated)	8. United States	43,557,370,917	43,313,875,622	43,596,319,228	43,359,326,168
	9. Canada	2,223,008,315	2,192,511,629	2,265,158,351	2,188,760,574
	10. Other Countries	29,343,923,876	29,031,139,209	29,881,062,535	29,446,263,149
	11. Totals	75,124,303,108	74,537,526,460	75,742,540,114	74,994,349,891
Parent, Subsidiaries and Affiliates	12. Totals	7,526,017,124	7,570,106,838	7,151,152,065	7,994,689,837
	13. Total Bonds	97,079,123,131	97,421,047,029	96,158,509,380	98,825,172,402
PREFERRED STOCKS					
Industrial and Miscellaneous (unaffiliated)	14. United States	618,945,777	594,015,081	618,769,206	
	15. Canada				
	16. Other Countries	125,146,288	139,760,762	155,242,288	
	17. Totals	744,092,065	733,775,843	774,011,494	
Parent, Subsidiaries and Affiliates	18. Totals				
	19. Total Preferred Stocks	744,092,065	733,775,843	774,011,494	
COMMON STOCKS					
Industrial and Miscellaneous (unaffiliated)	20. United States	460,123,350	460,123,350	438,988,406	
	21. Canada	18,890,634	18,890,634	13,569,737	
	22. Other Countries	334,429,742	334,429,742	290,441,669	
	23. Totals	813,443,726	813,443,726	742,999,812	
Parent, Subsidiaries and Affiliates	24. Totals	12,013,931,427	12,013,931,427	4,132,864,094	
	25. Total Common Stocks	12,827,375,153	12,827,375,153	4,875,863,906	
	26. Total Stocks	13,571,467,218	13,561,150,996	5,649,875,400	
	27. Total Bonds and Stocks	110,650,590,349	110,982,198,025	101,808,384,780	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1A - SECTION 1

Quality and Maturity Distribution of All Bonds Owned December 31, at Book/Adjusted Carrying Values by Major Types of Issues and NAIC Designations

NAIC Designation	1 1 Year or Less	2 Over 1 Year Through 5 Years	3 Over 5 Years Through 10 Years	4 Over 10 Years Through 20 Years	5 Over 20 Years	6 No Maturity Date	7 Total Current Year	8 Col. 7 as a % of Line 11.7	9 Total from Col. 7 Prior Year	10 % From Col. 8 Prior Year	11 Total Publicly Traded	12 Total Privately Placed (a)
1. U.S. Governments												
1.1 NAIC 1	1,552,202,600	1,758,329,555	961,038,020	107,214,158	1,475,449,288	XXX	5,854,233,621	5.8	7,148,657,604	7.6	5,854,233,621	
1.2 NAIC 2						XXX						
1.3 NAIC 3						XXX						
1.4 NAIC 4						XXX						
1.5 NAIC 5						XXX						
1.6 NAIC 6						XXX						
1.7 Totals	1,552,202,600	1,758,329,555	961,038,020	107,214,158	1,475,449,288	XXX	5,854,233,621	5.8	7,148,657,604	7.6	5,854,233,621	
2. All Other Governments												
2.1 NAIC 1	19,750,526	57,537,529	121,530,603	55,318,174	32,601,290	XXX	286,738,122	0.3	211,639,111	0.2	154,521,560	132,216,562
2.2 NAIC 2	749,806	124,541,389	389,048,609	150,268,473	342,020,665	XXX	1,006,628,942	1.0	516,098,337	0.6	703,077,747	303,551,195
2.3 NAIC 3		40,571,446	38,234,351	9,849,031	18,196,836	XXX	106,851,664	0.1	266,864,734	0.3	36,850,640	70,001,024
2.4 NAIC 4	15,192,825	22,638,108	26,167,841	5,632,554	16,806,900	XXX	86,438,228	0.1	165,301,177	0.2	9,344,712	77,093,516
2.5 NAIC 5						XXX			20,733,110	0.0		
2.6 NAIC 6						XXX						
2.7 Totals	35,693,157	245,288,472	574,981,404	221,068,232	409,625,691	XXX	1,486,656,956	1.5	1,180,636,469	1.3	903,794,659	582,862,297
3. U.S. States, Territories and Possessions etc., Guaranteed												
3.1 NAIC 1	7,623,889	203,834,143	130,067,618	140,112,238	99,496,317	XXX	581,134,205	0.6	560,340,327	0.6	581,134,205	
3.2 NAIC 2		2,506,084	12,356,754	17,310,998		XXX	32,173,836	0.0	32,272,489	0.0	32,173,836	
3.3 NAIC 3						XXX						
3.4 NAIC 4						XXX						
3.5 NAIC 5						XXX						
3.6 NAIC 6					222,500	XXX	222,500	0.0	3,126,250	0.0	222,500	
3.7 Totals	7,623,889	206,340,227	142,424,372	157,423,236	99,718,817	XXX	613,530,541	0.6	595,739,066	0.6	613,530,541	
4. U.S. Political Subdivisions of States, Territories and Possessions, Guaranteed												
4.1 NAIC 1	39,162,791	116,447,576	149,782,608	170,391,809	66,135,110	XXX	541,919,894	0.5	527,149,790	0.6	541,919,894	
4.2 NAIC 2	7,500	509,000	3,216,146	993,000	512,500	XXX	5,238,146	0.0	3,747,061	0.0	5,238,146	
4.3 NAIC 3						XXX			1,000,000	0.0		
4.4 NAIC 4						XXX						
4.5 NAIC 5						XXX						
4.6 NAIC 6						XXX						
4.7 Totals	39,170,291	116,956,576	152,998,754	171,384,809	66,647,610	XXX	547,158,040	0.5	531,896,851	0.6	547,158,040	
5. U.S. Special Revenue & Special Assessment Obligations, etc., Non-Guaranteed												
5.1 NAIC 1	123,213,547	1,366,695,767	1,442,883,307	2,046,512,844	546,825,344	XXX	5,526,130,809	5.5	5,483,515,555	5.9	5,522,352,691	3,778,118
5.2 NAIC 2	10,786,306	62,885,953	129,018,828	62,621,987	40,083,320	XXX	305,396,394	0.3	218,111,680	0.2	267,449,779	37,946,615
5.3 NAIC 3	1,265,250	9,687,512	10,933,682	18,390,481	9,312,455	XXX	49,589,380	0.0	55,320,636	0.1	42,559,315	7,030,065
5.4 NAIC 4	1,453,692	5,526,910	9,259,843	1,510,739	220,621	XXX	17,971,805	0.0	33,192,220	0.0	11,399,843	6,571,962
5.5 NAIC 5	1,088,034	5,050,917	8,712,609	3,588,364	10,058,354	XXX	28,498,278	0.0	15,315,305	0.0	13,886,931	14,611,347
5.6 NAIC 6	50,382				1,176,569	XXX	1,226,951	0.0	8,469,645	0.0	1,226,950	1
5.7 Totals	137,857,211	1,449,847,059	1,600,808,269	2,132,624,415	607,676,663	XXX	5,928,813,617	5.9	5,813,925,041	6.2	5,858,875,509	69,938,108

S105

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1A - SECTION 1 (Continued)

Quality and Maturity Distribution of All Bonds Owned December 31, at Book/Adjusted Carrying Values by Major Types of Issues and NAIC Designations

NAIC Designation	1 1 Year or Less	2 Over 1 Year Through 5 Years	3 Over 5 Years Through 10 Years	4 Over 10 Years Through 20 Years	5 Over 20 Years	6 No Maturity Date	7 Total Current Year	8 Col. 7 as a % of Line 11.7	9 Total from Col. 7 Prior Year	10 % From Col. 8 Prior Year	11 Total Publicly Traded	12 Total Privately Placed (a)
6. Industrial & Miscellaneous (Unaffiliated)												
6.1 NAIC 1	2,374,342,462	7,803,103,388	9,784,011,932	5,450,722,746	9,276,841,783	XXX	34,689,022,311	34.4	30,632,358,697	32.7	13,750,225,323	20,938,796,988
6.2 NAIC 2	4,089,263,661	7,470,271,250	10,866,903,613	5,423,105,768	6,852,761,660	XXX	34,702,305,952	34.4	32,789,122,225	35.0	12,192,009,172	22,510,296,780
6.3 NAIC 3	38,622,672	714,784,828	884,852,038	194,956,775	97,048,424	XXX	1,930,264,737	1.9	4,008,430,989	4.3	524,121,330	1,406,143,407
6.4 NAIC 4	47,502,769	510,475,685	273,941,922	10,230,466	19,543,260	XXX	861,694,102	0.9	2,579,850,209	2.8	440,212,895	421,481,207
6.5 NAIC 5	53,822,498	160,624,482	63,889,567	23,367,740	35,691,613	XXX	337,395,900	0.3	962,742,501	1.0	76,258,095	261,137,805
6.6 NAIC 6	9,912,213	16,540,428	5,852,701	561,317	101,762,151	XXX	134,628,810	0.1	136,770,677	0.1	7,246,731	127,382,079
6.7 Totals	6,613,466,275	16,675,800,061	21,879,451,773	11,102,944,812	16,383,648,891	XXX	72,655,311,812	72.0	71,109,275,298	75.9	26,990,073,546	45,665,238,266
7. Hybrid Securities												
7.1 NAIC 1	12,092,136	12,945,680	1,797,579	1,115,125	14,667,397	XXX	42,617,917	0.0	39,037,245	0.0	40,393,233	2,224,684
7.2 NAIC 2	20,137,780	49,426,415	65,496,960	36,946,289	18,598,369	XXX	190,605,813	0.2	171,431,188	0.2	127,352,337	63,253,476
7.3 NAIC 3		17,655,819	12,840,968	391,508	12,245,196	XXX	43,133,491	0.0	89,713,245	0.1	30,316,700	12,816,791
7.4 NAIC 4		10,300,757			543,626	XXX	10,844,383	0.0	26,333,963	0.0	796,625	10,047,758
7.5 NAIC 5					5,486,000	XXX	5,486,000	0.0				5,486,000
7.6 NAIC 6						XXX						
7.7 Totals	32,229,916	90,328,671	80,135,507	38,452,922	51,540,588	XXX	292,687,604	0.3	326,515,641	0.3	198,858,895	93,828,709
8. Parent, Subsidiaries and Affiliates												
8.1 NAIC 1	80,191,265	4,260,046,091	430,827,421	16,598,323	6,449,522	XXX	4,794,112,622	4.8	4,440,223,672	4.7	714,775	4,793,397,847
8.2 NAIC 2	314,961,101	1,524,932,794	43,136,824	12,299,359	162,215,655	XXX	2,057,545,733	2.0	1,942,166,552	2.1	110,027,153	1,947,518,580
8.3 NAIC 3		364,395,000	2,947,925		(2,290)	XXX	367,340,635	0.4	403,103,213	0.4		367,340,635
8.4 NAIC 4		49,000,000	531,395			XXX	49,531,395	0.0	379,275	0.0		49,531,395
8.5 NAIC 5	1,152,164	3,934,635	10,973,486	29,400,591	2,743,259	XXX	48,204,135	0.0			18,562,013	29,642,122
8.6 NAIC 6	39,363,743	18,093,132	51,753,667	1,840,111	98,231,948	XXX	209,282,601	0.2	238,220,407	0.3	50,897	209,231,704
8.7 Totals	435,668,273	6,220,401,652	540,170,718	60,138,384	269,638,094	XXX	7,526,017,121	7.5	7,024,093,119	7.5	129,354,838	7,396,662,283
9. SVO Identified Funds												
9.1 NAIC 1	XXX	XXX	XXX	XXX	XXX							
9.2 NAIC 2	XXX	XXX	XXX	XXX	XXX	10,043,280	10,043,280	0.0			10,043,280	
9.3 NAIC 3	XXX	XXX	XXX	XXX	XXX							
9.4 NAIC 4	XXX	XXX	XXX	XXX	XXX							
9.5 NAIC 5	XXX	XXX	XXX	XXX	XXX							
9.6 NAIC 6	XXX	XXX	XXX	XXX	XXX							
9.7 Totals	XXX	XXX	XXX	XXX	XXX	10,043,280	10,043,280	0.0			10,043,280	
10. Bank Loans												
10.1 NAIC 1	43,865,498	978,603,027	484,855,586	447,326,417	156,387,321	XXX	2,111,037,849	2.1	XXX	XXX		2,111,037,849
10.2 NAIC 2		108,152,949	532,063,427	690,470,573	81,298,657	XXX	1,411,985,606	1.4	XXX	XXX		1,411,985,606
10.3 NAIC 3		161,865,270	141,154,177	51,427,458		XXX	354,446,905	0.4	XXX	XXX		354,446,905
10.4 NAIC 4	1,811,086	372,943,130	599,592,097	3,736,719		XXX	978,083,032	1.0	XXX	XXX		978,083,032
10.5 NAIC 5		516,054,422	473,677,025	20,663,668	66,396,845	XXX	1,076,791,960	1.1	XXX	XXX		1,076,791,960
10.6 NAIC 6		3,150,548		1,777,778	327,512	XXX	5,255,838	0.0	XXX	XXX		5,255,838
10.7 Totals	45,676,584	2,140,769,346	2,231,342,312	1,215,402,613	304,410,335	XXX	5,937,601,190	5.9	XXX	XXX		5,937,601,190

9015

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1A - SECTION 1 (Continued)

Quality and Maturity Distribution of All Bonds Owned December 31, at Book/Adjusted Carrying Values by Major Types of Issues and NAIC Designations

NAIC Designation	1 1 Year or Less	2 Over 1 Year Through 5 Years	3 Over 5 Years Through 10 Years	4 Over 10 Years Through 20 Years	5 Over 20 Years	6 No Maturity Date	7 Total Current Year	8 Col. 7 as a % of Line 11.7	9 Total from Col. 7 Prior Year	10 % From Col. 8 Prior Year	11 Total Publicly Traded	12 Total Privately Placed (a)
11. Total Bonds Current Year												
11.1 NAIC 1	(d) 4,252,444,714	16,557,542,756	13,506,794,674	8,435,311,834	11,674,853,372		54,426,947,350	54.0	XXX	XXX	26,445,495,302	27,981,452,048
11.2 NAIC 2	(d) 4,435,906,154	9,343,225,834	12,041,241,161	6,394,016,447	7,497,490,826	10,043,280	39,721,923,702	39.4	XXX	XXX	13,447,371,450	26,274,552,252
11.3 NAIC 3	(d) 39,887,922	1,308,959,875	1,090,963,141	275,015,253	136,800,621		2,851,626,812	2.8	XXX	XXX	633,847,985	2,217,778,827
11.4 NAIC 4	(d) 65,960,372	970,884,590	909,493,098	21,110,478	37,114,407		2,004,562,945	2.0	XXX	XXX	461,754,075	1,542,808,870
11.5 NAIC 5	(d) 56,062,696	685,664,456	557,252,687	77,020,363	120,376,071		(c) 1,496,376,273	1.5	XXX	XXX	108,707,039	1,387,669,234
11.6 NAIC 6	(d) 49,326,338	37,784,108	57,606,368	4,179,206	201,720,680		(c) 350,616,700	0.3	XXX	XXX	8,747,078	341,869,622
11.7 Totals	8,899,588,196	28,904,061,619	28,163,351,129	15,206,653,581	19,668,355,977	10,043,280	100,852,053,78	100.0			41,105,922,929	59,746,130,853
11.8 Line 11.7 as a % of Col. 7	8.8	28.7	27.9	15.1	19.5	0.0	(b) 2 100.0	XXX	XXX	XXX	40.8	59.2
12. Total Bonds Prior Year												
12.1 NAIC 1	2,081,291,614	17,793,401,187	12,015,460,706	7,545,773,462	9,606,995,032		XXX	XXX	49,042,922,001	52.3	24,778,396,115	24,264,525,886
12.2 NAIC 2	3,683,630,981	8,405,910,455	11,812,694,659	5,166,856,268	6,603,857,229		XXX	XXX	35,672,949,532	38.1	12,390,980,082	23,281,969,450
12.3 NAIC 3	805,750,237	1,950,212,742	1,409,822,710	385,077,368	273,569,760		XXX	XXX	4,824,432,817	5.1	1,278,092,224	3,546,340,593
12.4 NAIC 4	134,239,471	1,464,331,755	1,079,025,730	85,183,606	42,276,282		XXX	XXX	2,805,056,844	3.0	912,625,729	1,892,431,115
12.5 NAIC 5	141,535,376	465,424,934	226,331,574	61,832,713	103,666,319		XXX	XXX	(c) 998,790,916	1.1	152,173,863	846,617,053
12.6 NAIC 6	42,121,047	65,605,167	48,907,258	10,417,545	219,535,962		XXX	XXX	(c) 386,586,979	0.4	39,468,299	347,118,680
12.7 Totals	6,888,568,726	30,144,886,240	26,592,242,637	13,255,140,902	16,849,900,584		XXX	XXX	(b) 93,730,739,089	100.0	39,551,736,312	54,179,002,777
12.8 Line 12.7 as a % of Col. 9	7.3	32.2	28.4	14.1	18.0		XXX	XXX	100.0	XXX	42.2	57.8
13. Total Publicly Traded Bonds												
13.1 NAIC 1	2,188,658,801	5,738,531,046	5,104,837,341	4,725,418,998	8,688,049,114		26,445,495,300	26.2	24,778,396,115	26.4	26,445,495,300	XXX
13.2 NAIC 2	531,367,052	2,621,660,241	2,523,819,631	2,032,215,304	5,728,265,913	10,043,280	13,447,371,421	13.3	12,390,980,082	13.2	13,447,371,421	XXX
13.3 NAIC 3	6,310,947	212,244,846	184,407,265	115,136,652	115,748,276		633,847,986	0.6	1,278,092,224	1.4	633,847,986	XXX
13.4 NAIC 4	19,096,780	261,261,181	145,213,921	9,088,057	27,094,136		461,754,075	0.5	912,625,729	1.0	461,754,075	XXX
13.5 NAIC 5	13,585,679	3,548,842	13,467,945	35,916,636	42,187,936		108,707,038	0.1	152,173,863	0.2	108,707,038	XXX
13.6 NAIC 6	50,361	495,107	15,914	1,754	8,183,942		8,747,078	0.0	39,468,299	0.0	8,747,078	XXX
13.7 Totals	2,759,069,620	8,837,741,263	7,971,762,017	6,917,777,401	14,609,529,317	10,043,280	41,105,922,898	40.8	39,551,736,312	42.2	41,105,922,898	XXX
13.8 Line 13.7 as a % of Col. 7	6.7	21.5	19.4	16.8	35.5	0.0	100.0	XXX	XXX	XXX	100.0	XXX
13.9 Line 13.7 as a % of Line 11.7, Col. 7, Section 11	2.7	8.8	7.9	6.9	14.5	0.0	40.8	XXX	XXX	XXX	40.8	XXX
14. Total Privately Placed Bonds												
14.1 NAIC 1	2,063,785,913	10,819,011,710	8,401,957,333	3,709,892,836	2,986,804,258		27,981,452,050	27.7	24,264,525,886	25.9	XXX	27,981,452,050
14.2 NAIC 2	3,904,539,102	6,721,565,593	9,517,421,530	4,361,801,143	1,769,224,913		26,274,552,281	26.1	23,281,969,450	24.8	XXX	26,274,552,281
14.3 NAIC 3	33,576,975	1,096,715,029	906,555,876	159,878,601	21,052,345		2,217,778,826	2.2	3,546,340,593	3.8	XXX	2,217,778,826
14.4 NAIC 4	46,863,592	709,623,409	764,279,177	12,022,421	10,020,271		1,542,808,870	1.5	1,892,431,115	2.0	XXX	1,542,808,870
14.5 NAIC 5	42,477,017	682,115,614	543,784,742	41,103,727	78,188,135		1,387,669,235	1.4	846,617,053	0.9	XXX	1,387,669,235
14.6 NAIC 6	49,275,977	37,289,001	57,590,454	4,177,452	193,536,738		341,869,622	0.3	347,118,680	0.4	XXX	341,869,622
14.7 Totals	6,140,518,576	20,066,320,356	20,191,589,112	8,288,876,180	5,058,826,660		59,746,130,884	59.2	54,179,002,777	57.8	XXX	59,746,130,884
14.8 Line 14.7 as a % of Col. 7	10.3	33.6	33.8	13.9	8.5		100.0	XXX	XXX	XXX	XXX	100.0
14.9 Line 14.7 as a % of Line 11.7, Col. 7, Section 11	6.1	19.9	20.0	8.2	5.0		59.2	XXX	XXX	XXX	XXX	59.2

(a) Includes \$ 17,223,510,521 freely tradable under SEC Rule 144 or qualified for resale under SEC Rule 144A.
 (b) Includes \$ 3,587,566,853 current year of bonds with Z designations, \$ 4,527,543,881 prior year of bonds with Z designations and \$ prior year of bonds with Z* designations. The letter "Z" means the NAIC designation was not assigned by the Securities Valuation Office (SVO) at the date of the statement. "Z*" means the SVO could not evaluate the obligation because valuation procedures for the security class are under regulatory review.
 (c) Includes \$ 669,688,836 current year of bonds with 5GI designations, \$ 231,812,445 prior year of bonds with 5* or 5GI designations and \$ 288,289,588 current year, \$ 277,840,062 prior year of bonds with 6* designations. "5GI" means the NAIC designation was assigned by the (SVO) in reliance on the insurer's certification that the issuer is current in all principal and interest payments. "6*" means the NAIC designation was assigned by the SVO due to inadequate certification of principal and interest payments.
 (d) Includes the following amount of short-term and cash equivalent bonds by NAIC designation: NAIC 1 \$ 840,556,726 ; NAIC 2 \$ 2,932,373,923 ; NAIC 3 \$; NAIC 4 \$; NAIC 5 \$; NAIC 6 \$

S107

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1A - SECTION 2

Maturity Distribution of All Bonds Owned December 31, at Book/Adjusted Carrying Values by Major Type and Subtype of Issues

Distribution by Type	1 1 Year or Less	2 Over 1 Year Through 5 Years	3 Over 5 Years Through 10 Years	4 Over 10 Years Through 20 Years	5 Over 20 Years	6 No Maturity Date	7 Total Current Year	8 Col. 7 as a % of Line 11.7	9 Total from Col. 7 Prior Year	10 % From Col. 8 Prior Year	11 Total Publicly Traded	12 Total Privately Placed
1. U.S. Governments												
1.1 Issuer Obligations	1,530,610,241	1,704,429,089	930,910,039	87,841,162	1,473,570,774	XXX	5,727,361,305	5.7	6,999,964,024	7.5	5,727,361,305	
1.2 Residential Mortgage-Backed Securities	13,967,469	37,727,881	22,152,797	12,928,449	887,923	XXX	87,664,519	0.1	106,858,857	0.1	87,664,519	
1.3 Commercial Mortgage-Backed Securities	278,586	1,039,216	1,151,979	2,218,657	897,239	XXX	5,585,677	0.0	4,788,651	0.0	5,585,677	
1.4 Other Loan-Backed and Structured Securities	7,346,304	15,133,370	6,823,206	4,225,891	93,352	XXX	33,622,123	0.0	37,046,072	0.0	33,622,123	
1.5 Totals	1,552,202,600	1,758,329,556	961,038,021	107,214,159	1,475,449,288	XXX	5,854,233,624	5.8	7,148,657,604	7.6	5,854,233,624	
2. All Other Governments												
2.1 Issuer Obligations	35,693,156	245,288,472	574,981,403	221,068,232	409,625,691	XXX	1,486,656,954	1.5	1,180,636,469	1.3	903,794,660	582,862,294
2.2 Residential Mortgage-Backed Securities						XXX						
2.3 Commercial Mortgage-Backed Securities						XXX						
2.4 Other Loan-Backed and Structured Securities						XXX						
2.5 Totals	35,693,156	245,288,472	574,981,403	221,068,232	409,625,691	XXX	1,486,656,954	1.5	1,180,636,469	1.3	903,794,660	582,862,294
3. U.S. States, Territories and Possessions, Guaranteed												
3.1 Issuer Obligations	7,623,889	206,340,227	142,424,373	157,423,235	99,718,817	XXX	613,530,541	0.6	595,739,066	0.6	613,530,541	
3.2 Residential Mortgage-Backed Securities						XXX						
3.3 Commercial Mortgage-Backed Securities						XXX						
3.4 Other Loan-Backed and Structured Securities						XXX						
3.5 Totals	7,623,889	206,340,227	142,424,373	157,423,235	99,718,817	XXX	613,530,541	0.6	595,739,066	0.6	613,530,541	
4. U.S. Political Subdivisions of States, Territories and Possessions, Guaranteed												
4.1 Issuer Obligations	39,170,291	116,956,576	152,998,754	171,384,809	66,647,610	XXX	547,158,040	0.5	531,896,851	0.6	547,158,040	
4.2 Residential Mortgage-Backed Securities						XXX						
4.3 Commercial Mortgage-Backed Securities						XXX						
4.4 Other Loan-Backed and Structured Securities						XXX						
4.5 Totals	39,170,291	116,956,576	152,998,754	171,384,809	66,647,610	XXX	547,158,040	0.5	531,896,851	0.6	547,158,040	
5. U.S. Special Revenue & Special Assessment Obligations etc., Non-Guaranteed												
5.1 Issuer Obligations	53,286,436	1,196,141,103	1,432,916,074	1,998,586,814	575,335,959	XXX	5,256,266,386	5.2	5,096,859,182	5.4	5,186,979,963	69,286,423
5.2 Residential Mortgage-Backed Securities	82,251,843	223,297,525	167,892,195	134,037,601	32,340,704	XXX	639,819,868	0.6	679,111,828	0.7	639,168,184	651,684
5.3 Commercial Mortgage-Backed Securities	2,318,931	30,408,431				XXX	32,727,362	0.0	37,954,031	0.0	32,727,362	
5.4 Other Loan-Backed and Structured Securities						XXX						
5.5 Totals	137,857,210	1,449,847,059	1,600,808,269	2,132,624,415	607,676,663	XXX	5,928,813,616	5.9	5,813,925,041	6.2	5,858,875,509	69,938,107
6. Industrial and Miscellaneous												
6.1 Issuer Obligations	5,550,449,133	11,352,312,700	16,561,863,335	9,851,535,141	16,126,801,846	XXX	59,442,962,155	58.9	58,610,134,643	62.5	24,207,948,175	35,235,013,980
6.2 Residential Mortgage-Backed Securities	137,313,127	370,087,843	200,531,045	192,883,092	71,416,097	XXX	972,231,204	1.0	676,306,145	0.7	867,195,558	105,035,646
6.3 Commercial Mortgage-Backed Securities	50,931,681	1,017,017,427	814,039,590	15,115,546	(61)	XXX	1,897,104,183	1.9	1,676,028,629	1.8	1,115,512,041	781,592,142
6.4 Other Loan-Backed and Structured Securities	874,772,334	3,936,382,092	4,303,017,803	1,043,411,032	185,430,965	XXX	10,343,014,226	10.3	10,146,805,884	10.8	799,417,772	9,543,596,454
6.5 Totals	6,613,466,275	16,675,800,062	21,879,451,773	11,102,944,811	16,383,648,847	XXX	72,655,311,768	72.0	71,109,275,301	75.9	26,990,073,546	45,665,238,222
7. Hybrid Securities												
7.1 Issuer Obligations	32,229,915	90,328,670	80,135,507	38,452,922	51,540,586	XXX	292,687,600	0.3	326,515,642	0.3	198,858,895	93,828,705
7.2 Residential Mortgage-Backed Securities						XXX						
7.3 Commercial Mortgage-Backed Securities						XXX						
7.4 Other Loan-Backed and Structured Securities						XXX						
7.5 Totals	32,229,915	90,328,670	80,135,507	38,452,922	51,540,586	XXX	292,687,600	0.3	326,515,642	0.3	198,858,895	93,828,705
8. Parent, Subsidiaries and Affiliates												
8.1 Issuer Obligations	349,194,397	5,963,152,100	107,522,606		43,367,175	XXX	6,463,236,278	6.4	6,311,377,797	6.7		6,463,236,278
8.2 Residential Mortgage-Backed Securities	156,078	464,869	205,296	80,573		XXX	906,816	0.0	2,421,246	0.0	741,928	164,888
8.3 Commercial Mortgage-Backed Securities	4,511,467	22,486,845	216,444,154	42,922,458	9,190,491	XXX	295,555,415	0.3	99,079,245	0.1	18,562,013	276,993,402
8.4 Other Loan-Backed and Structured Securities	81,806,331	234,297,838	215,998,664	17,135,353	217,080,428	XXX	766,318,614	0.8	611,214,833	0.7	110,050,897	656,267,717
8.5 Totals	435,668,273	6,220,401,652	540,170,720	60,138,384	269,638,094	XXX	7,526,017,123	7.5	7,024,093,121	7.5	129,354,838	7,396,662,285

8010

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1A - SECTION 2 (Continued)

Maturity Distribution of All Bonds Owned December 31, at Book/Adjusted Carrying Values by Major Type and Subtype of Issues

Distribution by Type	1 1 Year or Less	2 Over 1 Year Through 5 Years	3 Over 5 Years Through 10 Years	4 Over 10 Years Through 20 Years	5 Over 20 Years	6 No Maturity Date	7 Total Current Year	8 Col. 7 as a % of Line 11.7	9 Total from Col. 7 Prior Year	10 % From Col. 8 Prior Year	11 Total Publicly Traded	12 Total Privately Placed
9. SVO Identified Funds												
9.1 Exchange Traded Funds Identified by the SVO	XXX	XXX	XXX	XXX	XXX	10,043,280	10,043,280	0.0			10,043,280	
9.2 Bond Mutual Funds Identified by the SVO	XXX	XXX	XXX	XXX	XXX							
9.3 Totals	XXX	XXX	XXX	XXX	XXX	10,043,280	10,043,280	0.0			10,043,280	
10. Bank Loans												
10.1 Bank Loans - Issued	12,720,062	49,710,301	40,149,900	54,367,287		XXX	156,947,550	0.2	XXX	XXX		156,947,550
10.2 Bank Loans - Acquired	32,956,522	2,091,059,412	2,191,192,412	1,161,035,325	304,410,335	XXX	5,780,653,639	5.7	XXX	XXX		5,780,653,639
10.3 Totals	45,676,584	2,140,769,346	2,231,342,312	1,215,402,612	304,410,335	XXX	5,937,601,189	5.9	XXX	XXX		5,937,601,189
11. Total Bonds Current Year												
11.1 Issuer Obligations	7,598,257,458	20,874,948,937	19,983,752,091	12,526,292,315	18,846,608,458	XXX	79,829,859,259	79.2	XXX	XXX	37,385,631,579	42,444,227,680
11.2 Residential Mortgage-Backed Securities	233,688,517	631,578,118	390,781,333	339,929,715	104,644,724	XXX	1,700,622,407	1.7	XXX	XXX	1,594,770,189	105,852,218
11.3 Commercial Mortgage-Backed Securities	58,040,665	1,070,951,919	1,031,635,723	60,256,661	10,087,669	XXX	2,230,972,637	2.2	XXX	XXX	1,172,387,093	1,058,585,544
11.4 Other Loan-Backed and Structured Securities	963,924,969	4,185,813,300	4,525,839,673	1,064,772,276	402,604,745	XXX	11,142,954,963	11.0	XXX	XXX	943,090,792	10,199,864,171
11.5 SVO Identified Funds	XXX	XXX	XXX	XXX	XXX	10,043,280	10,043,280	0.0	XXX	XXX	10,043,280	
11.6 Bank Loans	45,676,584	2,140,769,346	2,231,342,312	1,215,402,612	304,410,335	XXX	5,937,601,189	5.9	XXX	XXX		5,937,601,189
11.7 Totals	8,899,588,193	28,904,061,620	28,163,351,132	15,206,653,579	19,668,355,931	10,043,280	100,852,053,735	100.0	XXX	XXX	41,105,922,933	59,746,130,802
11.8 Line 11.7 as a % of Col. 7	8.8	28.7	27.9	15.1	19.5	0.0	100.0	XXX	XXX	XXX	40.8	59.2
12. Total Bonds Prior Year												
12.1 Issuer Obligations	5,690,472,581	23,333,395,798	21,765,299,387	12,330,231,693	16,533,724,215	XXX	79,653,123,674	85.0		85.0	36,300,422,355	43,352,701,319
12.2 Residential Mortgage-Backed Securities	285,506,660	617,694,075	310,446,641	216,450,459	34,600,241	XXX	1,464,698,076	1.6		1.6	1,340,295,076	124,403,000
12.3 Commercial Mortgage-Backed Securities	49,308,737	822,973,448	934,354,562	10,196,404	1,017,405	XXX	1,817,850,556	1.9		1.9	1,061,036,472	756,814,084
12.4 Other Loan-Backed and Structured Securities	863,280,750	5,370,822,921	3,582,142,047	698,262,346	280,558,725	XXX	10,795,066,789	11.5		11.5	849,982,407	9,945,084,382
12.5 SVO Identified Funds	XXX	XXX	XXX	XXX	XXX	XXX	XXX	0.0				
12.6 Bank Loans	XXX	XXX	XXX	XXX	XXX	XXX	XXX	0.0				
12.7 Totals	6,888,568,728	30,144,886,242	26,592,242,637	13,255,140,902	16,849,900,586	XXX	93,730,739,095	100.0		100.0	39,551,736,310	54,179,002,785
12.8 Line 12.7 as a % of Col. 9	7.3	32.2	28.4	14.1	18.0		XXX	XXX		XXX	42.2	57.8
13. Total Publicly Traded Bonds												
13.1 Issuer Obligations	2,429,549,377	7,468,467,067	6,570,512,638	6,427,303,202	14,489,799,295	XXX	37,385,631,579	37.1	36,300,422,355	38.7	37,385,631,579	XXX
13.2 Residential Mortgage-Backed Securities	217,127,880	587,111,801	365,762,183	322,201,814	102,566,511	XXX	1,594,770,189	1.6	1,340,295,076	1.4	1,594,770,189	XXX
13.3 Commercial Mortgage-Backed Securities	30,034,520	478,770,033	649,196,828	13,488,474	897,239	XXX	1,172,387,094	1.2	1,061,036,472	1.1	1,172,387,094	XXX
13.4 Other Loan-Backed and Structured Securities	82,357,844	303,392,362	386,290,367	154,783,942	16,266,277	XXX	943,090,792	0.9	849,982,407	0.9	943,090,792	XXX
13.5 SVO Identified Funds	XXX	XXX	XXX	XXX	XXX	10,043,280	10,043,280	0.0			10,043,280	XXX
13.6 Bank Loans						XXX						XXX
13.7 Totals	2,759,069,621	8,837,741,263	7,971,762,016	6,917,777,432	14,609,529,322	10,043,280	41,105,922,934	40.8	39,551,736,310	42.2	41,105,922,934	XXX
13.8 Line 13.7 as a % of Col. 7	6.7	21.5	19.4	16.8	35.5	0.0	100.0	XXX	XXX	XXX	100.0	XXX
13.9 Line 13.7 as a % of Line 11.7, Col. 7, Section 11	2.7	8.8	7.9	6.9	14.5	0.0	40.8	XXX	XXX	XXX	40.8	XXX
14. Total Privately Placed Bonds												
14.1 Issuer Obligations	5,168,708,081	13,406,481,870	13,413,239,453	6,098,989,113	4,356,809,163	XXX	42,444,227,680	42.1	43,352,701,319	46.3	XXX	42,444,227,680
14.2 Residential Mortgage-Backed Securities	16,560,637	44,466,317	25,019,150	17,727,901	2,078,213	XXX	105,852,218	0.1	124,403,000	0.1	XXX	105,852,218
14.3 Commercial Mortgage-Backed Securities	28,006,145	592,181,886	382,438,895	46,768,187	9,190,430	XXX	1,058,585,543	1.0	756,814,084	0.8	XXX	1,058,585,543
14.4 Other Loan-Backed and Structured Securities	881,567,125	3,882,420,938	4,139,549,306	909,988,334	386,338,468	XXX	10,199,864,171	10.1	9,945,084,382	10.6	XXX	10,199,864,171
14.5 SVO Identified Funds	XXX	XXX	XXX	XXX	XXX	XXX	XXX	0.0				XXX
14.6 Bank Loans	45,676,584	2,140,769,346	2,231,342,312	1,215,402,612	304,410,335	XXX	5,937,601,189	5.9	XXX	XXX	XXX	5,937,601,189
14.7 Totals	6,140,518,572	20,066,320,357	20,191,589,116	8,288,876,147	5,058,826,609		59,746,130,801	59.2	54,179,002,785	57.8	XXX	59,746,130,801
14.8 Line 14.7 as a % of Col. 7	10.3	33.6	33.8	13.9	8.5		100.0	XXX	XXX	XXX	XXX	100.0
14.9 Line 14.7 as a % of Line 11.7, Col. 7, Section 11	6.1	19.9	20.0	8.2	5.0		59.2	XXX	XXX	XXX	XXX	59.2

SCHEDULE DA - VERIFICATION BETWEEN YEARS

Short-Term Investments

	1	2	3	4	5
	Total	Bonds	Mortgage Loans	Other Short-term Investment Assets (a)	Investments in Parent, Subsidiaries and Affiliates
1. Book/adjusted carrying value, December 31 of prior year	508,320,258	508,320,258			
2. Cost of short-term investments acquired	2,219,939,077	2,219,939,077			
3. Accrual of discount	9,958,973	9,958,973			
4. Unrealized valuation increase (decrease)					
5. Total gain (loss) on disposals	89,026	89,026			
6. Deduct consideration received on disposals	2,290,572,883	2,290,572,883			
7. Deduct amortization of premium					
8. Total foreign exchange change in book/adjusted carrying value					
9. Deduct current year's other than temporary impairment recognized					
10. Book adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9)	447,734,452	447,734,452			
11. Deduct total nonadmitted amounts					
12. Statement value at end of current period (Line 10 minus Line 11)	447,734,452	447,734,452			

(a) Indicate the category of such assets, for example, joint ventures, transportation equipment:

SCHEDULE DB - PART A - VERIFICATION BETWEEN YEARS

Options, Caps, Floors, Collars, Swaps and Forwards

1. Book/adjusted carrying value, December 31, prior year (Line 9, prior year)	2,878,021,222
2. Cost paid/(consideration received) on additions:	
2.1 Current year paid/(consideration received) at time of acquisition, still open, Section 1, Column 12	623,600,627
2.2 Current year paid/(consideration received) at time of acquisition, terminated, Section 2, Column 14	303,332,713
	926,933,339
3. Unrealized valuation increase/(decrease):	
3.1 Section 1, Column 17	564,922,910
3.2 Section 2, Column 19	128,827,458
	693,750,368
4. Total gain (loss) on termination recognized, Section 2, Column 22	85,172,045
5. Considerations received/(paid) on terminations, Section 2, Column 15	947,662,945
6. Amortization:	
6.1 Section 1, Column 19	(988,845)
6.2 Section 2, Column 21	(6,620,053)
	(7,608,898)
7. Adjustment to the book/adjusted carrying value of hedged item:	
7.1 Section 1, Column 20	
7.2 Section 2, Column 23	
8. Total foreign exchange change in book/adjusted carrying value:	
8.1 Section 1, Column 18	
8.2 Section 2, Column 20	
9. Book/adjusted carrying value at end of current period (Lines 1+2+3+4-5+6+7+8)	3,628,605,132
10. Deduct nonadmitted assets	
11. Statement value at end of current period (Line 9 minus Line 10)	3,628,605,132

SCHEDULE DB - PART B - VERIFICATION

Futures Contracts

1. Book/Adjusted carrying value, December 31 of prior year (Line 6, prior year).....	
2. Cumulative cash change (Section 1, Broker Name/Net Cash Deposits Footnote - Cumulative Cash Change Column)	
3.1 Add:	
Change in variation margin on open contracts - Highly effective hedges	
3.11 Section 1, Column 15, current year minus	
3.12 Section 1, Column 15, prior year	
Change in variation margin on open contracts - All other	
3.13 Section 1, Column 18, current year minus	200,720,383
3.14 Section 1, Column 18, prior year	18,023,700
	182,696,683
	182,696,683
3.2 Add:	
Change in adjustment to basis of hedged item	
3.21 Section 1, Column 17, current year to date minus	
3.22 Section 1, Column 17, prior year	
Change in amount recognized	
3.23 Section 1, Column 19, current year to date minus	200,720,383
3.24 Section 1, Column 19, prior year	18,023,700
	182,696,683
	182,696,683
3.3 Subtotal (Line 3.1 minus Line 3.2)	
4.1 Cumulative variation margin on terminated contracts during the year (Section 2, Column 15)	(299,202,095)
4.2 Less:	
4.21 Amount used to adjust basis of hedged item (Section 2, Column 17) ..	
4.22 Amount recognized (Section 2, Column 16)	(317,225,796)
	(317,225,796)
4.3 Subtotal (Line 4.1 minus Line 4.2)	18,023,701
5. Dispositions gains (losses) on contracts terminated in prior year:	
5.1 Total gain (loss) recognized for terminations in prior year	
5.2 Total gain (loss) adjusted into the hedged item(s) for terminations in prior year	(18,023,701)
6. Book/Adjusted carrying value at end of current period (Lines 1+2+3.3-4.3-5.1-5.2)	
7. Deduct total nonadmitted amounts	
8. Statement value at end of current period (Line 6 minus Line 7)	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*AA9	Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2	50,000,000	13,094,586	10,241,079	10/01/2012	10/01/2042	Interest Rate Swap	(2,567,196)		42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	13,094,586	12,808,275
57629*AA9	Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2		11,430,344	11,765,000	10/01/2012	10/01/2042	Interest Rate Swap			320808-AD-0	FIRST MARYLAND CAP I-LIMITED GUARANTEE NOTE	2	11,430,344	11,765,000
57629*AA9	Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2		17,950,006	17,903,600	10/01/2012	10/01/2042	Interest Rate Swap			38136M-AC-2	GLM 2017-2A A	1	17,950,006	17,903,600
57629*AA9	Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2		10,000,000	9,864,130	10/01/2012	10/01/2042	Interest Rate Swap			09629L-AE-5	BLUEMOUNTAIN CLO XXIII L-BLUEM 2018-23A B	1	10,000,000	9,864,130
57629*AA9	Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	2		5,000,000	4,645,345	10/01/2012	10/01/2042	Interest Rate Swap			03328Y-AG-9	Anchorage Capital CLO Lt-ANCHC 2018-1RA C	1	5,000,000	4,645,345
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3	50,000,000	5,600,000	2,979,603	10/01/2012	10/01/2042	Interest Rate Swap	(2,620,481)		87246M-AA-0	TICP CLO LTD-SERIES 2016-6A CLASS A	1	5,600,000	5,600,084
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3		2,483,711	2,483,711	10/01/2012	10/01/2042	Interest Rate Swap			77277L-A7-2	ROCKALL CLO BV Variable Funding Note- USD	1	2,483,711	2,483,711
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3		4,313,594	4,446,076	10/01/2012	10/01/2042	Interest Rate Swap			83149E-AG-2	SLM STUDENT LN TR 2006-5-NOTE CL B	1	4,313,594	4,446,076
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3		5,470,000	5,338,977	10/01/2012	10/01/2042	Interest Rate Swap			883310-AE-4	THAYER PARK CLO LTD.-THAYR 2017-1A	1	5,470,000	5,338,977
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3		6,425,501	6,340,957	10/01/2012	10/01/2042	Interest Rate Swap			77342K-AA-8	ROCKFORD TOWER CLO 2018-ROCKT 2018-2A A	1	6,425,501	6,340,957
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3		4,000,000	3,873,080	10/01/2012	10/01/2042	Interest Rate Swap			09628F-AE-9	BlueMountain Fuji US CLO-SERIES 2017-3A CLASS B	1	4,000,000	3,873,080
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3		4,000,000	3,892,432	10/01/2012	10/01/2042	Interest Rate Swap			13876J-AE-2	Canyon Capital CLO Ltd-CANYC 2012-1RA B	1	4,000,000	3,892,432
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3		15,000,000	14,848,680	10/01/2012	10/01/2042	Interest Rate Swap			88432U-AC-0	Wind River CLO Ltd-SERIES 18-3A CLASS A2	1	15,000,000	14,848,680
57629*AB7	Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	3		6,800,000	6,658,716	10/01/2012	10/01/2042	Interest Rate Swap			03762Y-AH-0	Apidos Clo XXV-APID 2016-25A A2R	1	6,800,000	6,658,716
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	264,000,000	19,165,000	4,126,978	11/29/2012	11/29/2042	Interest Rate Swap	(14,637,474)		14316R-ZZ-6	Carlyle US CLO 2017-5 Re Term Loan	1	19,165,000	18,764,452
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,976,329	6,644,321	11/29/2012	11/29/2042	Interest Rate Swap			83149F-AD-6	SLMA 2006 6 NT CL B	1	5,976,329	6,644,321
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	15,500,000	15,358,346	11/29/2012	11/29/2042	Interest Rate Swap			375415-AA-4	GILBERT PARK CLO LTD-SERIES 17-1A CLASS A	1	15,500,000	15,358,346
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,500,000	12,827,241	11/29/2012	11/29/2042	Interest Rate Swap			14310D-AY-3	CARLYLE GLOBAL MKT STRATEGIES CLO 2013-2 LTD MEZZ SECD DEF NT	1	13,500,000	12,827,241
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,100,000	12,720,611	11/29/2012	11/29/2042	Interest Rate Swap			670970-AC-9	OPC CLO 2017-14 Ltd-SERIES 17-14A CLASS A1B	1	13,100,000	12,720,611
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		27,761,873	27,453,754	11/29/2012	11/29/2042	Interest Rate Swap			57542Z-AO-7	MASSMUTUAL ASSET FIN LLC SR SECD REV NT	1	27,761,873	27,453,754
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		152,910,180	152,271,015	11/29/2012	11/29/2042	Interest Rate Swap			126611-AL-6	CVP CASCADE CLO LTD-CVPC 2014-2A A1R	1	152,910,180	152,271,015
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,200,000	6,011,731	11/29/2012	11/29/2042	Interest Rate Swap			94950G-AE-7	WELLFLEET CLO LTD-WELF 2017-1A B	1	6,200,000	6,011,731
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,525,000	5,324,746	11/29/2012	11/29/2042	Interest Rate Swap			01748R-AE-5	ALLEGRO CLO V LTD-SERIES 17-1A CLASS MEZ, FLT	1	5,525,000	5,324,746
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,760,735	11/29/2012	11/29/2042	Interest Rate Swap			38137M-AK-3	Goldentree Loan Opportun-GLD12 2016-12A AJR	1	15,000,000	14,760,735
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,500,000	4,231,787	11/29/2012	11/29/2042	Interest Rate Swap			03767M-AJ-7	Apidos CLO-APID 2018-29A B	1	4,500,000	4,231,787
57629*AC5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,997,645	4,930,755	11/29/2012	11/29/2042	Interest Rate Swap			17181T-AA-9	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A1	1	4,997,645	4,930,755
57629*AE1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	100,000,000	12,000,000	9,251,163	12/27/2012	12/27/2042	Interest Rate Swap	(2,278,581)		67112K-AC-3	OPC CLO Ltd-SERIES 18-15A CLASS A3	1	12,000,000	11,529,744
57629*AE1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,000,000	3,921,412	12/27/2012	12/27/2042	Interest Rate Swap			83609R-AE-1	SOUND POINT CLO LTD-SNDPT 2017-1A C	1	4,000,000	3,921,412
57629*AE1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		22,800,000	22,505,880	12/27/2012	12/27/2042	Interest Rate Swap			14315J-YY-9	Carlyle US CLO 2017-3 Ri Term Loan	1	22,800,000	22,505,880
57629*AE1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,200,000	3,110,003	12/27/2012	12/27/2042	Interest Rate Swap			03330A-AC-6	Anchorage Capital CLO 3-ANCHC 2014-3RA B	1	3,200,000	3,110,003
57629*AE1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		33,000,000	32,593,341	12/27/2012	12/27/2042	Interest Rate Swap			87271L-AJ-1	TIAA CLO I Ltd-TIA 2016-1A AR	1	33,000,000	32,593,341

S112

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*AE1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,800,000	8,589,566	12/27/2012	12/27/2042	Interest Rate Swap			14310D-AW-7	Carlyle Global Market St-SERIES 2013-2A CLASS BR	1	8,800,000	8,589,566
57629*AE1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,905,192	16,206,407	12/27/2012	12/27/2042	Interest Rate Swap			24820R-AA-6	Statoil ASA-SENIOR UNSECURED NOTE C1FC Funding 2017-IV Ltd-SERIES 17-	1	13,905,192	16,206,407
57629*AE1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		125,000,000	4,962,810	12/27/2012	12/27/2042	Interest Rate Swap			12551J-AG-1	4A CLASS B WACHOVIA STUDENT LOAN TR-WSLT 2005-	1	4,962,810	4,774,680
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		100,000,000	14,843,729	12/27/2012	12/27/2042	Interest Rate Swap		(2,278,581)	92977H-AG-3	1 B ATRIUM CDO CORP-SERIES 9A CLASS BR	1	14,843,729	14,743,530
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		18,990,000	18,822,109	12/27/2012	12/27/2042	Interest Rate Swap			04964K-AN-1		1	18,990,000	18,822,109
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		18,810,000	18,370,674	12/27/2012	12/27/2042	Interest Rate Swap			92912V-AQ-8	VOYA CLO LTD-VOYA 2014-2A A2AR	1	18,810,000	18,370,674
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,800,000	6,799,830	12/27/2012	12/27/2042	Interest Rate Swap			48251B-AA-8	KKR FINANCIAL CLO LTD-KKR 16 A1 Babson CLO Ltd/Cayman 1s-BABSON	1	6,800,000	6,799,830
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,000,000	22,588,415	12/27/2012	12/27/2042	Interest Rate Swap			06760P-AE-1	2018-3A A2 Madison Park Funding Ltd-SERIES 18-	1	23,000,000	22,588,415
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,500,000	9,313,458	12/27/2012	12/27/2042	Interest Rate Swap			55821A-AE-8	28A CLASS B Shackleton 2015-VII-R CL-SERIES	1	9,500,000	9,313,458
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,894,072	12/27/2012	12/27/2042	Interest Rate Swap			81883A-AC-3	2015-7RA CLASS B CARLYLE GLOBAL MARKET ST-SERIES 15-	1	8,000,000	7,894,072
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,450,000	3,314,984	12/27/2012	12/27/2042	Interest Rate Swap			14311D-BC-9	1A CLASS BR ARROWMARK COLORADO HOLDI-SERIES 17-	2	3,450,000	3,314,984
57629*AD3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,000,000	3,857,720	12/27/2012	12/27/2042	Interest Rate Swap			28622J-AB-3	7A CLASS B Goldentree Loan Managem-GLM 2018-	1	4,000,000	3,857,720
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		100,000,000	6,000,000	12/28/2012	12/28/2042	Interest Rate Swap		(1,869,526)	38138B-AG-5	3A B1 Marble Point CLO XIV Ltd-MP14 2018-	1	6,000,000	5,847,456
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		29,967,000	29,744,490	12/28/2012	12/28/2042	Interest Rate Swap			56608K-AA-1	2A A SYMPHONY CLO V LTD-SR SEC0 NT CL A-	1	29,967,000	29,744,490
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,690,308	9,650,878	12/28/2012	12/28/2042	Interest Rate Swap			87155M-AC-5	2 144A MADISON PARK FUNDING LTD-SERIES	1	9,690,308	9,650,878
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,000,000	7,000,644	12/28/2012	12/28/2042	Interest Rate Swap			55818X-BA-0	2015-16A CLASS BR WIND RIVER CLO LTD-WINDR 2017-1A B	1	7,000,000	7,000,644
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,050,000	10,902,792	12/28/2012	12/28/2042	Interest Rate Swap			88432M-AC-8	Crestline Denali CLO XIV-SERIES16-	1	11,050,000	10,902,792
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,000,000	22,872,925	12/28/2012	12/28/2042	Interest Rate Swap			22615M-AL-6	1A CLASS ATR Tryon Park CLO Ltd-TPCLO 2013-1A	1	23,000,000	22,872,925
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		125,000,000	8,000,000	12/28/2012	12/28/2042	Interest Rate Swap			89852T-AN-8	A1JR TICP CLO VI 2016-5 LTD-TICP 2016-5A	1	8,000,000	7,938,752
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,000,000	2,941,593	12/28/2012	12/28/2042	Interest Rate Swap			87248K-AS-3	A2R Wellfleet CLO Ltd-SERIES 18-1A	1	3,000,000	2,941,593
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,000,000	986,601	12/28/2012	12/28/2042	Interest Rate Swap			94950J-AA-9	CLASS A HPS LOAN MANAGEMENT 13-2-HLM 13A-18	1	1,000,000	986,601
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,000,000	3,935,812	12/28/2012	12/28/2042	Interest Rate Swap			40437L-AE-2	A2 Voya CLO Ltd-SERIES 18-1A CLASS B	1	4,000,000	3,935,812
57629*AF8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,060,000	4,691,000	12/28/2012	12/28/2042	Interest Rate Swap			92917A-AE-6	Wellfleet CLO Ltd-SERIES 18-1A	1	5,060,000	4,691,000
57629*AH4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		100,000,000	59,000,000	12/28/2012	12/28/2042	Interest Rate Swap		(1,869,526)	94950J-AA-9	CLASS A BABSON CLO LTD 2015-II-SERIES 15-2A	1	59,000,000	58,209,459
57629*AH4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,200,000	14,022,983	12/28/2012	12/28/2042	Interest Rate Swap			06759F-AB-2	CLASS AR Ares XXXIR CLO Ltd-SERIES 14-31RA	1	14,200,000	14,022,983
57629*AH4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,000,000	19,469,300	12/28/2012	12/28/2042	Interest Rate Swap			04017T-AE-9	CLASS B MADISON PARK FUNDING LTD-SERIES 15-	1	20,000,000	19,469,300
57629*AH4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,700,000	12,587,326	12/28/2012	12/28/2042	Interest Rate Swap			55818Y-BE-0	17A CLASS B1R C1FC Funding 2018-I Ltd-SERIES 18-	1	12,700,000	12,587,326
57629*AH4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,200,000	3,869,044	12/28/2012	12/28/2042	Interest Rate Swap			12551R-AE-8	1A CLASS C Benefit Street Partners -BSP 2018-	1	4,200,000	3,869,044
57629*AH4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,100,000	1,074,709	12/28/2012	12/28/2042	Interest Rate Swap			08179M-AC-3	15A A2A BlueMountain CLO 2015-4 -SERIES 15-	1	1,100,000	1,074,709
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		100,000,000	17,697,754	12/28/2012	12/28/2042	Interest Rate Swap		(1,869,526)	09628N-AQ-5	4A CLASS A2R SOUND POINT CLO IX LTD-SERIES 2015-	1	20,000,000	19,567,280
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,877,184	12/28/2012	12/28/2042	Interest Rate Swap			83609G-AN-5	2A CLASS B1R	1	8,000,000	7,877,184

SH2.1

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	14 NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,822,953	3,828,230	12/28/2012	12/28/2042	Interest Rate Swap			38141G-VW-1	GOLDMAN SACHS GROUP INC-SENIOR UNSECURED	1	3,822,953	3,828,230
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,272,368	11,835,267	12/28/2012	12/28/2042	Interest Rate Swap			63939F-AC-4	Navient Student Loan Tru-SERIES 15-1 CLASS B	1	12,272,368	11,835,267
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,906,411	8,921,591	12/28/2012	12/28/2042	Interest Rate Swap			78447Y-AD-4	SLM STUDENT LOAN TRUST-SLMA 2013-3	1	8,906,411	8,921,591
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,767,235	12/28/2012	12/28/2042	Interest Rate Swap			12550G-AE-3	CIFC Funding Ltd-CIFC 2018-5A B	1	5,000,000	4,767,235
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,900,000	8,795,344	12/28/2012	12/28/2042	Interest Rate Swap			55820T-AC-2	MADISON PARK FUNDING LTD-SERIES 2017-23A CLASS B	1	8,900,000	8,795,344
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,650,000	8,345,139	12/28/2012	12/28/2042	Interest Rate Swap			33882G-AC-2	FLATIRON CLO LTD-FLAT 2017-1A C	1	8,650,000	8,345,139
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,000,000	966,034	12/28/2012	12/28/2042	Interest Rate Swap			48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	1	1,000,000	966,034
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,250,000	4,249,838	12/28/2012	12/28/2042	Interest Rate Swap			09626U-AQ-1	BLUEMOUNTAIN CLO LTD-BLUEM 2013-1A BR	1	4,250,000	4,249,838
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,350,000	6,350,241	12/28/2012	12/28/2042	Interest Rate Swap			26249K-AM-3	DRYDEN SENIOR LOAN FUND-SERIES 2014-36A CLASS CR	1	6,350,000	6,350,241
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,761,000	12,954,278	12/28/2012	12/28/2042	Interest Rate Swap			78447M-AD-0	SLM STUDENT LOAN TRUST-SERIES 2013-1 CLASS B	1	12,761,000	12,954,278
57629*AG6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	4,250,000	4,191,699	12/28/2012	12/28/2042	Interest Rate Swap			75888M-AG-5	Regatta XIV Funding Ltd-SERIES 18-3A CLASS B	1	4,250,000	4,191,699
57629*AJ0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	9,550,000	8,480,238	12/28/2012	12/28/2042	Interest Rate Swap		(934,763)	04965F-AG-6	Regatta XIV Funding Ltd-SERIES 18-3A CLASS B	1	9,550,000	9,415,001
57629*AJ0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,928,570	12/28/2012	12/28/2042	Interest Rate Swap			55819B-AL-4	MADISON PARK FUNDING XVI-SERIES 15-18A CLASS A1R	1	10,000,000	9,928,570
57629*AJ0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,548,583	9,360,828	12/28/2012	12/28/2042	Interest Rate Swap			63940A-AD-0	NAVIENT STUDENT LOAN TRU-SERIES 17-4A CLASS B	1	9,548,583	9,360,828
57629*AJ0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,600,000	9,600,576	12/28/2012	12/28/2042	Interest Rate Swap			00191Y-AM-6	ARES CLO LTD-SERIES 2015 1-A CLASS A2R	1	9,600,000	9,600,576
57629*AJ0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,500,000	7,459,133	12/28/2012	12/28/2042	Interest Rate Swap			26245C-AE-3	DRYDEN SENIOR LOAN FUND-SERIES 2016-43A CLASS B	1	7,500,000	7,459,133
57629*AJ0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,100,000	1,074,709	12/28/2012	12/28/2042	Interest Rate Swap			08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2A	1	1,100,000	1,074,709
57629*AJ0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,500,000	2,432,770	12/28/2012	12/28/2042	Interest Rate Swap			13876J-AE-2	Canyon Capital CLO Ltd-CANVC 2012-1RA B	1	2,500,000	2,432,770
57629*AJ0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,400,000	6,292,141	12/28/2012	12/28/2042	Interest Rate Swap			77342K-AC-4	Rockford Tower CLO 2018-2 Ltd	1	6,400,000	6,292,141
57629*AK7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	10,000,000	8,673,547	12/28/2012	12/28/2042	Interest Rate Swap		(934,763)	24380L-AE-3	DEER CREEK CLO LTD 2017-SERIES 17-1A CLASS B	1	10,000,000	9,608,310
57629*AK7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		30,000,000	29,587,680	12/28/2012	12/28/2042	Interest Rate Swap			04624W-AC-1	ASSURANT CLO III LTD-SERIES 2018-2A CLASS A	1	30,000,000	29,587,680
57629*AK7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,570,000	13,176,497	12/28/2012	12/28/2042	Interest Rate Swap			48249V-AQ-4	KKR FINANCIAL CLO LTD-SERIES 13-1A CLASS A2R	1	13,570,000	13,176,497
57629*AK7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,850,000	4,745,846	12/28/2012	12/28/2042	Interest Rate Swap			08179H-AB-6	BENEFIT STREET PARTNERS -SERIES 2017-12A CLASS A2	1	4,850,000	4,745,846
57629*AL5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	10,000,000	9,065,237	12/28/2012	12/28/2042	Interest Rate Swap		(934,763)	87232A-AE-4	TFLAT 2018-1A B	2	10,000,000	10,000,000
57629*AL5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,643,801	10,801,635	12/28/2012	12/28/2042	Interest Rate Swap			78442G-PL-4	SLM STUDENT LOAN TRUST-SERIES 2005-4 CLASS B	1	10,643,801	10,801,635
57629*AL5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,920,000	8,898,200	12/28/2012	12/28/2042	Interest Rate Swap			10302V-BC-8	BOWMAN PARK CLO LTD-BOWPK 2014-1A B1R	1	8,920,000	8,898,200
57629*AL5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,850,000	6,665,393	12/28/2012	12/28/2042	Interest Rate Swap			674000-AQ-7	OAKTREE CLO LTD-SERIES 14-1A CLASS A2R	1	6,850,000	6,665,393
57629*AL5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,840,000	6,723,665	12/28/2012	12/28/2042	Interest Rate Swap			88433R-AE-2	WIND RIVER CLO LTD-SERIES 17-2A CLASS B	1	6,840,000	6,723,665
57629*AL5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,933,995	12/28/2012	12/28/2042	Interest Rate Swap			50188Y-AB-0	LCM LTD PARTNERSHIP-LCM 24A B	1	5,000,000	4,933,995
57629*AL5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,100,000	1,074,709	12/28/2012	12/28/2042	Interest Rate Swap			08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2A	1	1,100,000	1,074,709
57629*AL5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,600,000	4,288,879	12/28/2012	12/28/2042	Interest Rate Swap			05875H-AE-3	Ballyrock CLO 2018-1 Ltd-SERIES 2018-1A CLASS B	1	4,600,000	4,288,879

SH2.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*AM3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	5,400,000	4,367,951	12/28/2012	12/28/2042	Interest Rate Swap		(934,763)	12548J-AE-2	CIFC FUNDING LTD-SERIES 17-3A CLASS A2	1	5,400,000	5,302,714
57629*AM3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,900,000	11,527,161	12/28/2012	12/28/2042	Interest Rate Swap			74988L-AC-8	ALM XIV Ltd-SERIES 14-14A CLASS A2R2	1	11,900,000	11,527,161
57629*AM3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,050,000	3,019,183	12/28/2012	12/28/2042	Interest Rate Swap			00191Y-AP-9	APES CLO LTD-SERIES 2015 1-A CLASS B2R	1	3,050,000	3,019,183
57629*AM3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,500,000	4,499,991	12/28/2012	12/28/2042	Interest Rate Swap			50184K-AII-8	LOM LTD PARTNERSHIP-SERIES 13A CLASS CR	1	4,500,000	4,499,991
57629*AM3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	5,000,015	12/28/2012	12/28/2042	Interest Rate Swap			08181L-AA-5	BENEFIT STREET PARTNERS -BSP 2016-10A A1	1	5,000,000	5,000,015
57629*AM3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,200,000	10,976,706	12/28/2012	12/28/2042	Interest Rate Swap			08181B-AS-8	Benefit Street Partners -SERIES 16-9A CLASS BR	1	11,200,000	10,976,706
57629*AM3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,946,400	12/28/2012	12/28/2042	Interest Rate Swap			94951D-AC-7	Wellfleet CLO 2018-3 Ltd-SERIES 18-3A CLASS A1B	1	8,000,000	7,946,400
57629*AM3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,900,000	3,880,777	12/28/2012	12/28/2042	Interest Rate Swap			05875F-AC-1	BALLYROCK LTD-SERIES 16-1A CLASS B1	1	3,900,000	3,880,777
57629*AN1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	20,000,000	18,268,951	12/31/2012	12/31/2042	Interest Rate Swap		(1,460,509)	36248M-AJ-6	GT Loan Financing I Ltd -SERIES 2013-1A CLASS AR	1	20,000,000	19,729,460
57629*AN1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		21,032,568	20,857,998	12/31/2012	12/31/2042	Interest Rate Swap			14315J-MM-8	Carlyle US CLO 2013-2 Re Term Loan	1	21,032,568	20,857,998
57629*AN1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,550,000	7,285,101	12/31/2012	12/31/2042	Interest Rate Swap			74982L-AS-9	RACE POINT CLO LTD-SERIES 13-8A CLASS CR	1	7,550,000	7,285,101
57629*AN1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,850,000	5,674,061	12/31/2012	12/31/2042	Interest Rate Swap			64131Q-AC-4	NEUBERGER BERMAN LOAN AD-SERIES 2017-26A CLASS B	1	5,850,000	5,674,061
57629*AP6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	9,900,000	8,374,349	12/31/2012	12/31/2042	Interest Rate Swap		(1,460,509)	67707C-AE-8	Oak Hill Credit Partners-OAKC 2014-10RA A2A	1	9,900,000	9,834,858
57629*AP6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		25,000,000	24,362,875	12/31/2012	12/31/2042	Interest Rate Swap			67104L-AF-4	CHA Loan Funding 2013-2 -OHALF 2013-2A BR	1	25,000,000	24,362,875
57629*AP6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,850,000	13,620,409	12/31/2012	12/31/2042	Interest Rate Swap			38137P-AU-4	GALAXY CLO LTD-GALXY 2014-18A AR	1	13,850,000	13,620,409
57629*AP6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,000,000	1,962,858	12/31/2012	12/31/2042	Interest Rate Swap			94184B-D8-9	Waters Corporation Gtd Senior Note Series H	2	2,000,000	1,962,858
57629*AP6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,800,000	3,559,574	12/31/2012	12/31/2042	Interest Rate Swap			74988L-AJ-3	ALM XIV Ltd-SERIES 14-14A CLASS BR2	2	3,800,000	3,559,574
57629*A04	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	14,300,000	12,846,670	12/31/2012	12/31/2042	Interest Rate Swap		(1,460,509)	55820J-AC-4	MADISON PARK FUNDING LTD-SERIES 2016-21A CLASS A2	1	14,300,000	14,307,179
57629*A04	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,452,140	12/31/2012	12/31/2042	Interest Rate Swap			48250W-AJ-4	KKR CLO 14 Ltd-KKR 14 BR	1	15,000,000	14,452,140
57629*A04	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,902,655	12/31/2012	12/31/2042	Interest Rate Swap			87248K-AS-3	TICP CLO VI 2016-5 LTD-TICP 2016-5A A2R	1	5,000,000	4,902,655
57629*A04	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,350,000	4,350,030	12/31/2012	12/31/2042	Interest Rate Swap			020053-AS-3	ALM LOAN FUNDING-SERIES 13-8A CLASS A1R	1	4,350,000	4,350,030
57629*A04	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,022,697	986,272	12/31/2012	12/31/2042	Interest Rate Swap			63939F-AC-4	Navient Student Loan Tru-SERIES 15-1 CLASS B	1	1,022,697	986,272
57629*A04	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,700,000	8,704,254	12/31/2012	12/31/2042	Interest Rate Swap			59983H-AB-5	MILL CREEK CLO II LTD-SR SEC2 NT CL B-1 144A	1	8,700,000	8,704,254
57629*A04	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,000,000	3,857,720	12/31/2012	12/31/2042	Interest Rate Swap			28622J-AB-3	ARROWMARK COLORADO HOLDI-SERIES 17-7A CLASS B	1	4,000,000	3,857,720
57629*AR2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	8,800,000	7,227,537	12/31/2012	12/31/2042	Interest Rate Swap		(1,460,509)	38137P-AS-9	Goldentree Loan Opportun-SERIES 2015-10A CLASS AJR	1	8,800,000	8,688,046
57629*AR2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,400,000	7,131,313	12/31/2012	12/31/2042	Interest Rate Swap			92916M-AC-5	VOYA CLO LTD-VOYA 2017-1A B	1	7,400,000	7,131,313
57629*AR2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,350,000	5,296,414	12/31/2012	12/31/2042	Interest Rate Swap			69689A-AN-0	PALMER SQUARE CLO LTD-SERIES 15-1A CLASS A2R	1	5,350,000	5,296,414
57629*AR2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,500,000	7,054,350	12/31/2012	12/31/2042	Interest Rate Swap			55819T-AU-5	Madison Park Funding XX -SERIES 2016-20A CLASS CR	1	7,500,000	7,054,350
57629*AR2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,900,000	13,429,541	12/31/2012	12/31/2042	Interest Rate Swap			03328Y-AE-4	Anchorage Capital CLO Lt-ANCHC 2018-1RA B	1	13,900,000	13,429,541
57629*AR2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,740,000	12,707,258	12/31/2012	12/31/2042	Interest Rate Swap			09626U-AN-8	BLUEMOUNTAIN CLO LTD-BLUEM 2013-1A A2R	1	12,740,000	12,707,258
57629*ASO	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	10,025,949	8,441,877	12/31/2012	12/31/2042	Interest Rate Swap		(1,460,509)	46616K-AE-4	JFIN CLO 2013 LTD SR SEC2 DEF NT CL B	1	10,025,949	9,902,386

SH2.3

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*AS0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,722,992	12/31/2012	12/31/2042	Interest Rate Swap			83608G-AQ-9	Sound Point CLO II Ltd-SNDPT 2013-1A A2R	1	8,000,000	7,722,992
57629*AS0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,678,775	12/31/2012	12/31/2042	Interest Rate Swap			05682V-AC-9	Bain Capital Credit CLO -SERIES 18-2A CLASS A2	1	15,000,000	14,678,775
57629*AS0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,847,130	12/31/2012	12/31/2042	Interest Rate Swap			50188Q-AE-1	LCM XIX LTD PARTNERSHIP DEF MEZZ NT CL C	1	10,000,000	9,847,130
57629*AS0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,300,000	8,300,000	12/31/2012	12/31/2042	Interest Rate Swap			00900P-AE-5	AIMCO CLO Series 2018-B-SERIES 18-BA CLASS B	1	8,300,000	8,300,000
57629*AS0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,100,000	1,074,709	12/31/2012	12/31/2042	Interest Rate Swap			08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2A	1	1,100,000	1,074,709
57629*AT8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	10,000,000	8,267,921	12/31/2012	12/31/2042	Interest Rate Swap		(1,460,509)	87248W-AC-2	TIOP CLO VIII LTD-SERIES 2017-8A CLASS A2	1	10,000,000	9,728,430
57629*AT8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,430,000	3,385,153	12/31/2012	12/31/2042	Interest Rate Swap			674000-AS-3	OAKTREE CLO LTD-SERIES 14-1A CLASS BR	1	3,430,000	3,385,153
57629*AT8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,900,000	5,685,140	12/31/2012	12/31/2042	Interest Rate Swap			48251F-AB-7	KKR FINANCIAL CLO LTD-SERIES 17 CLASS B	1	5,900,000	5,685,140
57629*AT8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,000,000	11,605,428	12/31/2012	12/31/2042	Interest Rate Swap			92917J-AE-7	Voya CLO 2018-2 Ltd-VOYA 2018-2A B1	1	12,000,000	11,605,428
57629*AT8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		22,650,000	22,289,865	12/31/2012	12/31/2042	Interest Rate Swap			14315C-ZZ-0	Carlyle US CLO 2017-4 Ri Term Loan	1	22,650,000	22,289,865
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	55,000,000	6,830,000	5,624,452	04/09/2013	04/09/2043	Interest Rate Swap		(1,078,701)	55953E-AN-0	MAGNETITE CLO LTD-SERIES 14-11A CLASS BR	1	6,830,000	6,703,153
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,600,000	5,413,078	04/09/2013	04/09/2043	Interest Rate Swap			12550Y-AG-9	CIFC FUNDING LTD-CIFC 2017-2A C	1	5,600,000	5,413,078
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,280,000	4,215,920	04/09/2013	04/09/2043	Interest Rate Swap			09629C-AE-5	BLUEMOUNTAIN CLO LTD-SERIES 17-1A CLASS B	1	4,280,000	4,215,920
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,250,000	4,238,266	04/09/2013	04/09/2043	Interest Rate Swap			00163K-AS-7	ALM LOAN FUNDING-ALM 2013-TRA A2R	1	4,250,000	4,238,266
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,000,000	5,920,554	04/09/2013	04/09/2043	Interest Rate Swap			81883A-AC-3	Shackleton 2015-VII-R CL-SERIES 2015-7RA CLASS B	1	6,000,000	5,920,554
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,500,000	7,351,553	04/09/2013	04/09/2043	Interest Rate Swap			77342J-AC-7	Rockford Tower CLO 2018--SERIES 18-1A CLASS B	1	7,500,000	7,351,553
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,100,000	5,899,707	04/09/2013	04/09/2043	Interest Rate Swap			94951M-AC-7	WELLFLEET CLO 2017-2 LTD-SERIES 17-2A CLASS A2	1	6,100,000	5,899,707
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,330,000	4,211,986	04/09/2013	04/09/2043	Interest Rate Swap			64130H-AE-1	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A C	1	4,330,000	4,211,986
57629*AI1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,560,000	13,474,057	04/09/2013	04/09/2043	Interest Rate Swap			64129J-AQ-3	NEUBERGER BERMAN CLO LTD-NEUB 2013-14A A1R	1	13,560,000	13,474,057
57629*AV3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	60,000,000	17,970,000	17,152,636	04/09/2013	04/09/2043	Interest Rate Swap		(1,176,764)	74992*-AD-7	RXR Realty, LLC Senior Secured	2	17,970,000	18,329,400
57629*AV3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		18,500,000	18,008,770	04/09/2013	04/09/2043	Interest Rate Swap			50188G-AX-1	LCM XVIII LP-LGM 18A A2R	1	18,500,000	18,008,770
57629*AV3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,750,000	12,715,562	04/09/2013	04/09/2043	Interest Rate Swap			27830B-AQ-7	EATON VANCE CDO LTD-SERIES 2013-1A CLASS A2R	1	12,750,000	12,715,562
57629*AV3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,800,000	12,604,454	04/09/2013	04/09/2043	Interest Rate Swap			67102Q-AK-4	CHA CREDIT PARTNERS LTD-SERIES 2012-7A CLASS B1R	1	12,800,000	12,604,454
57629*AV3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	2,000,000	1,967,710	04/09/2013	04/09/2043	Interest Rate Swap			62848F-AC-6	MYERS PARK CLO LTD-MYERS 2018-1A A2	1	2,000,000	1,967,710
57629*AX9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	55,000,000	26,000,000	24,786,609	04/09/2013	04/09/2043	Interest Rate Swap		(872,193)	83609Y-AC-0	Sounds Point CLO IV-R LT-SERIES 13-3RA CLASS A	1	26,000,000	25,658,802
57629*AX9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,454,437	6,503,805	04/09/2013	04/09/2043	Interest Rate Swap			78442G-OA-7	SLM STUDENT LOAN TRUST-SERIES 2005-6 CLASS B	1	6,454,437	6,503,805
57629*AX9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,775,000	10,663,112	04/09/2013	04/09/2043	Interest Rate Swap			74982L-AQ-3	RACE POINT CLO LTD-SERIES 13-8A CLASS BR	1	10,775,000	10,663,112
57629*AX9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,350,000	14,975,460	04/09/2013	04/09/2043	Interest Rate Swap			14315J-RR-2	Carlyle US CLO 2013-4 Re Term Loan	1	15,350,000	14,975,460
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	55,000,000	4,450,000	3,508,681	04/09/2013	04/09/2043	Interest Rate Swap		(872,193)	55820R-AG-7	MADISON PARK FUNDING LTD-SERIES 17-25A CLASS C	2	4,450,000	4,380,874
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,950,000	1,895,320	04/09/2013	04/09/2043	Interest Rate Swap			55954K-AE-5	MAGNETITE CLO LTD-SERIES 2017-19A CLASS C	1	1,950,000	1,895,320
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		22,850,000	22,642,979	04/09/2013	04/09/2043	Interest Rate Swap			14311C-RR-1	Carlyle US CLO 2017-1 Ri Term Loan	1	22,850,000	22,642,979

SH2.4

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,789,580	04/09/2013	04/09/2043	Interest Rate Swap			033292-AS-2	ANCHORAGE CAPITAL CLO 20-SERIES 13-1A CLASS A2R	1	10,000,000	9,789,580
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,190,000	5,109,628	04/09/2013	04/09/2043	Interest Rate Swap			00900A-AN-8	AIMCO-SERIES 14-AA CLASS C1R LCM XIX LTD PARTNERSHIP SR NT CL B	1	5,190,000	5,109,628
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,000,000	6,967,534	04/09/2013	04/09/2043	Interest Rate Swap			50188Q-AC-5	Babson CLO Ltd 2016-II-BABSN 2016-2A BR	1	7,000,000	6,967,534
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,300,000	3,274,570	04/09/2013	04/09/2043	Interest Rate Swap			06761C-AC-3	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	1	3,300,000	3,274,570
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,000,000	992,344	04/09/2013	04/09/2043	Interest Rate Swap			89852T-AN-8	Canyon Capital CLO Ltd-CANYC 2012-1RA B	1	1,000,000	992,344
57629*AY7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,000,000	973,108	04/09/2013	04/09/2043	Interest Rate Swap			13876J-AE-2		1	1,000,000	973,108
57629*AU5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	55,000,000	28,800,000	27,829,920	04/09/2013	04/09/2043	Interest Rate Swap	(969,648)		67110H-AA-6	OZLM XIV LTD SR SEC2 NT CL A-1A BENEFIT STREET PARTNERS -BSP 2017-11A A2A	1	28,800,000	28,799,568
57629*AU5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,783,445	04/09/2013	04/09/2043	Interest Rate Swap			08179C-AE-1	BALLYROCK CLO 2018-1 LTD-SERIES 2018-1A CLASS A2	1	15,000,000	14,783,445
57629*AU5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,900,000	13,493,884	04/09/2013	04/09/2043	Interest Rate Swap			05875H-AC-7	MYERS PARK CLO LTD-MYERS 2018-1A A2	1	13,900,000	13,493,884
57629*AU5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		50,000,000	1,000,000	04/09/2013	04/09/2043	Interest Rate Swap			62848F-AC-6	Marble Point CLO XI Ltd-IP11 2017-2A A	1	1,000,000	983,855
57629*BA8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		60,000,000	21,900,000	04/09/2013	04/09/2043	Interest Rate Swap	(1,057,798)		56607F-AA-3	NORTHSTAR EDUCATION FINA-SERIES 04-2 CLASS B	1	21,900,000	21,626,469
57629*BA8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		50,000,000	19,113,458	04/09/2013	04/09/2043	Interest Rate Swap			66704J-BD-9	NORTHSTAR EDUCATION FINA-SERIES 05-1 CLASS B	1	19,113,458	18,879,336
57629*BA8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		50,000,000	16,555,191	04/09/2013	04/09/2043	Interest Rate Swap			66704J-BK-3	Wellfleet CLO Ltd-SERIES 18-1A CLASS B	1	16,555,191	16,195,454
57629*BA8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		75,000,000	3,500,000	04/09/2013	04/09/2043	Interest Rate Swap			94950J-AC-5	Crestline Denali CLO Ltd-SERIES 2018-1A CLASS C	1	3,500,000	3,363,798
57629*BA8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		90,000,000	3,200,000	04/09/2013	04/09/2043	Interest Rate Swap			22615E-AE-0	MYERS PARK CLO LTD-MYERS 2018-1A A2	1	3,200,000	2,949,584
57629*BA8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,000,000	983,855	04/09/2013	04/09/2043	Interest Rate Swap			62848F-AC-6	Allegro CLO VII Ltd-ALLEG 2018-1A A	1	1,000,000	983,855
57629*BB6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		50,000,000	34,500,000	04/09/2013	04/09/2043	Interest Rate Swap		(873,380)	01750C-AA-1	KKR CLO 14 Ltd-KKR 14 AR	1	34,500,000	34,037,976
57629*BB6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,000,000	6,906,935	04/09/2013	04/09/2043	Interest Rate Swap			48250W-AG-0	Waters Corporation Gtd Senior Note Series H	2	7,000,000	6,906,935
57629*BB6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,100,000	6,968,146	04/09/2013	04/09/2043	Interest Rate Swap			941848-D8-9	Carlisle Global Market St-CGMS 2014-2RA A2	1	7,100,000	6,968,146
57629*BB6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,895,505	04/09/2013	04/09/2043	Interest Rate Swap			14314L-AE-5	CVP CASCADE CLO LTD-CVPC 2013-CLO1 A1R	1	5,000,000	4,895,505
57629*AZ4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		50,000,000	26,223,664	04/09/2013	04/09/2043	Interest Rate Swap		(873,380)	126612-AJ-9	DRYDEN 64 CLO LTD-DRSLF 2018-64A A	1	26,223,664	26,117,222
57629*AZ4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		50,000,000	22,850,000	04/09/2013	04/09/2043	Interest Rate Swap			26251L-AC-8	Babson CLO Ltd 2016-II-BABSN 2016-2A BR	1	22,850,000	22,285,971
57629*AZ4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		50,000,000	3,274,570	04/09/2013	04/09/2043	Interest Rate Swap			06761C-AC-3	Fletcher Building Intern Gtd Senior Note	2	3,300,000	3,274,570
92553PA*3	Viacom, Inc. Senior Note	1Z		20,000,000	23,524,779	12/20/2013	03/20/2019	5 Yr Credit Default Swap	24,779	38,307	03915F-AB-2	VOYA CLO LTD-SERIES 2017-3A CLASS A1B	1	23,500,000	23,863,334
57629*BD2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		100,000,000	6,800,000	03/05/2014	03/05/2034	Interest Rate Swap			92915Q-AE-3	THL CREDIT WIND RIVER 20-SERIES 2017-3A CLASS B	1	6,800,000	6,664,401
57629*BD2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		25,000,000	6,780,000	03/05/2014	03/05/2034	Interest Rate Swap			88434G-AC-9	KKR FINANCIAL CLO LTD-SERIES 13-1A CLASS BR	1	6,780,000	6,636,969
57629*BD2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		250,000,000	4,920,000	03/05/2014	03/05/2034	Interest Rate Swap			48249V-AS-0	MADISON PARK FUNDING LTD-SERIES 15-17A CLASS AR	1	4,920,000	4,728,892
57629*BD2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		21,100,000	20,953,039	03/05/2014	03/05/2034	Interest Rate Swap			55818Y-BA-8	KKR FINANCIAL CLO LTD-SERIES 13-1A CLASS A1R	1	21,100,000	20,953,039
57629*BD2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		21,015,000	20,876,112	03/05/2014	03/05/2034	Interest Rate Swap			48249V-AN-1	CRESTLINE DENALI CLO XV -SERIES 17-1A CLASS A	1	21,015,000	20,876,112
57629*BD2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,800,000	20,662,803	03/05/2014	03/05/2034	Interest Rate Swap			22616C-AA-1	KKR CLO 14 Ltd-KKR 14 AR	1	20,800,000	20,662,803
57629*BD2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,000,000	6,906,935	03/05/2014	03/05/2034	Interest Rate Swap			48250W-AG-0		1	7,000,000	6,906,935

SH2.5

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*BD2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,200,000	12,024,064	03/05/2014	03/05/2034	Interest Rate Swap			55818P-AS-9	MADISON PARK FUNDING LTD-HDPK 2014-12A CR	1	12,200,000	12,024,064
57629*BC4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	100,000,000	20,124,711	28,275,503	03/05/2014	03/05/2034	Interest Rate Swap	7,225,188		346845-AC-4	FORT BENNING FAM-UNSECURED CARLYLE GLOBAL MARKET ST-SERIES 15-	1	20,124,711	21,050,315
57629*BC4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,800,000	11,639,213	03/05/2014	03/05/2034	Interest Rate Swap			14311D-AY-2	1A CLASS BR	1	11,800,000	11,639,213
57629*BC4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,217,330	11,048,670	03/05/2014	03/05/2034	Interest Rate Swap			38021X-AB-8	GOAL STRUCTURED SOLUTION-SERIES 2016-A CLASS A2	1	11,217,330	11,048,670
57629*BC4	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		44,744,657	43,129,336	03/05/2014	03/05/2034	Interest Rate Swap			16892D-AC-2	CHINA SOUTHERN POWER GRI-SENIOR UNSECURED	1	44,744,657	43,129,336
57629*BC4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,001,957	4,011,047	03/05/2014	03/05/2034	Interest Rate Swap			29365T-AA-2	ENTERGY TEXAS INC-NOTE THAYER PARK CLO LTD.-THAYR 2017-1A	1	4,001,957	4,011,047
57629*BC4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,850,000	10,665,376	03/05/2014	03/05/2034	Interest Rate Swap			883310-AC-8	A2 ROCKALL CLO BV EURO CL VF-1 SR SECD VAR FDG NT	1	10,850,000	10,665,376
57629*BE0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	11,148,009	23,494,328	05/19/2014	05/19/2044	Interest Rate Swap		11,637,033	77277L-GO-1	Canyon Capital CLO Ltd-CANYC 2012-1RA A	1	11,148,009	11,857,295
57629*BE0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		45,000,000	44,789,580	05/19/2014	05/19/2044	Interest Rate Swap			13876J-AC-6	HIGHBRIDGE LOAN MANAGEME-HLM 11A-17	1	45,000,000	44,789,580
57629*BE0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	250,000,000	9,100,000	8,797,807	05/19/2014	05/19/2044	Interest Rate Swap			40436V-AC-5	LMI LTD PARTNERSHIP-SERIES 15A CLASS CR	1	9,100,000	8,797,807
57629*BE0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,950,000	8,751,552	05/19/2014	05/19/2044	Interest Rate Swap			50184N-AP-7	NEXTGEAR FLOORPLAN WASTE-SERIES 2016-1A CLASS A1	1	8,950,000	8,751,552
57629*BE0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,600,000	4,616,802	05/19/2014	05/19/2044	Interest Rate Swap			65341K-AJ-5	Regatta X Funding Ltd-SERIES 2017-3A CLASS B	1	4,600,000	4,616,802
57629*BE0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,100,000	12,654,797	05/19/2014	05/19/2044	Interest Rate Swap			75884B-AC-2	Kingsland Ltd-SERIES 18-8A CLASS A	1	13,100,000	12,654,797
57629*BE0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		44,981,404	43,997,895	05/19/2014	05/19/2044	Interest Rate Swap			42086P-AC-7	Carlyle US CLO 2017-2 Ri Term Loan	1	44,981,404	43,997,895
57629*BE0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,007,143	22,784,664	05/19/2014	05/19/2044	Interest Rate Swap			14315J-ZZ-5	OHA CREDIT PARTNERS LTD-OAKC 2013-9A B1R	1	23,007,143	22,784,664
57629*BF7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	20,000,000	25,267,837	05/19/2014	05/19/2034	Interest Rate Swap		5,335,997	67105V-AW-4	Rockford Tower CLO 2018--SERIES 18-1A CLASS A	1	20,000,000	19,931,840
57629*BF7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		50,000,000	49,345,700	05/19/2014	05/19/2034	Interest Rate Swap			77342J-AA-1	Neuberger Berman CLO Ltd-NEUB 2018-28A B	1	50,000,000	49,345,700
57629*BF7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	250,000,000	7,000,000	6,818,637	05/19/2014	05/19/2034	Interest Rate Swap			64130P-AE-3	SYMPHONY CLO LTD-SERIES 13-12A CLASS B1R	1	7,000,000	6,818,637
57629*BF7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,000,000	19,935,720	05/19/2014	05/19/2034	Interest Rate Swap			13080B-AB-7	Greywolf CLO V Ltd-GWOLF 2015-1A A1R	1	20,000,000	19,935,720
57629*BF7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		19,900,000	19,654,852	05/19/2014	05/19/2034	Interest Rate Swap			39808P-AL-0	APES CLO Ltd-SERIES 18-28RA CLASS B	1	19,900,000	19,654,852
57629*BF7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,000,000	8,843,526	05/19/2014	05/19/2034	Interest Rate Swap			04017Q-AE-5	Kingsland Ltd-SERIES 18-8A CLASS A	1	9,000,000	8,843,526
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	28,888,057	40,165,914	05/19/2014	05/19/2044	Interest Rate Swap		11,909,488	42086P-AC-7	SOUTH CAROLINA STUDENT L-SERIES 2014-1 CLASS B	1	28,888,057	28,256,426
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		17,078,152	17,290,499	05/19/2014	05/19/2044	Interest Rate Swap			83715R-AG-7	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A1	1	17,078,152	17,290,499
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,998,116	3,944,604	05/19/2014	05/19/2044	Interest Rate Swap			17181T-AA-9	GOAL CAPITAL FUNDING TRU-SERIES 2006-1 CLASS B	1	3,998,116	3,944,604
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,470,392	6,456,214	05/19/2014	05/19/2044	Interest Rate Swap			38021B-AG-5	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS B2	1	6,470,392	6,456,214
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,174,286	4,449,368	05/19/2014	05/19/2044	Interest Rate Swap			42982T-AS-7	Palmer Square CLO 2018-1-PLMRS	1	4,174,286	4,449,368
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,646,600	05/19/2014	05/19/2044	Interest Rate Swap			69703P-AC-3	2018-1A A2 Babson CLO Ltd 2013-I-SERIES 2013-1A CLASS CR	1	10,000,000	9,646,600
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,050,000	8,561,906	05/19/2014	05/19/2044	Interest Rate Swap			06760E-AE-6	Navient Student Loan Tru-SERIES 18-1A CLASS B	1	9,050,000	8,561,906
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,500,000	9,471,860	05/19/2014	05/19/2044	Interest Rate Swap			63940D-AD-4	Neuberger Berman CLO XVI-SERIES 17-16SA CLASS C	1	9,500,000	9,471,860
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	250,000,000	7,750,000	7,320,317	05/19/2014	05/19/2044	Interest Rate Swap			64131T-AG-9	Anchorage Capital CLO 3-ANCHC 2014-3RA C	1	7,750,000	7,320,317
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,500,000	7,004,715	05/19/2014	05/19/2044	Interest Rate Swap			03330A-AE-2	2014-3RA C	1	7,500,000	7,004,715

SH2.6

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,730,104	05/19/2014	05/19/2044	Interest Rate Swap			38137H-BW-7	Goldentree Loan Opportun-SERIES 2015-11A CLASS BR2	1	8,000,000	7,730,104
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,826,112	05/19/2014	05/19/2044	Interest Rate Swap			39808P-AN-6	Greywolf CLO V Ltd-GWOLF 2015-1A A2R	1	8,000,000	7,826,112
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,050,000	7,497,746	05/19/2014	05/19/2044	Interest Rate Swap			06760G-AC-5	Barings CLO Ltd 2018-I-SERIES 18-1A CLASS B	1	8,050,000	7,497,746
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,800,000	5,324,290	05/19/2014	05/19/2044	Interest Rate Swap			01749B-AC-3	Allegro CLO VI Ltd-ALLEG 2017-2A C	1	5,800,000	5,324,290
57629*BG5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		16,000,000	15,793,872	05/19/2014	05/19/2044	Interest Rate Swap			06760X-AC-8	BARINGS CLO LTD 2018-IV-SERIES 18-4A CLASS A2	1	16,000,000	15,793,872
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	8,650,000	20,172,276	05/19/2014	05/19/2044	Interest Rate Swap		11,860,586	55818R-BC-9	Madison Park Funding XIV-HDPK 2014-14A CRR	1	8,650,000	8,311,690
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,468,612	2,441,408	05/19/2014	05/19/2044	Interest Rate Swap			784424-AE-3	SLC STUDENT LOAN TRUST 2-SERIES 07-1 CLASS B	1	2,468,612	2,441,408
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,970,900	05/19/2014	05/19/2044	Interest Rate Swap			67091H-AK-7	QHA LOAN FUNDING LTD-OHALF 2012-1A B1R	1	15,000,000	14,970,900
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,600,000	14,512,517	05/19/2014	05/19/2044	Interest Rate Swap			09628W-AC-6	BLUEMOUNTAIN CLO LTD-SERIES 16-2A CLASS A2	1	14,600,000	14,512,517
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		16,000,000	15,807,440	05/19/2014	05/19/2044	Interest Rate Swap			69688A-AA-9	Palmer Square CLO 2013-2-SERIES 13-2A CLASS AARR	1	16,000,000	15,807,440
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,850,000	13,810,652	05/19/2014	05/19/2044	Interest Rate Swap			11014P-AB-1	BRISTOL PARK CLO LTD-SERIES 2016-1A CLASS B	1	13,850,000	13,810,652
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	5,000,000	12,150,000	12,056,056	05/19/2014	05/19/2044	Interest Rate Swap			056828-AC-0	BAIN CAPITAL CREDIT CLO -SERIES BCC 2016-2A CLASS B	1	12,150,000	12,056,056
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	15,000,000	3,479,822	3,540,334	05/19/2014	05/19/2044	Interest Rate Swap			23340L-AA-2	DBB PRIME STUDENT LOAN T-SERIES 2015-B CLASS A1	1	3,479,822	3,540,334
57629*BH3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	10,000,000	67,500,000	65,616,750	05/19/2014	05/19/2044	Interest Rate Swap			22101F-AA-6	CORVIAS CAMPUS LIVING - HU, LLC - Sr Seed Note	2	67,500,000	65,616,750
57629*BJJ	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	133,500,000	143,258,517	05/19/2014	05/19/2044	Interest Rate Swap		11,525,256	858102-AX-4	Steele Creek CLO 2016-1 -SERIES 2016-1A CLASS AR	1	133,500,000	131,733,261
57629*BJJ	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	15,000,000	10,000,000	9,641,880	05/19/2014	05/19/2044	Interest Rate Swap			04625A-AC-8	ASSURANT CLO I LTD-SERIES 17-1A CLASS B	1	10,000,000	9,641,880
57629*BJJ	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	25,000,000	7,000,000	6,906,935	05/19/2014	05/19/2044	Interest Rate Swap			48250W-AG-0	KKR CLO 14 Ltd-KKR 14 AR	1	7,000,000	6,906,935
57629*BK6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	130,000,000	140,484,736	05/19/2014	05/19/2044	Interest Rate Swap		11,525,256	85816W-AC-8	Steele Creek CLO 2014-1 -SERIES 14-1RA CLASS A	1	130,000,000	128,959,480
57629*BK6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	10,000,000	15,000,000	14,963,685	05/19/2014	05/19/2044	Interest Rate Swap			88322U-AM-1	THACHER PARK CLO-THRPK 2014-1A BR Harbor Park CLO, Ltd-HAR-HARB 2018-1A B1	1	15,000,000	14,963,685
57629*BK6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	15,000,000	5,200,000	5,091,429	05/19/2014	05/19/2044	Interest Rate Swap			41154X-AG-0	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A1	1	5,200,000	5,091,429
57629*BL4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	4,997,645	16,511,899	05/19/2014	05/19/2044	Interest Rate Swap		11,581,144	17181T-AA-9	ATLAS SENIOR LOAN FUND L-SERIES 2017-8A CLASS B	1	4,997,645	4,930,755
57629*BL4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		25,300,000	25,140,990	05/19/2014	05/19/2044	Interest Rate Swap			04943A-AC-3	SYMPHONY CLO LTD-SYMP 2014-14A B1R	1	25,300,000	25,140,990
57629*BL4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	226,000,000	12,800,000	12,800,051	05/19/2014	05/19/2044	Interest Rate Swap			87159Q-BG-2	Harbour Aircraft Investm Series 2017-1 C	1	12,800,000	12,800,051
57629*BL4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	257,000,000	24,144,529	24,265,367	05/19/2014	05/19/2044	Interest Rate Swap			64301U-AH-7	QHA Loan Funding 2013-2 -OHALF	1	24,144,529	24,265,367
57629*BL4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		79,100,000	77,426,956	05/19/2014	05/19/2044	Interest Rate Swap			67104L-AE-7	2013-2A AR	1	79,100,000	77,426,956
57629*BL4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,000,000	3,826,668	05/19/2014	05/19/2044	Interest Rate Swap			94949R-AW-7	Wellfleet CLO 2016-1 Ltd-WELF 2016-1A CR	1	4,000,000	3,826,668
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	44,981,404	55,593,011	05/19/2014	05/19/2044	Interest Rate Swap		11,595,116	42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	44,981,404	43,997,895
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		17,316,316	16,607,708	05/19/2014	05/19/2044	Interest Rate Swap			67818N-ZZ-5	SASOL CHEMICALS (USA) LL TERM LOAN	2	17,316,316	16,607,708
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	49,665,019	6,123,240	6,321,141	05/19/2014	05/19/2044	Interest Rate Swap			00764M-GG-6	AEGIS ASSET BACKED SECUR-SERIES 2005-4 CLASS M1	1	6,123,240	6,321,141
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	167,790,725	4,145,899	3,735,994	05/19/2014	05/19/2044	Interest Rate Swap			247358-CC-6	EAIIV Delta MSN 15181	1	4,145,899	3,735,994
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	49,878,194	15,000,000	14,843,010	05/19/2014	05/19/2044	Interest Rate Swap			67707C-AJ-7	Oak Hill Credit Partners-OAKC 2014-10RA B	1	15,000,000	14,843,010

SH12.7

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,207,107	13,560,000	13,470,735	05/19/2014	05/19/2044	Interest Rate Swap			64130H-AA-9	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A A	1	13,560,000	13,470,735
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,616,145	13,600,000	13,286,656	05/19/2014	05/19/2044	Interest Rate Swap			64130H-AC-5	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A B1	1	13,600,000	13,286,656
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	51,627,893	15,000,000	14,953,875	05/19/2014	05/19/2044	Interest Rate Swap			817176-AN-0	SENECA PARK CLO LTD-SPARK 2014-1A B1R	1	15,000,000	14,953,875
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	51,630,473	15,800,000	15,161,648	05/19/2014	05/19/2044	Interest Rate Swap			50512#-AE-2	LA Stadium Finance Compa Senior Secured	2	15,800,000	15,161,648
57629*BM2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	100,000,000	4,911,579	5,009,369	05/19/2014	05/19/2044	Interest Rate Swap			64033L-AD-2	NELNET STUDENT LOAN TRUS-SERIES 2014-2A CLASS B	1	4,911,579	5,009,369
57629*BNO	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	135,000,000	104,754,822	115,271,849	05/19/2014	05/19/2044	Interest Rate Swap		10,825,425	05363U-AS-2	EVERY POINT CLO LTD-SERIES 14-1A CLASS AR	1	104,754,822	104,446,424
57629*BNO	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,597,362	5,522,446	05/19/2014	05/19/2044	Interest Rate Swap			17181T-AA-9	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A1	1	5,597,362	5,522,446
57629*BNO	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		27,700,000	26,781,496	05/19/2014	05/19/2044	Interest Rate Swap			38176D-AJ-8	GoLub Capital Partners C-GOCAP 2015-26A A2R	1	27,700,000	26,781,496
57629*BP5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	85,000,000	27,953,783	29,716,730	05/09/2014	05/09/2034	Interest Rate Swap		4,809,345	77277L-B8-9	ROCKALL CLO BV Variable Funding Note - GBP	1	27,953,783	24,907,385
57629*BP5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,764,140	05/09/2014	05/09/2034	Interest Rate Swap			03765W-BC-1	Apollo Credit Funding IV-SERIES 4A CLASS A1BR	1	15,000,000	14,764,140
57629*BP5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,570,000	13,370,806	05/09/2014	05/09/2034	Interest Rate Swap			04016P-AC-2	ARES CLO LTD-SERIES 17-43A CLASS B	1	13,570,000	13,370,806
57629*BP5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	170,000,000	13,570,000	13,025,775	05/09/2014	05/09/2034	Interest Rate Swap			22616C-AC-7	CRESTLINE DENALI CLO XV -SERIES 17-1A CLASS B	1	13,570,000	13,025,775
57629*BP5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,560,506	13,382,083	05/09/2014	05/09/2034	Interest Rate Swap			77342K-AA-8	ROCKFORD TOWER CLO 2018-ROCKT 2018-2A A	1	13,560,506	13,382,083
57629*BP5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,900,000	3,632,335	05/09/2014	05/09/2034	Interest Rate Swap			05683L-AG-1	Bain Capital Credit CLO -SERIES 1A CLASS C	1	3,900,000	3,632,335
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	13,100,000	21,758,146	07/22/2014	07/22/2044	Interest Rate Swap		9,107,070	67707B-AB-6	OHA Credit Partners XV L-SERIES 17-15A CLASS B	1	13,100,000	12,651,076
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,300,000	13,077,730	07/22/2014	07/22/2044	Interest Rate Swap			75888F-AE-5	Regatta XIII Funding LLC-SERIES 18-2A CLASS A2	1	13,300,000	13,077,730
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	200,000,000	8,000,000	7,838,832	07/22/2014	07/22/2044	Interest Rate Swap			67115W-AG-5	OHA Credit Funding 1 LTD-SERIES 18-1A CLASS B	1	8,000,000	7,838,832
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,614,095	07/22/2014	07/22/2044	Interest Rate Swap			17180W-AC-9	CIFC Funding 2018-II Ltd-CIFC 2018-2A A2	1	15,000,000	14,614,095
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,500,000	13,232,079	07/22/2014	07/22/2044	Interest Rate Swap			03329A-AE-5	Anchorage Capital CLO Lt-SERIES 2014-5RA CLASS B	1	13,500,000	13,232,079
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,751,509	10,801,242	07/22/2014	07/22/2044	Interest Rate Swap			247361-PP-9	DELTA AIR LINES INC AIRBUS A330-200 N856NW	1	10,751,509	10,801,242
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		35,000,000	34,572,405	07/22/2014	07/22/2044	Interest Rate Swap			14315J-AL-3	CARLYLE GLOBAL MARKET ST-SERIES 17-2A CLASS A1B	1	35,000,000	34,572,405
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	300,000,000	5,900,000	5,714,675	07/22/2014	07/22/2044	Interest Rate Swap			40436X-AG-2	HIGHBRIDGE LOAN MANAGEMEN-SERIES 2014 CLASS BR	1	5,900,000	5,714,675
57629*BR1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,500,000	14,394,484	07/22/2014	07/22/2044	Interest Rate Swap			553205-AC-9	MP CLO III LTD-IMP3 2013-1A AR	1	14,500,000	14,394,484
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	20,000,000	28,848,230	07/22/2014	07/22/2044	Interest Rate Swap		9,118,770	36248M-AJ-6	GT Loan Financing I Ltd -SERIES 2013-1A CLASS AR	1	20,000,000	19,729,460
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,896,380	07/22/2014	07/22/2044	Interest Rate Swap			48251M-AS-5	KKR CLO 15 Ltd-KKR 15 A2R	1	15,000,000	14,896,380
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		19,590,000	19,464,428	07/22/2014	07/22/2044	Interest Rate Swap			88433R-AC-6	WIND RIVER CLO LTD-SERIES 17-2A CLASS A	1	19,590,000	19,464,428
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		19,500,000	19,362,194	07/22/2014	07/22/2044	Interest Rate Swap			04016P-AA-6	ARES CLO LTD-ARES 2017-43A A	1	19,500,000	19,362,194
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	320,000,000	8,500,000	8,340,413	07/22/2014	07/22/2044	Interest Rate Swap			15032T-AW-6	CEDAR FUNDING LTD-SERIES 13-1A CLASS BR	1	8,500,000	8,340,413
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,828,192	07/22/2014	07/22/2044	Interest Rate Swap			12551J-AE-6	CIFC FUNDING LTD-SERIES 17-4A CLASS A2	1	8,000,000	7,828,192
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,100,000	4,989,519	07/22/2014	07/22/2044	Interest Rate Swap			06760B-AJ-1	BARSON CLO LTD-SERIES 17-1A CLASS C	1	5,100,000	4,989,519
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,100,000	4,975,728	07/22/2014	07/22/2044	Interest Rate Swap			566061-AE-7	MARBLE POINT CLO X LTD-SERIES 2017-1A CLASS B	1	5,100,000	4,975,728

SH2.8

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,400,000	3,326,033	04/09/2013	04/09/2043	Interest Rate Swap			55818Y-BG-5	MADISON PARK FUNDING LTD-SERIES 15-17A CLASS CR	1	3,400,000	3,326,033
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,975,000	2,975,494	04/09/2013	04/09/2043	Interest Rate Swap			671020-AP-3	OHA CREDIT PARTNERS LTD-SERIES 2012-7A CLASS CR	1	2,975,000	2,975,494
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	160,000,000	6,540,000	6,540,052	04/09/2013	04/09/2043	Interest Rate Swap			87231L-AC-5	TCI-CENT CLO 2016-1 LTD.-TCENT 2016-1A A2	1	6,540,000	6,540,052
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,250,000	9,215,673	04/09/2013	04/09/2043	Interest Rate Swap			94950G-AA-5	WELLFLEET CLO LTD-WELF 2017-1A A1	1	9,250,000	9,215,673
57629*BT7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,000,000	3,756,664	04/09/2013	04/09/2043	Interest Rate Swap			41154X-AL-9	Harbor Park CLO, Ltd-HARB 2018-1A C	1	4,000,000	3,756,664
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	17,000,000	26,078,140	07/22/2014	07/22/2044	Interest Rate Swap		9,118,770	04014W-AL-9	ARES CLO LTD-ARES 2014-1A A2R Steele Creek Clo 2018-2 -SERIES	1	17,000,000	16,959,370
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,981,866	15,783,840	07/22/2014	07/22/2044	Interest Rate Swap			85816L-AA-6	2018-2A CLASS A	1	15,981,866	15,783,840
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		22,550,000	22,290,675	07/22/2014	07/22/2044	Interest Rate Swap			14315J-SS-9	Carlyle US CLO 2013-1 Re Term Loan	1	22,550,000	22,290,675
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	320,000,000	17,000,000	16,974,364	07/22/2014	07/22/2044	Interest Rate Swap			55818P-AN-0	MADISON PARK FUNDING LTD-MDPK 2014-12A B1R	1	17,000,000	16,974,364
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,125,000	8,124,496	07/22/2014	07/22/2044	Interest Rate Swap			55820N-AE-1	MADISON PARK FUNDING LTD-MDPK 2016-24A C1	1	8,125,000	8,124,496
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,900,000	6,726,900	07/22/2014	07/22/2044	Interest Rate Swap			38136F-AL-7	GoldenTree Loan Managem-GLIM 2017-1A C	1	6,900,000	6,726,900
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,650,000	5,565,431	07/22/2014	07/22/2044	Interest Rate Swap			50184N-AN-2	LGM LTD PARTNERSHIP-SERIES 15A CLASS BR	1	5,650,000	5,565,431
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,077,958	8,975,786	07/22/2014	07/22/2044	Interest Rate Swap			61945C-AA-1	MOAIC CO/THE-SENIOR UNSECURED NOTE	2	9,077,958	8,975,786
57629*BU4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,000,000	20,635,807	07/22/2014	07/22/2044	Interest Rate Swap			67332F-AG-8	RRPF Engine Leasing Ltd Senior Secured	2	23,000,000	20,635,807
57629*BV2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	7,000,000	15,950,268	07/22/2014	07/22/2044	Interest Rate Swap		9,071,970	04017Q-AE-5	ARES CLO Ltd-SERIES 18-28RA CLASS B	1	7,000,000	6,878,298
57629*BV2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,600,000	7,461,551	07/22/2014	07/22/2044	Interest Rate Swap			75888K-AC-8	REGATTA VIII FUNDING LTD-SERIES 2017-1A CLASS B	1	7,600,000	7,461,551
57629*BV2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	140,000,000	7,460,000	7,404,818	07/22/2014	07/22/2044	Interest Rate Swap			00900C-AA-2	AIMCO-AIMCO 2017-AA A	1	7,460,000	7,404,818
57629*BV2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		28,400,000	27,689,886	07/22/2014	07/22/2044	Interest Rate Swap			04017T-AC-3	Aras XXXIR CLO Ltd-SERIES 14-31RA CLASS A2	1	28,400,000	27,689,886
57629*BV2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,806,084	11,623,590	07/22/2014	07/22/2044	Interest Rate Swap			26244Q-AB-9	DRYDEN SENIOR LOAN FUND-SERIES 17-49A CLASS B	1	11,806,084	11,623,590
57629*BV2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		41,982,644	41,064,702	07/22/2014	07/22/2044	Interest Rate Swap			42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	41,982,644	41,064,702
57629*BV2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,500,000	12,385,150	07/22/2014	07/22/2044	Interest Rate Swap			05683H-AC-9	BAIN CAPITAL CREDIT CLO -SERIES 2017-2A CLASS AR	1	12,500,000	12,385,150
57629*BV2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,500,000	9,365,414	07/22/2014	07/22/2044	Interest Rate Swap			88432U-AE-6	Wind River CLO Ltd-SERIES 18-3A CLASS B	2	9,500,000	9,365,414
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	4,071,125	12,759,037	07/22/2014	07/22/2044	Interest Rate Swap		9,083,670	247358-XT-6	EAIV Delta MSN 15166	1	4,071,125	3,675,367
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,964,550	6,970,998	07/22/2014	07/22/2044	Interest Rate Swap			91754R-ZG-5	STATE BOARD OF REGENTS 0-SERIES JSBR 2017-1 CLASS B	1	6,964,550	6,970,998
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,291,202	5,274,308	07/22/2014	07/22/2044	Interest Rate Swap			78443K-AK-2	SLM STUDENT LOAN TRUST 2-SERIES 06-9 CLASS B	1	5,291,202	5,274,308
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,200,000	14,743,164	07/22/2014	07/22/2044	Interest Rate Swap			87248K-AL-8	TICP CLO VI 2016-5 Ltd-TICP 2016-5A BR	1	15,200,000	14,743,164
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,599,298	4,499,412	07/22/2014	07/22/2044	Interest Rate Swap			57643L-FG-6	MASTR ASSET BACKED SECUR-SERIES 2004-OPT2 CLASS A1	1	4,599,298	4,499,412
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,295,000	5,178,897	07/22/2014	07/22/2044	Interest Rate Swap			03766G-AG-7	APIDOS CLO-SERIES 17-26A CLASS B	1	5,295,000	5,178,897
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	160,000,000	11,987,554	11,946,300	07/22/2014	07/22/2044	Interest Rate Swap			55819X-AC-6	Madison Park Funding XXI-MDPK 2016-22A B	1	11,987,554	11,946,300
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		16,300,000	16,040,015	07/22/2014	07/22/2044	Interest Rate Swap			33882G-AA-6	FLATIRON CLO LTD-FLAT 2017-1A A	1	16,300,000	16,040,015
57629*B10	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		16,280,000	15,623,688	07/22/2014	07/22/2044	Interest Rate Swap			150323-AQ-6	CEDAR FUNDING LTD-SERIES 14-4A CLASS BR	1	16,280,000	15,623,688

SH2.9

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*B1W0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,410,000	9,330,222	07/22/2014	07/22/2044	Interest Rate Swap			04943A-AE-9	ATLAS SENIOR LOAN FUND L-SERIES 17-8A CLASS C	1	9,410,000	9,330,222
57629*B1W0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,900,000	11,482,441	07/22/2014	07/22/2044	Interest Rate Swap			44330G-AE-3	Highbridge Loan Managem-SERIES 4A-2014 CLASS A2R	1	11,900,000	11,482,441
57629*B1W0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,250,000	4,249,979	07/22/2014	07/22/2044	Interest Rate Swap			76761R-AE-9	Riserva Clo Ltd-SERIES 2016-3A CLASS C1	1	4,250,000	4,249,979
57629*B1W0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,500,000	8,499,805	07/22/2014	07/22/2044	Interest Rate Swap			87231L-AA-9	TCI-CENT CLO 2016-1 LTD.-TCENT 2016-1A A1	1	8,500,000	8,499,805
57629*B1W0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,000,000	983,855	07/22/2014	07/22/2044	Interest Rate Swap			62848F-AC-6	MYERS PARK CLO LTD-MYERS 2018-1A A2	1	1,000,000	983,855
57629*B1W0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	5,000,000	07/22/2014	07/22/2044	Interest Rate Swap			00900P-AG-0	AIMCO CLO Series 2018-B-SERIES 18-8A CLASS C	1	5,000,000	5,000,000
57629*BZ3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	10,941,399	13,772,210	08/27/2014	08/27/2044	Interest Rate Swap		2,726,604	78443G-AJ-4	SLM STUDENT LOAN TRUST 2-SERIES 06-7 CLASS B	1	10,941,399	11,045,606
57629*BZ3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,900,000	7,612,243	08/27/2014	08/27/2044	Interest Rate Swap			92916Q-AC-6	VOYA CLO 2017-4 LTD-SERIES 17-4A CLASS B	1	7,900,000	7,612,243
57629*BZ3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,745,825	08/27/2014	08/27/2044	Interest Rate Swap			14314B-AC-1	CARLYLE GLOBAL MARKET ST-CGMS 2017-1A A2	1	15,000,000	14,745,825
57629*BZ3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,560,000	8,333,845	08/27/2014	08/27/2044	Interest Rate Swap			85816B-CQ-1	STEELE CREEK CLO LTD-SERIES 15-1A CLASS BR	1	8,560,000	8,333,845
57629*BZ3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,050,000	8,989,790	08/27/2014	08/27/2044	Interest Rate Swap			92912V-AN-5	VOYA CLO LTD-VOYA 2014-2A A1R	1	9,050,000	8,989,790
57629*CA7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	60,500,000	62,999,808	08/27/2014	08/27/2044	Interest Rate Swap		2,745,377	126612-AJ-9	CVP CASCADE CLO LTD-CVPC 2013-CLO1 A1R	1	60,500,000	60,254,431
57629*CB5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	6,800,000	9,497,411	08/27/2014	08/27/2044	Interest Rate Swap		2,698,445	388080-AN-1	GREYWOLF CLO LTD-SERIES 2014-2A CLASS BR	1	6,800,000	6,798,966
57629*CB5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,800,000	6,736,121	08/27/2014	08/27/2044	Interest Rate Swap			00900A-AJ-7	AIMCO-SERIES 14-AA CLASS B1R	1	6,800,000	6,736,121
57629*CB5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,250,000	13,892,710	08/27/2014	08/27/2044	Interest Rate Swap			67112K-AB-5	CCP CLO LTD-SERIES 18-15A CLASS A2	1	14,250,000	13,892,710
57629*CB5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,300,000	3,274,570	08/27/2014	08/27/2044	Interest Rate Swap			06761C-AC-3	Babson CLO Ltd 2016-11-BABSN 2016-2A BR	2	3,300,000	3,274,570
57629*CB5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,100,000	14,099,986	08/27/2014	08/27/2044	Interest Rate Swap			06759Y-AA-3	BARINGS CLO LTD-BABSN 2016-3A A1	1	14,100,000	14,099,986
57629*CB5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,350,000	2,267,616	08/27/2014	08/27/2044	Interest Rate Swap			14954W-AQ-9	BAIN CAPITAL CREDIT CLO -SERIES 2017-2A CLASS CR	1	2,350,000	2,267,616
57629*CB5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,652,876	2,639,416	08/27/2014	08/27/2044	Interest Rate Swap			045487-AA-3	ASSOC BANC-CORP-SR UNSECURED Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A1	2	2,652,876	2,639,416
57629*CC3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	50,000,000	22,469,287	24,913,976	08/27/2014	08/27/2044	Interest Rate Swap		2,665,593	94949J-AA-3	ALM XIV Ltd-SERIES 14-14A CLASS A1R2	1	22,469,287	22,248,383
57629*CC3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,900,000	15,616,328	08/27/2014	08/27/2044	Interest Rate Swap			74988L-AA-2	Barings CLO Ltd 2018-1-SERIES 18-1A CLASS A1	1	15,900,000	15,616,328
57629*CC3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		16,475,000	16,049,237	08/27/2014	08/27/2044	Interest Rate Swap			06760G-AA-9	Kingsland VI Ltd-KING 2013-6A AR	1	16,475,000	16,049,237
57629*CE9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	100,000,000	106,753,870	09/08/2014	09/08/2044	Interest Rate Swap		8,044,570	42086Q-AA-9	AUST & NZ BANKING GROUP-SUBORDINATED NOTE	1	100,000,000	98,709,300
57629*CE9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		21,465,000	27,108,918	09/08/2014	09/08/2044	Interest Rate Swap			ZZ2066-36-8	WIND RIVER CLO LTD-SERIES 17-2A CLASS C1	1	21,465,000	27,108,918
57629*CE9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,400,000	8,256,654	09/08/2014	09/08/2044	Interest Rate Swap			48252Y-AE-9	AIMCO CLO Series 2015-A-SERIES 15-AA CLASS CR	1	8,400,000	8,256,654
57629*CE9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,750,000	2,537,117	09/08/2014	09/08/2044	Interest Rate Swap			04015U-AK-4	Carlyle Global Market St-SERIES 14-38A CLASS CR	1	2,750,000	2,537,117
57629*CE9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,590,000	2,522,049	09/08/2014	09/08/2044	Interest Rate Swap			88433R-AG-7	Carlyle Global Market St-SERIES 14-38A CLASS CR	1	2,590,000	2,522,049
57629*CE9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,500,000	2,378,120	09/08/2014	09/08/2044	Interest Rate Swap			00900L-AJ-3	AIMCO CLO Series 2015-A-SERIES 15-AA CLASS CR	1	2,500,000	2,378,120
57629*CE9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,500,000	10,261,850	09/08/2014	09/08/2044	Interest Rate Swap			14315L-AC-8	Carlyle Global Market St-SERIES 14-38A CLASS A1B	1	10,500,000	10,261,850
57629*CE9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,770,000	4,675,667	09/08/2014	09/08/2044	Interest Rate Swap			48275P-AG-6	KREF 2018-FL1 Ltd-KREF 2018-FL1 C	1	4,770,000	4,675,667
57629*CG4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	55,000,000	9,826,366	11,081,149	10/06/2014	10/06/2034	Interest Rate Swap		1,265,069	55819B-AN-0	Madison Park Funding XVI-MDPK 2015-18A BR	1	9,826,366	9,816,080

SI12.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	14 NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*CG4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,100,000	19,374,993	10/06/2014	10/06/2034	Interest Rate Swap			06760G-AB-7	Barings CLO Ltd 2018-I-SERIES 18-1A CLASS A2	1	20,100,000	19,374,993
57629*CG4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,100,000	19,849,333	10/06/2014	10/06/2034	Interest Rate Swap			77341D-AA-5	Rockford Tower CLO 2017--ROCKT 2017-3A A	1	20,100,000	19,849,333
57629*CG4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,896,745	10/06/2014	10/06/2034	Interest Rate Swap			817176-AS-9	SENECA PARK CLO LTD-SPARK 2014-1A CR	1	5,000,000	4,896,745
57629*CH2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	100,000,000	44,959,263	50,325,311	10/06/2014	10/06/2044	Interest Rate Swap		4,811,941	28108R-AA-0	EdLinc Student Loan Fund-ESLFT 2017-A A	1	44,959,263	45,513,370
57629*CH2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,580,682	6,574,283	10/06/2014	10/06/2044	Interest Rate Swap			61744C-NB-8	MORGAN STANLEY CAPITAL I-SERIES 2005-HE2 CLASS M1	1	6,580,682	6,574,283
57629*CH2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,900,000	4,737,673	10/06/2014	10/06/2044	Interest Rate Swap			12481K-AC-2	CBAM 2017-2 LTD-SERIES 17-2A CLASS B1	1	4,900,000	4,737,673
57629*CH2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,950,000	2,913,037	10/06/2014	10/06/2044	Interest Rate Swap			13080B-AD-3	SYMPHONY CLO LTD-SERIES 13-12A CLASS CR	1	2,950,000	2,913,037
57629*CH2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,000,000	19,472,700	10/06/2014	10/06/2044	Interest Rate Swap			94950G-AC-1	WELLFLEET CLO LTD-WELF 2017-1A A2	1	20,000,000	19,472,700
57629*CH2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,692,140	10/06/2014	10/06/2044	Interest Rate Swap			55952Y-AR-8	Magnetite VIII Ltd-MAGNE 2014-8A BR2	1	15,000,000	14,692,140
57629*CH2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,400,000	4,331,272	10/06/2014	10/06/2044	Interest Rate Swap			88434H-AE-3	THL Credit Wind River 20-SERIES 18-2A CLASS A2	1	4,400,000	4,331,272
57629*CH2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,600,000	3,324,053	10/06/2014	10/06/2044	Interest Rate Swap			87249C-AE-1	TICOP CLO X LTD-SERIES 18-10A CLASS C	1	3,600,000	3,324,053
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2	175,000,000	60,000,000	63,355,113	10/10/2014	10/10/2044	Interest Rate Swap		5,921,793	67332F-AD-5	PRPF Engine Leasing Ltd Senior Secured	2	60,000,000	57,433,320
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2		27,402,329	27,724,500	10/10/2014	10/10/2044	Interest Rate Swap			629394-AA-5	NTC CAPITAL I-UNSECURED BOND CULLEN/FROST CAP TR II-SUBORDINATED NOTE	2	27,402,329	27,724,500
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2		20,990,792	21,455,070	10/10/2014	10/10/2044	Interest Rate Swap			230000-AB-7	BLUEMOUNTAIN CLO LTD-SERIES 2015-1A CLASS A2R	2	20,990,792	21,455,070
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2		20,500,000	20,420,747	10/10/2014	10/10/2044	Interest Rate Swap			09627X-AW-1	CHENANGO PARK CLO LTD-SERIES 18-1A CLASS A1B	1	20,500,000	20,420,747
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2		16,200,000	15,844,151	10/10/2014	10/10/2044	Interest Rate Swap			16409T-AC-3	Taconic Park CLO Ltd 201-SERIES 2016-1A CLASS A2	1	16,200,000	15,844,151
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2		16,100,000	16,053,857	10/10/2014	10/10/2044	Interest Rate Swap			873549-AC-3	GRIFFEN PARK CLO LTD-SERIES 17-1A CLASS B	1	16,100,000	16,053,857
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2		7,000,000	6,919,290	10/10/2014	10/10/2044	Interest Rate Swap			39862E-AB-0	Dryden XXVIII Senior Loa-DRSLF	1	7,000,000	6,919,290
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2		3,554,347	3,496,963	10/10/2014	10/10/2044	Interest Rate Swap			26251B-AN-6	2013-28A A2LR	1	3,554,347	3,496,963
57629*CJ8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	2		5,938,666	6,584,183	10/10/2014	10/10/2044	Interest Rate Swap			78442G-RC-2	SLMA 2005-9 STUDENT LN-BKD NT CL B	1	5,938,666	6,584,183
57629*CK5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	80,000,000	83,227,961	11/04/2014	11/04/2044	Interest Rate Swap		4,213,801	87271L-AJ-1	TIAA CLO I Ltd-TIA 2016-1A AR	1	80,000,000	79,014,160
57629*CK5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,000,000	19,740,040	11/04/2014	11/04/2044	Interest Rate Swap			55819D-AE-6	Madison Park Funding XXX-MDPK 2018-31A A2A	1	20,000,000	19,740,040
57629*CK5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		35,000,000	34,558,755	11/04/2014	11/04/2044	Interest Rate Swap			22616T-AA-4	Crestline Denali CLO XVI-DEN17 2018-1A A	1	35,000,000	34,558,755
57629*CL3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	110,000,000	109,331,381	11/04/2014	11/04/2044	Interest Rate Swap		4,237,381	06761N-AE-5	Barings Middle Market CL-BMM 2018-II COM	1	110,000,000	105,094,000
57629*CL3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		22,445,000	22,157,839	11/04/2014	11/04/2044	Interest Rate Swap			08181J-AA-0	Benefit Street Partners -SERIES 18-5BA CLASS A1A	1	22,445,000	22,157,839
57629*CL3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,000,000	966,034	11/04/2014	11/04/2044	Interest Rate Swap			48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	1	1,000,000	966,034
57629*CM1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	34,479,172	38,670,514	11/04/2014	11/04/2044	Interest Rate Swap		4,426,024	50188G-AT-0	LOM XVIII LP-LQM 18A A1R	1	34,479,172	34,244,490
57629*CM1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		45,980,991	44,975,626	11/04/2014	11/04/2044	Interest Rate Swap			42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	1	45,980,991	44,975,626
57629*CM1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		30,000,000	30,016,200	11/04/2014	11/04/2044	Interest Rate Swap			38172X-AG-4	GOLUB CAPITAL PARTNERS C-SERIES 13-16A CLASS A1R	1	30,000,000	30,016,200
57629*CM1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,200,000	1,159,241	11/04/2014	11/04/2044	Interest Rate Swap			48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	1	1,200,000	1,159,241
57629*CM1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,187,114	15,247,420	11/04/2014	11/04/2044	Interest Rate Swap			03328Y-AA-2	ANCHORAGE CAPITAL CLO 1--ANCHC 2018-1RA A1	1	15,187,114	15,247,420

SI12.11

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	14,404,435	18,533,409	11/04/2014	11/04/2044	Interest Rate Swap	4,449,604		G6776M-ZZ-9	ORANGE GROVE ENERGY, L.P DELAYED DRAW TE	2	14,404,435	14,083,805
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	3,750,239	3,417,368	3,417,368	11/04/2014	11/04/2044	Interest Rate Swap			247358-BB-9	EAIV Delta MSN 15153	1	3,750,239	3,417,368
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	4,057,609	3,690,574	3,690,574	11/04/2014	11/04/2044	Interest Rate Swap			247358-DD-3	EAIV Delta MSN 15161	1	4,057,609	3,690,574
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	3,759,546	3,428,191	3,428,191	11/04/2014	11/04/2044	Interest Rate Swap			247358-PP-3	EAIV Delta MSN 15147	1	3,759,546	3,428,191
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	3,759,695	3,355,798	3,355,798	11/04/2014	11/04/2044	Interest Rate Swap			247358-RR-7	EAIV 2017 Delta MSN 15146	1	3,759,695	3,355,798
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	4,057,609	3,690,574	3,690,574	11/04/2014	11/04/2044	Interest Rate Swap			247358-RW-6	EAIV Delta MSN 15162	1	4,057,609	3,690,574
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	45,945,301	47,642,015	47,642,015	11/04/2014	11/04/2044	Interest Rate Swap			83416T-RR-3	Arpad Solar Borrower LLC Term Loan	2	45,945,301	47,642,015
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	26,700,000	26,635,680	26,635,680	11/04/2014	11/04/2044	Interest Rate Swap			29108Q-AY-8	EMERSON PARK CLO LTD-SERIES 13-1A	1	26,700,000	26,635,680
57629*CN9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	22,500,000	22,077,000	22,077,000	11/04/2014	11/04/2044	Interest Rate Swap			G1093*-AA-7	BIF II SAFE HARBOR HOLDINGS LLC ATRIUM CDO CORP-SERIES 9A CLASS AR	2	22,500,000	22,077,000
57629*CP4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	48,000,000	52,193,177	11/04/2014	11/04/2044	Interest Rate Swap	4,520,345		04964K-AL-5	BAIN CAPITAL CREDIT CLO -SERIES 18-2A CLASS A1	1	48,000,000	47,672,832
57629*CP4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	28,500,000	27,963,345	27,963,345	11/04/2014	11/04/2044	Interest Rate Swap			05682V-AA-3	CAMERON LNG CONSTRUCTION FA JFIN CLO LTD-SERIES 14-2A CLASS	1	28,500,000	27,963,345
57629*CP4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	55,348,843	55,670,517	55,670,517	11/04/2014	11/04/2044	Interest Rate Swap			13345*-AA-5	CAMERON LNG CONSTRUCTION FA JFIN CLO LTD-SERIES 14-2A CLASS	1	55,348,843	55,670,517
57629*CO2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	67,256,197	71,592,503	11/04/2014	11/04/2044	Interest Rate Swap	4,661,826		46617N-AQ-0	AT1AR	1	67,256,197	66,930,677
57629*CO2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	37,400,000	37,400,000	37,400,000	11/04/2014	11/04/2044	Interest Rate Swap			74992*-AB-1	RXR Realty, LLC Senior Secured HPS Loan Management 13-2-HLM 13A-18	2	37,400,000	37,400,000
57629*CO2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	10,490,000	10,242,698	10,242,698	11/04/2014	11/04/2044	Interest Rate Swap			40437L-AG-7	HPS Loan Management 9-20-HLM 9A-2016 A1BR	1	10,490,000	10,242,698
57629*CO2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	10,000,000	9,811,790	9,811,790	11/04/2014	11/04/2044	Interest Rate Swap			40436Q-AL-6	Voya CLO 2014-1 Ltd-INGIN 2014-1A ABR2	1	10,000,000	9,811,790
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	16,600,000	20,785,846	11/04/2014	11/04/2044	Interest Rate Swap	4,638,246		92915P-AA-1	AVERY POINT IV CLO LTD-SERIES 14-1A CLASS CR	1	16,600,000	16,147,600
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	13,660,000	13,561,388	13,561,388	11/04/2014	11/04/2044	Interest Rate Swap			05363U-AH-3	ATRIUM CDO CORP-SERIES 9A CLASS CR	1	13,660,000	13,561,388
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	13,660,000	13,414,257	13,414,257	11/04/2014	11/04/2044	Interest Rate Swap			04964K-AS-0	RRPF Engine Leasing Ltd Senior Secured	2	13,660,000	13,414,257
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	13,000,000	11,216,998	11,216,998	11/04/2014	11/04/2044	Interest Rate Swap			G7332F-AH-6	Atlas Senior Loan Fund X-ATCLO	2	13,000,000	11,216,998
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	10,000,000	9,768,030	9,768,030	11/04/2014	11/04/2044	Interest Rate Swap			04941Y-AJ-8	2018-11A B	1	10,000,000	9,768,030
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	30,000,000	29,681,850	29,681,850	11/04/2014	11/04/2044	Interest Rate Swap			87806L-AC-0	TCI-CENT CLO 2016-1 LTD.-SERIES 17-1A CLASS A1	1	30,000,000	29,681,850
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	20,000,000	19,868,220	19,868,220	11/04/2014	11/04/2044	Interest Rate Swap			12550Y-AC-8	CIFC FUNDING LTD-CIFC 2017-2A A Wellfleet CLO 2018-3 Ltd-SERIES 18-3A CLASS A2	1	20,000,000	19,868,220
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	7,500,000	7,395,450	7,395,450	11/04/2014	11/04/2044	Interest Rate Swap			94951D-AJ-2	EVERSOURCE ENERGY-UNSECURED NOTE MADISON PARK FUNDING LTD-SERIES 2015-16A CLASS A2R	2	7,500,000	7,395,450
57629*CR0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	1,798,144	1,756,466	1,756,466	11/04/2014	11/04/2044	Interest Rate Swap			664397-AK-2	MAGNETITE CLO LTD-SERIES 14-11A CLASS A1R	2	1,798,144	1,756,466
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	12,740,000	17,374,829	11/04/2014	11/04/2044	Interest Rate Swap	4,685,407		55818X-AY-9	APIDOS CLO-SERIES 17-26A CLASS A2 CATSKILL PARK CLO LTD.-SERIES 17-1A CLASS A2	1	12,740,000	12,689,422
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	12,675,000	12,623,679	12,623,679	11/04/2014	11/04/2044	Interest Rate Swap			55853E-AJ-9	THL Credit Wind River 20-SERIES 18-2A CLASS A2	1	12,675,000	12,623,679
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	12,240,000	12,059,044	12,059,044	11/04/2014	11/04/2044	Interest Rate Swap			03766G-AE-2	KFR FINANCIAL CLO LTD-SERIES 9 CLASS AR	1	12,240,000	12,059,044
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	11,980,000	11,800,204	11,800,204	11/04/2014	11/04/2044	Interest Rate Swap			149420-AE-1	EVERSOURCE ENERGY-UNSECURED NOTE MADISON PARK FUNDING LTD-SERIES 2015-16A CLASS A2R	1	11,980,000	11,800,204
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	5,000,000	4,921,900	4,921,900	11/04/2014	11/04/2044	Interest Rate Swap			88434H-AE-3	THL Credit Wind River 20-SERIES 18-2A CLASS A2	1	5,000,000	4,921,900
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	21,100,000	20,956,035	20,956,035	11/04/2014	11/04/2044	Interest Rate Swap			48250L-AL-3	EVERSOURCE ENERGY-UNSECURED NOTE MADISON PARK FUNDING LTD-SERIES 2015-16A CLASS A2R	1	21,100,000	20,956,035

SI12.12

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,100,000	22,861,885	11/04/2014	11/04/2044	Interest Rate Swap			24824T-AQ-3	Denali Capital Clo XII L-DEV12 2016-1A A1R	1	23,100,000	22,861,885
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,250,000	9,968,627	11/04/2014	11/04/2044	Interest Rate Swap			44330Q-AB-7	Highbridge Loan Managem-SERIES 12A-18 CLASS A1B	1	10,250,000	9,968,627
57629*CS8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		18,100,000	17,979,110	11/04/2014	11/04/2044	Interest Rate Swap			40436V-AA-9	HIGHBRIDGE LOAN MANAGEM-HLM 11A-17	1	18,100,000	17,979,110
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	37,784,080	34,775,792	12/16/2014	12/16/2044	Interest Rate Swap		(3,758,132)	39808C-AB-4	GRIDIRON FDG LLC Term Facility	2	37,784,080	38,533,924
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		27,013,508	25,353,158	12/16/2014	12/16/2044	Interest Rate Swap			66704J-CB-2	NORTHSTAR EDUCATION FINA-SERIES 07-1 CLASS B	1	27,013,508	25,353,158
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		17,299,828	17,308,949	12/16/2014	12/16/2044	Interest Rate Swap			55955A-AA-4	Magnetite XX Ltd-MAGNE 2018-20A A	1	17,299,828	17,308,949
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,000,000	19,732,500	12/16/2014	12/16/2044	Interest Rate Swap			03331J-AA-0	2018-10A A1A Anchorage Capital CLO Lt-ANCHC	1	20,000,000	19,732,500
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		16,200,000	15,787,013	12/16/2014	12/16/2044	Interest Rate Swap			06760J-AE-5	Barings CLO Ltd 2018-II-SERIES 2018-2A CLAS A1B	1	16,200,000	15,787,013
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,700,000	6,596,619	12/16/2014	12/16/2044	Interest Rate Swap			06760B-AC-6	BABSON CLO LTD-SERIES 17-1A CLASS A2	1	6,700,000	6,596,619
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,960,000	4,840,112	12/16/2014	12/16/2044	Interest Rate Swap			55820R-AE-2	MADISON PARK FUNDING LTD-SERIES 17-25A CLASS B	1	4,960,000	4,840,112
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,575,000	2,425,431	12/16/2014	12/16/2044	Interest Rate Swap			08179H-AC-4	Benefit Street Partners -BSP 2017-12A B	1	2,575,000	2,425,431
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,730,860	12/16/2014	12/16/2044	Interest Rate Swap			79410U-AQ-4	SALEM FIELDS CLO LTD SR SEC2 NT CL A-2-R	1	10,000,000	9,730,860
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,100,000	8,078,932	12/16/2014	12/16/2044	Interest Rate Swap			001626-AC-4	ALM XIX Ltd SR SEC2 NT CL A-2	1	8,100,000	8,078,932
57629*CX7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,425,000	6,229,320	12/16/2014	12/16/2044	Interest Rate Swap			08180X-AQ-5	Benefit Street Partners -BSP 2015-8A A1BR	1	6,425,000	6,229,320
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	150,000,000	24,662,500	20,958,004	12/16/2014	12/16/2044	Interest Rate Swap		(4,041,996)	144577-TT-0	Carrix, Inc. Senior Term Loa	2	24,662,500	25,000,000
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,470,000	14,344,849	12/16/2014	12/16/2044	Interest Rate Swap			55820R-AC-6	MADISON PARK FUNDING LTD-SERIES 17-25A CLASS A2	1	14,470,000	14,344,849
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		34,949,527	34,536,985	12/16/2014	12/16/2044	Interest Rate Swap			04941Y-AC-3	Atlas Senior Loan Fund X-SERIES 18-11A CLASS A1L	1	34,949,527	34,536,985
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,339,166	6,280,013	12/16/2014	12/16/2044	Interest Rate Swap			92557W-AE-3	VIBRANT CLO IV LTD-SR SEC2 NT CL B 144A	1	6,339,166	6,280,013
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		65,000,000	64,106,640	12/16/2014	12/16/2044	Interest Rate Swap			04624W-AC-1	ASSURANT CLO III LTD-SERIES 2018-2A CLASS A	1	65,000,000	64,106,640
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,444,147	9,060,910	12/16/2014	12/16/2044	Interest Rate Swap			48252W-AC-7	KKR CLO LTD 22-SERIES 22A CLASS B	1	9,444,147	9,060,910
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,000,000	6,998,957	12/16/2014	12/16/2044	Interest Rate Swap			05618D-AN-4	BABSON CLO LTD-BABSN 2014-1A BR	1	7,000,000	6,998,957
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,045,000	1,980,664	12/16/2014	12/16/2044	Interest Rate Swap			056162-AQ-3	Barson CLO Ltd 2015-I-BABSN 2015-1A BR	1	2,045,000	1,980,664
57629*CT6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,900,000	3,595,870	12/16/2014	12/16/2044	Interest Rate Swap			69703P-AE-9	Palmer Square CLO 2018-1-PLMRS 2018-1A B	1	3,900,000	3,595,870
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	250,000,000	36,000,000	29,579,578	12/16/2014	12/16/2044	Interest Rate Swap		(6,121,622)	39808C-AA-3	Gridiron Fdg LLC Sr Secd Nt	2	36,000,000	35,701,200
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		25,900,000	25,347,190	12/16/2014	12/16/2044	Interest Rate Swap			14307P-AE-5	Carlyle Global Market St-SERIES C17A CLASS A1BR	1	25,900,000	25,347,190
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,500,000	23,429,970	12/16/2014	12/16/2044	Interest Rate Swap			05618D-AL-8	BABSON CLO LTD-BABSN 2014-1A A2R	1	23,500,000	23,429,970
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,100,000	22,938,531	12/16/2014	12/16/2044	Interest Rate Swap			83610K-AA-1	SOUND POINT CLO LTD-SERIES 2017-2A CLASS A	1	23,100,000	22,938,531
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,750,000	12,715,001	12/16/2014	12/16/2044	Interest Rate Swap			50184K-AU-2	LCM LTD PARTNERSHIP-SERIES 13A CLASS BR	1	12,750,000	12,715,001
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,060,137	13,792,091	12/16/2014	12/16/2044	Interest Rate Swap			88576P-AE-3	321 HENDERSON RECEIVABLE-SERIES 05-1A CLASS A1	1	14,060,137	13,792,091
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,768,313	13,784,610	12/16/2014	12/16/2044	Interest Rate Swap			92917A-AA-4	VOYA 2018-1A A1	1	13,768,313	13,784,610
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		20,000,000	19,373,320	12/16/2014	12/16/2044	Interest Rate Swap			58806P-AC-2	MERCER FIELD CLO LP-MERCL 2017-1A A2	1	20,000,000	19,373,320

SI12.13

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,500,000	11,496,460	12/16/2014	12/16/2044	Interest Rate Swap			64034B-AB-7	Netnet Student Loan Trus-NSLT 2018-5A B	1	11,500,000	11,496,460
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		22,469,287	22,248,383	12/16/2014	12/16/2044	Interest Rate Swap			94949J-AA-3	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A1	1	22,469,287	22,248,383
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,950,000	5,831,696	12/16/2014	12/16/2044	Interest Rate Swap			10302V-BG-9	BOWMAN PARK CLO LTD-BOWPK 2014-1A CR	1	5,950,000	5,831,696
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,107,617	12,999,909	12/16/2014	12/16/2044	Interest Rate Swap			87230A-AA-4	TCI-FLATIRON CLO 2016-1 LTD SR SECD NT CL A	1	13,107,617	12,999,909
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,909,487	12,870,733	12/16/2014	12/16/2044	Interest Rate Swap			817176-AL-4	AR SENECA PARK CLO LTD-SPARK 2014-1A	1	12,909,487	12,870,733
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,500,000	13,250,777	12/16/2014	12/16/2044	Interest Rate Swap			38136F-AG-8	Goldentree Loan Managem-GLM 2017-1A B1	1	13,500,000	13,250,777
57629*CI9	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,100,000	10,537,585	12/16/2014	12/16/2044	Interest Rate Swap			12481Q-AE-5	B1 Cham 2018-5 Ltd-SERIES 18-5A CLASS	1	11,100,000	10,537,585
57629*CU3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	250,000,000	328,073,426	317,411,725	12/16/2014	12/16/2044	Interest Rate Swap		(7,020,524)	57542Z-AO-7	RENT MASSMUTUAL ASSET FIN LLC SR SECD ANCHORAGE CAPITAL CLO LT-SERIES	1	328,073,426	324,432,249
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	200,000,000	16,900,000	10,746,270	12/16/2014	12/16/2044	Interest Rate Swap		(5,994,904)	03328Q-AN-1	2015-6A CLASS AR	1	16,900,000	16,741,174
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,805,425	12/16/2014	12/16/2044	Interest Rate Swap			94950J-AC-5	Wellfleet CLO Ltd-SERIES 18-1A CLASS B	1	5,000,000	4,805,425
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,780,000	6,622,799	12/16/2014	12/16/2044	Interest Rate Swap			33882G-AB-4	FLATIRON CLO LTD-FLAT 2017-1A B	1	6,780,000	6,622,799
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,750,000	9,665,838	12/16/2014	12/16/2044	Interest Rate Swap			36361U-AC-4	B GALLATIN CLO LTD-SERIES 17-1A CLASS	1	9,750,000	9,665,838
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,400,000	10,268,565	12/16/2014	12/16/2044	Interest Rate Swap			67115W-AE-0	1A CLASS A2 OHA Credit Funding 1 LTD-SERIES 18-	1	10,400,000	10,268,565
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		21,668,705	21,477,236	12/16/2014	12/16/2044	Interest Rate Swap			26245R-AA-8	Dryden 58 Clo Ltd-DRSLF 2018-58A A1	1	21,668,705	21,477,236
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,675,000	9,605,408	12/16/2014	12/16/2044	Interest Rate Swap			08179H-AA-8	BENEFIT STREET PARTNERS -SERIES 2017-12A CLASS A1	1	9,675,000	9,605,408
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,500,000	8,324,926	12/16/2014	12/16/2044	Interest Rate Swap			78109Q-AE-8	RR 2 LTD-SERIES 17-2A CLASS A2	1	8,500,000	8,324,926
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		17,120,000	17,056,485	12/16/2014	12/16/2044	Interest Rate Swap			67400Q-AN-4	OAKTREE CLO LTD-SERIES 14-1A CLASS A1R	1	17,120,000	17,056,485
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		19,075,000	18,701,130	12/16/2014	12/16/2044	Interest Rate Swap			14315J-NN-5	Carlyle US CLO 2013-3 Re Term Loan	1	19,075,000	18,701,130
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		21,375,328	21,250,210	12/16/2014	12/16/2044	Interest Rate Swap			74982L-AN-0	RACEP 2013-8A MASSMUTUAL ASSET FIN LLC SR SECD	1	21,375,328	21,250,210
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		56,000,000	55,378,475	12/16/2014	12/16/2044	Interest Rate Swap			57542Z-AO-7	RENT MASSMUTUAL ASSET FIN LLC SR SECD	1	56,000,000	55,378,475
57629*CV1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,400,000	6,267,117	12/16/2014	12/16/2044	Interest Rate Swap			00900L-AH-7	AA CLASS BR AIMCO CLO Series 2015-A-SERIES 15-	1	6,400,000	6,267,117
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	4,962,810	(9,055,989)	02/05/2015	02/05/2045	Interest Rate Swap		(13,830,669)	12551J-AG-1	CIFC Funding 2017-IV Ltd-SERIES 17-4A CLASS B	1	4,962,810	4,774,680
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,020,000	9,743,749	02/05/2015	02/05/2045	Interest Rate Swap			92912V-AS-4	VOYA CLO LTD-VOYA 2014-2A BR MANUF & TRADERS TRUST CO-	1	10,020,000	9,743,749
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,508,846	10,396,311	02/05/2015	02/05/2045	Interest Rate Swap			564759-OB-7	SUBORDINATED NOTE TCI-CENT CLO 2016-1 LTD--SERIES 17-	1	10,508,846	10,396,311
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,500,000	13,340,133	02/05/2015	02/05/2045	Interest Rate Swap			87806L-AE-6	1A CLASS A2 BABSON CLO LTD-SERIES 17-1A CLASS	1	13,500,000	13,340,133
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,500,000	13,299,566	02/05/2015	02/05/2045	Interest Rate Swap			06760B-AE-2	B1 GREYWOLF CLO LTD-SERIES 2014-2A CLASS A2R	1	13,500,000	13,299,566
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,700,000	12,665,989	02/05/2015	02/05/2045	Interest Rate Swap			38808Q-AL-5	HIGHBRIDGE LOAN MANAGEM--SERIES 2014 CLAS A2R	1	12,700,000	12,665,989
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,700,000	12,474,562	02/05/2015	02/05/2045	Interest Rate Swap			40436X-AE-7	BAIN CAPITAL CREDIT CLO -SERIES 17-2A CLASS BR	1	12,700,000	12,474,562
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,400,000	11,318,775	02/05/2015	02/05/2045	Interest Rate Swap			14954W-AN-6	BAIN CAPITAL CREDIT CLO -SERIES 17-1A CLASS A1	1	11,400,000	11,318,775
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,200,000	11,123,952	02/05/2015	02/05/2045	Interest Rate Swap			05682Q-AC-0	BlueMountain CLO 2015-3 -BLUEM 2015-3A A2R	1	11,200,000	11,123,952
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,900,000	13,574,087	02/05/2015	02/05/2045	Interest Rate Swap			09628J-AN-1	2015-3A A2R	1	13,900,000	13,574,087

SI12.14

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,300,000	11,280,101	02/05/2015	02/05/2045	Interest Rate Swap			053633-AH-6	EVERY POINT CLO LTD-SERIES 13-3A CLASS B1R	1	11,300,000	11,280,101
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,738,092	6,616,602	02/05/2015	02/05/2045	Interest Rate Swap			00287Y-AL-3	AbbVie Inc-SENIOR UNSECURED NOTE	2	6,738,092	6,616,602
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,400,000	7,184,727	02/05/2015	02/05/2045	Interest Rate Swap			55821T-AC-1	30A CLASS B	1	7,400,000	7,184,727
57629*CY5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,085,000	1,076,693	02/05/2015	02/05/2045	Interest Rate Swap			89852T-AN-8	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	1	1,085,000	1,076,693
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	5,280,000	(8,819,024)	02/05/2015	02/05/2045	Interest Rate Swap		(14,024,127)	00900C-AE-4	AIMCO-AIMCO 2017-AA C	1	5,280,000	5,205,103
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,039,080	14,005,625	02/05/2015	02/05/2045	Interest Rate Swap			053633-AG-8	EVERY POINT CLO LTD-SERIES 13-3A CLASS AR	1	14,039,080	14,005,625
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		32,100,000	32,051,882	02/05/2015	02/05/2045	Interest Rate Swap			05363U-AU-7	EVERY POINT IV CLO LTD-SERIES 14-1A CLASS BR	1	32,100,000	32,051,882
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		24,767,880	24,804,616	02/05/2015	02/05/2045	Interest Rate Swap			66704J-AY-4	NORTHSTAR EDUCATION FINA-SERIES 2004-1 CLASS B1	1	24,767,880	24,804,616
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		27,000,000	26,407,647	02/05/2015	02/05/2045	Interest Rate Swap			75887X-AA-5	Regatta Funding Ltd.-REG11 2018-1A	1	27,000,000	26,407,647
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,900,000	11,745,431	02/05/2015	02/05/2045	Interest Rate Swap			449258-AA-0	10G US CLO 2018-1 LTD-SERIES 2018-1A CLASS A1	1	11,900,000	11,745,431
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,266,286	5,149,582	02/05/2015	02/05/2045	Interest Rate Swap			00507U-AS-0	ACTAVIS FUNDING SCS-SENIOR UNSECURED NOTE	2	5,266,286	5,149,582
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,900,000	02/05/2015	02/05/2045	Interest Rate Swap			64132M-AC-2	Neuberger Berman CLO Ltd-NEUB 2018-30A A2	1	10,000,000	9,900,000
57629*C22	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,200,000	10,941,123	02/05/2015	02/05/2045	Interest Rate Swap			17181T-AC-5	CIFC Funding 2018-IV Ltd-SERIES 18-4A CLASS A2	1	11,200,000	10,941,123
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	24,425,000	10,378,714	02/05/2015	02/05/2045	Interest Rate Swap		(13,850,886)	14315J-TT-6	Carlyle US CLO 2015-1 Ri Term Loan	1	24,425,000	24,229,600
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		15,000,000	14,791,905	02/05/2015	02/05/2045	Interest Rate Swap			55818R-BA-3	Madison Park Funding XIV-HDPK 2014-14A BRR	1	15,000,000	14,791,905
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,600,000	11,241,838	02/05/2015	02/05/2045	Interest Rate Swap			04942J-AE-1	Atlas Senior Loan Fund X-ATCLO 2018-10A B	1	11,600,000	11,241,838
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		18,090,000	17,973,862	02/05/2015	02/05/2045	Interest Rate Swap			77340E-AC-0	ROCKFORD TOWER CLO LTD-ROCKT 2017-1A B	1	18,090,000	17,973,862
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,730,000	5,647,883	02/05/2015	02/05/2045	Interest Rate Swap			64129J-AU-4	NEUBERGER BERMAN CLO LTD-NEUB 2013-14A B1R	1	5,730,000	5,647,883
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		25,900,000	25,112,200	02/05/2015	02/05/2045	Interest Rate Swap			04016V-AC-9	ARES XLVII CLO Ltd-SERIES 18-47A CLASS A2	1	25,900,000	25,112,200
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,300,000	4,214,602	02/05/2015	02/05/2045	Interest Rate Swap			87248T-AE-5	TICP CLO LTD-SERIES 2017 CLASS 7A OCP CLO 2017-14 Ltd-SERIES 17-14A CLASS A2	1	4,300,000	4,214,602
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,400,000	10,945,539	02/05/2015	02/05/2045	Interest Rate Swap			67097Q-AE-5	Benefit Street Partners -SERIES 18-14A CLASS A2	1	11,400,000	10,945,539
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,400,000	12,942,149	02/05/2015	02/05/2045	Interest Rate Swap			08179L-AC-5	Wellfleet CLO Ltd-SERIES 18-1A CLASS B	1	13,400,000	12,942,149
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,805,425	02/05/2015	02/05/2045	Interest Rate Swap			94950J-AC-5	Carlyle Global Market St-SERIES 18-4A CLASS A2	1	5,000,000	4,805,425
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,000,000	6,925,905	02/05/2015	02/05/2045	Interest Rate Swap			14315R-AE-1	ATLAS SENIOR LOAN FUND L-SERIES 17-8A CLASS C	1	7,000,000	6,925,905
57629*DA6	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,100,000	3,032,736	02/05/2015	02/05/2045	Interest Rate Swap			04943A-AG-4	BAIN CAPITAL CREDIT CLO -SERIES 2017-2A CLASS AR	1	3,100,000	3,032,736
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	45,000,000	30,423,487	02/05/2015	02/05/2045	Interest Rate Swap		(14,163,053)	05683H-AC-9	MAGNETITE CLO LTD-SERIES 17-19A CLASS B	1	45,000,000	44,586,540
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,325,000	7,215,879	02/05/2015	02/05/2045	Interest Rate Swap			55954K-AC-9	VOYA CLO LTD-SERIES 2017-3A CLASS A2	1	7,325,000	7,215,879
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,200,000	7,092,497	02/05/2015	02/05/2045	Interest Rate Swap			92915Q-AG-8	HPS Loan Management 9-20-HLM 9A-2016 A2R	1	7,200,000	7,092,497
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,750,000	12,456,368	02/05/2015	02/05/2045	Interest Rate Swap			40436Q-AN-2	AIMCO-SERIES 14-AA CLASS B1R	1	12,750,000	12,456,368
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,924,848	02/05/2015	02/05/2045	Interest Rate Swap			00900A-AJ-7	TICP CLO Ltd-TICP 2018-11A A	1	8,000,000	7,924,848
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		25,000,000	24,655,575	02/05/2015	02/05/2045	Interest Rate Swap			87249Q-AA-8		1	25,000,000	24,655,575

SI12.15

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,425,000	14,191,935	02/05/2015	02/05/2045	Interest Rate Swap			06760E-AA-4	Babson CLO Ltd 2013-I-SERIES 2013-1A CLASS AR	1	14,425,000	14,191,935
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		21,133,090	24,630,472	02/05/2015	02/05/2045	Interest Rate Swap			24820R-AA-6	Statoil ASA-SENIOR UNSECURED NOTE -BLUEMOUNTAIN CLO 2015-1 LTD-SR SEC	1	21,133,090	24,630,472
57629*DB4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,686,671	2,693,577	02/05/2015	02/05/2045	Interest Rate Swap			09627X-AG-6	DEF NT CL C	2	2,686,671	2,693,577
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	8,846,600	2,554,915	12/05/2016	12/05/2046	Interest Rate Swap		(6,358,737)	MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	8,846,600	8,913,652
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		22,044,758	22,540,521	12/05/2016	12/05/2046	Interest Rate Swap			78449F-AC-5	SMB PRIVATE ED LN TR 2016-SMB PRIVATE ED LN TR 2016-A NT	1	22,044,758	22,540,521
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		22,420,000	23,167,281	12/05/2016	12/05/2046	Interest Rate Swap			63940F-AC-1	NAVIENT STUDENT LOAN TRU-SERIES 16-2 CLASS A3	1	22,420,000	23,167,281
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,150,634	11,306,310	12/05/2016	12/05/2046	Interest Rate Swap			26827X-AA-1	EMC GROUP STUDENT LOAN -SERIES 2016-1A CLASS A	1	11,150,634	11,306,310
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,500,000	23,317,264	12/05/2016	12/05/2046	Interest Rate Swap			04941T-AS-9	Atlas Senior Loan Fund V-SERIES 16-7A CLASS A1R	1	23,500,000	23,317,264
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,500,000	11,232,441	12/05/2016	12/05/2046	Interest Rate Swap			92916M-AB-7	VOYA CLO LTD-VOYA 2017-1A A2	1	11,500,000	11,232,441
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,783,390	12/05/2016	12/05/2046	Interest Rate Swap			67109Y-AN-4	Oak Hill Credit Partners-SERIES 15-12A CLASS A2R	1	10,000,000	9,783,390
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,330,000	4,250,835	12/05/2016	12/05/2046	Interest Rate Swap			85816B-CS-7	STEELE CREEK CLO LTD-SERIES 15-1A CLASS CR	1	4,330,000	4,250,835
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,200,000	3,902,585	12/05/2016	12/05/2046	Interest Rate Swap			08180X-AU-6	Benefit Street Partners -BSP 2015-8A BR	1	4,200,000	3,902,585
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,380,000	4,213,477	12/05/2016	12/05/2046	Interest Rate Swap			22616C-AE-3	CRESTLINE DENALI CLO XV -SERIES 17-1A CLASS C	1	4,380,000	4,213,477
57629*DK4	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,876,010	12/05/2016	12/05/2046	Interest Rate Swap			04965L-AE-8	ATRIUM XIV LLC-ATRM 14A A2A	1	10,000,000	9,876,010
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	10,923,378	4,672,310	12/05/2016	12/05/2046	Interest Rate Swap		(6,333,861)	MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	10,923,378	11,006,171
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,203,891	13,315,340	12/05/2016	12/05/2046	Interest Rate Swap			78442G-PQ-3	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLASS A4	1	13,203,891	13,315,340
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,465,837	1,467,611	12/05/2016	12/05/2046	Interest Rate Swap			49327H-AG-0	KEYCORP STUDENT LOAN TRU-SERIES 2006-A CLASS 2A4	1	1,465,837	1,467,611
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,196,079	9,200,627	12/05/2016	12/05/2046	Interest Rate Swap			64031Q-BR-1	MELNET STUDENT LOAN TRUS-SERIES 2005-1 CLASS A5	1	9,196,079	9,200,627
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,973,198	12,066,837	12/05/2016	12/05/2046	Interest Rate Swap			78448Q-AD-0	SMB PRIVATE EDUCATION LO-SMB 2015-B A3	1	11,973,198	12,066,837
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,520,898	10,865,113	12/05/2016	12/05/2046	Interest Rate Swap			78442G-RX-6	SLM STUDENT LN TR 2006-2 LN BKD NT CL A-6	1	10,520,898	10,865,113
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,411,010	5,496,494	12/05/2016	12/05/2046	Interest Rate Swap			78442G-EX-0	SLM STUDENT LOAN TRUST-SERIES 2002-7CLASS A11	1	5,411,010	5,496,494
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,352,635	10,469,775	12/05/2016	12/05/2046	Interest Rate Swap			10620N-AX-6	BRAZOS HIGHER EDUCATION -SER 2006-2 STUDENT LN REV NT	1	10,352,635	10,469,775
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,703,901	7,781,316	12/05/2016	12/05/2046	Interest Rate Swap			64031Q-BX-8	MELNET STUDENT LOAN TRUS-SERIES 2005-2 CLASS A5	1	7,703,901	7,781,316
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,838,355	10,128,647	12/05/2016	12/05/2046	Interest Rate Swap			83715R-AF-9	SOUTH CAROLINA STUDENT L-SERIES 14-1 CLASS A2	1	9,838,355	10,128,647
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,878,475	2,888,312	12/05/2016	12/05/2046	Interest Rate Swap			00432C-AV-3	ACCESS GROUP INC-SERIES 2003-A CLASS A3	1	2,878,475	2,888,312
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,895,755	12/05/2016	12/05/2046	Interest Rate Swap			88322U-AN-9	THACHER PARK CLO-THRPK 2014-1A CR	1	5,000,000	4,895,755
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,000,000	12,668,617	12/05/2016	12/05/2046	Interest Rate Swap			75887X-AC-1	Regatta Funding Ltd.-REG11 2018-1A B	1	13,000,000	12,668,617
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,626,289	4,626,289	12/05/2016	12/05/2046	Interest Rate Swap			77277L-A7-2	ROCKALL CLO BV Variable Funding Note- USD	1	4,626,289	4,626,289
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,300,000	4,300,632	12/05/2016	12/05/2046	Interest Rate Swap			92558A-AA-8	VIBRANT CLO LTD-SERIES 2016-5A CLASS A	1	4,300,000	4,300,632
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,350,000	7,064,901	12/05/2016	12/05/2046	Interest Rate Swap			12551R-AC-2	CIFC Funding 2018-I Ltd-SERIES 18-1A CLASS B	1	7,350,000	7,064,901
57629*DJ7	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,921,900	12/05/2016	12/05/2046	Interest Rate Swap			88434H-AE-3	THL Credit Wind River 20-SERIES 18-2A CLASS A2	1	5,000,000	4,921,900

S112.16

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	16,260,938	9,724,444	12/05/2016	12/05/2046	Interest Rate Swap		(6,659,742)	MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	16,260,938	16,384,186
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		65,300,000	66,701,808	12/05/2016	12/05/2046	Interest Rate Swap			63940L-AC-8	NAVIENT STUDENT LOAN TRU-SERIES 2016-6A CLASS A3	1	65,300,000	66,701,808
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		23,133,151	23,530,677	12/05/2016	12/05/2046	Interest Rate Swap			61205P-AL-3	MONTANA HIGHER EDUCATION-SERIES 12-1 CLASS A3	1	23,133,151	23,530,677
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,876,010	12/05/2016	12/05/2046	Interest Rate Swap			04965L-AE-8	ATRIUM XIV LLC-ATRM 14A A2A	1	10,000,000	9,876,010
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		898,120	900,884	12/05/2016	12/05/2046	Interest Rate Swap			78442G-EW-2	SLM STUDENT LOAN TRUST-SERIES 2002-7 CLASS A10	1	898,120	900,884
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,823,650	1,798,061	12/05/2016	12/05/2046	Interest Rate Swap			429827-AK-4	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS A10	1	1,823,650	1,798,061
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,189,068	1,196,607	12/05/2016	12/05/2046	Interest Rate Swap			429827-AP-3	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS A14	1	1,189,068	1,196,607
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,103,943	1,136,607	12/05/2016	12/05/2046	Interest Rate Swap			429827-AB-4	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS A2	1	1,103,943	1,136,607
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,867,287	1,890,038	12/05/2016	12/05/2046	Interest Rate Swap			83715A-AJ-8	SOUTH CAROLINA STUDENT L-SR UNSECURED	1	1,867,287	1,890,038
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,665,843	1,744,565	12/05/2016	12/05/2046	Interest Rate Swap			784427-AF-3	SLC STUDENT LN TR 2006-1 ASSET BK NT CL A-6	1	1,665,843	1,744,565
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,698,086	1,715,578	12/05/2016	12/05/2046	Interest Rate Swap			64033Q-AC-3	MELNET STUDENT LOAN TRUS-SERIES 2015-2A CLASS B	1	1,698,086	1,715,578
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,861,867	1,936,728	12/05/2016	12/05/2046	Interest Rate Swap			46259Q-JT-8	101A STUDENT LOAN LIQUID-SERIES 2012-1 CLASS B	1	1,861,867	1,936,728
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,237,441	1,225,700	12/05/2016	12/05/2046	Interest Rate Swap			709163-GJ-2	PENNSYLVANIA ST HGR EDU -SERIES 2006 CL B	1	1,237,441	1,225,700
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,129,812	1,192,854	12/05/2016	12/05/2046	Interest Rate Swap			17284L-AB-0	CIT EDUCATION LOAN TRUST-SERIES 2007-1 CLASS B	1	1,129,812	1,192,854
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,342,972	1,344,268	12/05/2016	12/05/2046	Interest Rate Swap			78448C-AH-2	SLM STUDENT LOAN TRUST-SERIES 2013-6 CLASS B	1	1,342,972	1,344,268
57629*DH1	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,000,000	3,737,376	12/05/2016	12/05/2046	Interest Rate Swap			056162-AS-9	Babson CLO Ltd 2015-1-BABSN 2015-1A CR	1	4,000,000	3,737,376
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	13,654,223	7,100,460	12/05/2016	12/05/2046	Interest Rate Swap		(6,657,254)	MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	13,654,223	13,757,714
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,292,680	6,503,029	12/05/2016	12/05/2046	Interest Rate Swap			78448R-AD-8	SMB PRIVATE ED LN TR 2015-C LN BCK NT CL A-3	1	6,292,680	6,503,029
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,510,181	5,713,427	12/05/2016	12/05/2046	Interest Rate Swap			78448P-AD-2	SMB PRIVATE ED LOAN TR 2015-A LN BACKED NT A-3	1	5,510,181	5,713,427
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,213,231	4,206,088	12/05/2016	12/05/2046	Interest Rate Swap			19458L-BH-2	COLLEGIATE FUNDING SERVI-SERIES 2005-B CLASS A4	1	4,213,231	4,206,088
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,546,585	4,567,785	12/05/2016	12/05/2046	Interest Rate Swap			78446D-AC-3	SLM STUDENT LOAN TRUST-SERIES 2011-A CLASS A3	1	4,546,585	4,567,785
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,829,137	3,940,904	12/05/2016	12/05/2046	Interest Rate Swap			63938E-AD-6	NAVIENT STUDENT LOAN TRU-SERIES 2014-1 CLASS A4	1	3,829,137	3,940,904
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		27,268	27,265	12/05/2016	12/05/2046	Interest Rate Swap			00432C-CF-6	ACCESS GROUP INC DEL 2005-1 ASSET BCK CTF CL A-3	1	27,268	27,265
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		16,262,686	16,317,980	12/05/2016	12/05/2046	Interest Rate Swap			840555-DA-1	SOUTH TX HIGHER ED AUTH REV SER 1 CL A-3	1	16,262,686	16,317,980
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,973,510	9,153,888	12/05/2016	12/05/2046	Interest Rate Swap			00432C-CW-9	ACCESS GROUP INC-SERIES 2005-B CLASS A3	1	8,973,510	9,153,888
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,038,755	10,662,526	12/05/2016	12/05/2046	Interest Rate Swap			28148W-AC-7	EDUCATIONAL FUNDING OF T-SERIES 2011-1 CLASS B	1	10,038,755	10,662,526
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,316,911	9,971,710	12/05/2016	12/05/2046	Interest Rate Swap			78444C-AE-3	SLM STUDENT LOAN TRUST-SERIES 07-6 CLASS A5	1	9,316,911	9,971,710
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,460,655	8,918,038	12/05/2016	12/05/2046	Interest Rate Swap			78443F-AF-4	SLM STUDENT LOAN TRUST-SERIES 2007-5 CLASS A6	1	8,460,655	8,918,038
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,287,978	7,405,962	12/05/2016	12/05/2046	Interest Rate Swap			00400V-AB-3	ACADEMIC LOAN FUNDING TR-ALFT 2012-1A A2	1	7,287,978	7,405,962
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		770,603	841,700	12/05/2016	12/05/2046	Interest Rate Swap			462592-AD-8	101A STUDENT LOAN LIQUID-SERIES 2005-1 CLASS B	1	770,603	841,700
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,131,706	9,201,552	12/05/2016	12/05/2046	Interest Rate Swap			78442G-OA-7	SLM STUDENT LOAN TRUST-SERIES 2005-6 CLASS B	1	9,131,706	9,201,552

SI12.17

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,659,443	1,811,193	12/05/2016	12/05/2046	Interest Rate Swap			38021F-AB-7	GOAL CAPITAL FUNDING TRU-SERIES 2015-1 CLASS B	1	1,659,443	1,811,193
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,679,498	1,779,866	12/05/2016	12/05/2046	Interest Rate Swap			28138J-AB-0	EDUCATIONAL SERVICES OF -SERIES 15-2 CLASS B	1	1,679,498	1,779,866
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,436,558	2,457,757	12/05/2016	12/05/2046	Interest Rate Swap			78442G-GN-2	SLM STUDENT LOAN TRUST 2003-4 LN BKD CTF CL B	1	2,436,558	2,457,757
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,356,180	1,366,857	12/05/2016	12/05/2046	Interest Rate Swap			28090A-AB-5	EDUCATIONAL SERVICES OF -2014-4 SERIES B	1	1,356,180	1,366,857
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		428,679	432,156	12/05/2016	12/05/2046	Interest Rate Swap			83401L-AA-2	SOCIAL PROFESSIONAL LOAN-SERIES 2015-A CLASS A1	1	428,679	432,156
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,200,000	7,040,110	12/05/2016	12/05/2046	Interest Rate Swap			03767M-AE-8	Apiidos CLO-SERIES 18-29A CLASS A1B	1	7,200,000	7,040,110
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,400,000	4,257,018	12/05/2016	12/05/2046	Interest Rate Swap			39729R-AC-2	Greenwood Park CLO Ltd-SERIES 18-1A CLASS B	1	4,400,000	4,257,018
57629*DG3	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,865,540	12/05/2016	12/05/2046	Interest Rate Swap			13876J-AE-2	Canyon Capital CLO Ltd-CANVC 2012-18A B	1	5,000,000	4,865,540
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	7,540,332	(498,933)	12/06/2016	12/06/2046	Interest Rate Swap		(7,897,956)	281397-AP-4	EDUCATION LOAN ASSET-BAC-SERIES 2003-2 CLASS 2A1	1	7,540,332	7,399,023
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,916,413	12,006,732	12/05/2016	12/05/2046	Interest Rate Swap			MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	11,916,413	12,006,732
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,145,746	4,228,548	12/06/2016	12/06/2046	Interest Rate Swap			66705R-AA-7	NORTHSTAR EDUCATION FINA-NEF 2016-1 A	1	4,145,746	4,228,548
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,668,047	6,852,435	12/06/2016	12/06/2046	Interest Rate Swap			281397-AB-5	EDUCATION LOAN ASSET-BAC-SERIES 2003-1 CLASS A2	1	6,668,047	6,852,435
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,158,616	5,430,424	12/06/2016	12/06/2046	Interest Rate Swap			64031Q-CK-5	MELNET STUDENT LOAN TRUS-SERIES 2005-4 CLASS A4R1	1	5,158,616	5,430,424
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,812,011	5,012,733	12/06/2016	12/06/2046	Interest Rate Swap			78443G-AJ-0	SLM STUDENT LOAN TRUST-SERIES 2006-7 CLASS A6B	1	4,812,011	5,012,733
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,290,093	4,999,753	12/06/2016	12/06/2046	Interest Rate Swap			106238-LJ-5	BRAZOS TX HGR EDU AUTH REVENUE BOND	1	4,290,093	4,999,753
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,583,957	6,115,334	12/06/2016	12/06/2046	Interest Rate Swap			28108Q-AB-0	EDLINC STUDENT LOAN FUND-SERIES 2012-1 CLASS B	1	5,583,957	6,115,334
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,450,000	4,317,823	12/06/2016	12/06/2046	Interest Rate Swap			281397-AQ-2	EDUCATION LOAN ASSET-BAC-SERIES 2003-2 CLASS 2A2	1	4,450,000	4,317,823
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,698,010	2,748,377	12/06/2016	12/06/2046	Interest Rate Swap			38021E-AA-2	GOAL CAPITAL FUNDING TR 2010-1 STUDENT LN BKD NT	1	2,698,010	2,748,377
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,506,777	4,001,365	12/06/2016	12/06/2046	Interest Rate Swap			64031Q-OM-1	MELNET STUDENT LOAN TRUS-SERIES 2005-4 CLASS A4R2	1	3,506,777	4,001,365
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,750,769	3,834,504	12/06/2016	12/06/2046	Interest Rate Swap			65826Z-GD-6	NORTH CAROLINA STATE EDU-SERIES 2011-2 CLASS A3	1	3,750,769	3,834,504
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,899,995	1,995,959	12/06/2016	12/06/2046	Interest Rate Swap			78442G-KW-5	SLM STUDENT LOAN TRUST-SERIES 2004-1 CLASS A6	1	1,899,995	1,995,959
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,702,353	15,153,903	12/06/2016	12/06/2046	Interest Rate Swap			83149E-AG-2	SLM STUDENT LN TR 2006-5-NOTE CL B	1	14,702,353	15,153,903
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,900,000	13,446,457	12/06/2016	12/06/2046	Interest Rate Swap			26251L-AE-4	Dryden 64 CLO Ltd-DRLSLF 2018-64A B	1	13,900,000	13,446,457
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,446,945	3,530,966	12/06/2016	12/06/2046	Interest Rate Swap			23341K-AA-3	DRB PRIME STUDENT LOAN T-SERIES 2015-D CLASS A1	1	3,446,945	3,530,966
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,791,794	8,881,153	12/06/2016	12/06/2046	Interest Rate Swap			64031C-AB-8	MELNET STUDENT LOAN TRUS-SERIES 2012-2A CLASS B	1	8,791,794	8,881,153
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,784,962	12,532,451	12/06/2016	12/06/2046	Interest Rate Swap			78442G-PS-9	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLASS B	1	12,784,962	12,532,451
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,900,000	3,893,085	12/06/2016	12/06/2046	Interest Rate Swap			87244A-BC-3	WIND RIVER CLO LTD-SERIES 12-1A CLASS BR	1	3,900,000	3,893,085
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,000,000	7,843,944	12/06/2016	12/06/2046	Interest Rate Swap			03328T-AS-4	ANCHORAGE CAPITAL CLO 7 -ANCHC	1	8,000,000	7,843,944
57629*DF5	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,000,000	2,977,032	12/06/2016	12/06/2046	Interest Rate Swap			89852T-AN-8	2015-7A B1R	1	3,000,000	2,977,032
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	10,923,378	3,381,875	12/06/2016	12/06/2046	Interest Rate Swap		(7,624,296)	MXP001-TT-1	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	1	10,923,378	11,006,171
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,652,214	9,772,229	12/05/2016	12/05/2046	Interest Rate Swap			83715R-AG-7	Grupo Aeromexico S.A.B. Floating Rate S	1	9,652,214	9,772,229

S112.18

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,873,795	6,475,199	12/06/2016	12/06/2046	Interest Rate Swap			784420-AE-1	SLC STUDENT LOAN TRUST-SERIES 2005-1 CLASS B	1	5,873,795	6,475,199
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,499,313	5,765,206	12/06/2016	12/06/2046	Interest Rate Swap			78442G-OT-6	SLM STUDENT LOAN TRUST-SERIES 2005-8 CLASS B	1	5,499,313	5,765,206
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,698,687	5,902,344	12/06/2016	12/06/2046	Interest Rate Swap			78442G-PD-2	SLM STUDENT LOAN TRUST-SERIES 2005-3 CLASS B	1	5,698,687	5,902,344
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,126,882	3,308,371	12/06/2016	12/06/2046	Interest Rate Swap			493268-AU-0	KEYCORP STUDENT LOAN TRU-SERIES 1999-B CLASS CTFS	1	3,126,882	3,308,371
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,659,776	7,104,157	12/06/2016	12/06/2046	Interest Rate Swap			78446C-AB-7	SLM STUDENT LOAN TRUST-SERIES 2013-2 CLASS B	1	6,659,776	7,104,157
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,955,000	6,471,386	12/06/2016	12/06/2046	Interest Rate Swap			63938E-AE-4	NAVIENT STUDENT LOAN TRU-SERIES 2014-1 CLASS B	1	6,955,000	6,471,386
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,981,340	4,886,447	12/06/2016	12/06/2046	Interest Rate Swap			64031A-AJ-5	NELNET STUDENT LOAN TRUS-SERIES 2006-3 CLASS B	1	4,981,340	4,886,447
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,199,206	6,737,880	12/06/2016	12/06/2046	Interest Rate Swap			63939L-AC-1	NAVIENT STUDENT LOAN TRU-SERIES 2015-3 CLASS B	1	6,199,206	6,737,880
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,500,000	6,598,449	12/06/2016	12/06/2046	Interest Rate Swap			78447M-AD-0	SLM STUDENT LOAN TRUST-SERIES 2013-1 CLASS B	1	6,500,000	6,598,449
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,381,839	5,603,990	12/06/2016	12/06/2046	Interest Rate Swap			64033J-AB-1	NELNET STUDENT LOAN TRUS-SERIES 2014-1A CLASS B	1	5,381,839	5,603,990
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,549,828	3,645,369	12/06/2016	12/06/2046	Interest Rate Swap			194266-AE-2	COLLEGE LOAN CORPORATION-SERIES 2005-2 CLASS B	1	3,549,828	3,645,369
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,478,990	4,776,007	12/06/2016	12/06/2046	Interest Rate Swap			64033N-AB-2	NELNET STUDENT LOAN TRUS-SERIES 2014-5A CLASS B	1	4,478,990	4,776,007
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		396,094	408,617	12/06/2016	12/06/2046	Interest Rate Swap			194262-CF-6	COLLEGE LOAN CORPORATION-SERIES 2004-1 CLASS B	1	396,094	408,617
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,713,709	2,829,716	12/06/2016	12/06/2046	Interest Rate Swap			78442G-LJ-3	SLM STUDENT LOAN TRUST-SERIES 2004-3 CLASS B	1	2,713,709	2,829,716
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,650,000	3,475,759	12/06/2016	12/06/2046	Interest Rate Swap			64032A-AB-1	NELNET STUDENT LOAN TRUS-SERIES 2012-1A CLASS B	1	3,650,000	3,475,759
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,059,627	3,377,949	12/06/2016	12/06/2046	Interest Rate Swap			64032F-AH-7	NELNET STUDENT LOAN TRUS-SERIES 2007-2A CLASS A4A2	1	3,059,627	3,377,949
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,290,758	3,356,277	12/06/2016	12/06/2046	Interest Rate Swap			64033L-AD-2	NELNET STUDENT LOAN TRUS-SERIES 2014-2A CLASS B	1	3,290,758	3,356,277
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,240,000	3,217,567	12/06/2016	12/06/2046	Interest Rate Swap			64033K-AB-8	NELNET STUDENT LOAN TRUS-SERIES 2014-3A CLASS B	1	3,240,000	3,217,567
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		14,750,000	14,355,585	12/06/2016	12/06/2046	Interest Rate Swap			03767M-AG-3	Apidos CLO-SERIES 18-29A CLASS A2	1	14,750,000	14,355,585
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,500,000	4,320,635	12/06/2016	12/06/2046	Interest Rate Swap			55952Y-AT-4	Magnetite VIII Ltd-MAGNE 2014-8A CR2	1	4,500,000	4,320,635
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,700,000	6,438,311	12/06/2016	12/06/2046	Interest Rate Swap			04015U-AJ-7	Ares XXXVIII CLO Ltd-SERIES 15-38A CLASS BR	1	6,700,000	6,438,311
57629*DE8	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,000,000	2,898,102	12/06/2016	12/06/2046	Interest Rate Swap			48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	1	3,000,000	2,898,102
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	8,900,000	915,042	12/06/2016	12/06/2046	Interest Rate Swap		(7,985,029)	04964H-AN-8	ATRIUM CDO CORP-SERIES 8A CLASS BR	1	8,900,000	8,900,071
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		993,034	1,000,561	12/05/2016	12/05/2046	Interest Rate Swap			MXP001-TT-1	Grupo Aeromexico S.A.B. Floating Rate S	1	993,034	1,000,561
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,900,000	8,877,714	12/06/2016	12/06/2046	Interest Rate Swap			87246M-AB-8	TIOP CLO LTD-SERIES 2016-6A CLASS B	1	8,900,000	8,877,714
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,834,510	9,846,150	12/06/2016	12/06/2046	Interest Rate Swap			92917A-AA-4	VOYA 2018-1A A1	1	9,834,510	9,846,150
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,850,000	8,827,149	12/06/2016	12/06/2046	Interest Rate Swap			14309Y-AQ-7	CARLYLE GLOBAL MARKET ST-SERIES 2012-4A CLASS BR	1	8,850,000	8,827,149
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,500,000	1,459,662	12/06/2016	12/06/2046	Interest Rate Swap			13876J-AE-2	Canyon Capital CLO Ltd-CANYC 2012-1RA B	1	1,500,000	1,459,662
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,500,000	7,479,720	12/06/2016	12/06/2046	Interest Rate Swap			06759Y-AC-9	BARINGS CLO LTD-BABSN 2016-3A A2	1	7,500,000	7,479,720
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		11,050,000	10,830,138	12/06/2016	12/06/2046	Interest Rate Swap			03331J-AJ-1	Anchorage Capital CLO Lt-ANCHC 2018-10A B	1	11,050,000	10,830,138
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		12,575,000	12,287,862	12/06/2016	12/06/2046	Interest Rate Swap			056162-AN-0	Babson CLO Ltd 2015-1-BABSN 2015-1A AR	1	12,575,000	12,287,862

S112.19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,000,000	9,835,280	12/06/2016	12/06/2046	Interest Rate Swap			83609Y-AE-6	Sounds Point CLO IV-R LT-SERIES 13-3RA CLASS B	1	10,000,000	9,835,280
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,200,000	3,200,086	12/06/2016	12/06/2046	Interest Rate Swap			78448A-AD-5	SLM STUDENT LOAN TRUST-SERIES 2013-4 CLASS B	1	3,200,000	3,200,086
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,742,758	1,904,136	12/06/2016	12/06/2046	Interest Rate Swap			00432C-DE-8	ACCESS GROUP INC-SERIES 2006-1 CLASS B	1	1,742,758	1,904,136
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,434,116	2,442,798	12/06/2016	12/06/2046	Interest Rate Swap			78442G-KN-5	SLM STUDENT LOAN TRUST-SERIES 2003-14 CLASS A6	1	2,434,116	2,442,798
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,715,690	1,686,948	12/06/2016	12/06/2046	Interest Rate Swap			493268-BW-5	KEYCORP STUDENT LOAN TRU-SERIES 2004-A CLASS 1B	1	1,715,690	1,686,948
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		603,688	654,843	12/06/2016	12/06/2046	Interest Rate Swap			429827-AR-9	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS B1	1	603,688	654,843
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,031,928	2,165,830	12/06/2016	12/06/2046	Interest Rate Swap			429827-AS-7	HIGHER EDUCATION FUNDING-SERIES 2004-1 CLASS B2	1	2,031,928	2,165,830
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,948,127	2,140,225	12/06/2016	12/06/2046	Interest Rate Swap			64033T-AB-9	INELNET STUDENT LOAN TRUS-SERIES 2015-3A CLASS B	1	1,948,127	2,140,225
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,530,128	1,512,492	12/06/2016	12/06/2046	Interest Rate Swap			19458L-BD-1	COLLEGIATE FUNDING SERVI-SERIES 2005-A CLASS B	1	1,530,128	1,512,492
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,885,874	1,971,105	12/06/2016	12/06/2046	Interest Rate Swap			00435T-AB-7	ACCESS GROUP INC-SERIES 2015-1 CLASS B	1	1,885,874	1,971,105
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,774,680	2,812,898	12/06/2016	12/06/2046	Interest Rate Swap			78442G-RY-4	SLM STUDENT LOAN TRUST-SERIES 2006-2 CLASS B	1	2,774,680	2,812,898
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		3,229,331	3,134,679	12/06/2016	12/06/2046	Interest Rate Swap			194267-AM-2	COLLEGE LOAN CORPORATION-SERIES 2007-1 CLASS B2	1	3,229,331	3,134,679
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,443,381	2,336,720	12/06/2016	12/06/2046	Interest Rate Swap			92978J-AH-6	WACHOVIA STUDENT LOAN TR-SERIES 2006-1 CLASS B	1	2,443,381	2,336,720
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,990,522	2,063,980	12/06/2016	12/06/2046	Interest Rate Swap			83715R-AH-5	SOUTH CAROLINA STUDENT L-SERIES 15-A CLASS A	1	1,990,522	2,063,980
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,490,583	2,455,243	12/06/2016	12/06/2046	Interest Rate Swap			28137T-AB-9	EDUCATIONAL SERVICES OF -SERIES 2014-2 CLASS B	1	2,490,583	2,455,243
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,858,923	1,906,443	12/06/2016	12/06/2046	Interest Rate Swap			78443B-AK-2	SLM STUDENT LOAN TRUST-SERIES 2006-10 CLASS B	1	1,858,923	1,906,443
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,392,246	2,329,734	12/06/2016	12/06/2046	Interest Rate Swap			69340Q-AB-2	PENNSYLVANIA HIGHER EDUC-SERIES 2015-1A CLASS B	1	2,392,246	2,329,734
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,147,401	2,261,054	12/06/2016	12/06/2046	Interest Rate Swap			281378-AB-5	EDUCATIONAL SERVICES OF -SERIES 2015-1 CLASS B	1	2,147,401	2,261,054
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		1,344,965	1,437,600	12/06/2016	12/06/2046	Interest Rate Swap			00432C-AR-2	ACCESS GROUP-STUDENT LN REVENUE NT	1	1,344,965	1,437,600
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,097,254	7,066,640	12/06/2016	12/06/2046	Interest Rate Swap			63939D-AD-7	NAVIENT STUDENT LOAN TRUST 2014-8 CL B	1	7,097,254	7,066,640
57629*DD0	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		9,900,000	9,562,093	12/06/2016	12/06/2046	Interest Rate Swap			69688X-AU-5	Palmer Square CLO 2014-1-SERIES 2014-1A CLASS A2PR	1	9,900,000	9,562,093
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1	125,000,000	23,500,000	14,533,135	12/06/2016	12/06/2046	Interest Rate Swap		(7,980,053)	92558V-AC-8	Vibrant CLO Ltd-SERIES 18-9A CLASS A2	1	23,500,000	22,513,188
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		10,800,000	10,472,134	12/06/2016	12/06/2046	Interest Rate Swap			94949J-AC-9	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A2	1	10,800,000	10,472,134
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,581,262	13,198,701	12/06/2016	12/06/2046	Interest Rate Swap			04017E-AE-2	ARES XXXIIR CLO LTD-SERIES 14-32RA CLASS A1B	1	13,581,262	13,198,701
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,790,000	8,532,506	12/06/2016	12/06/2046	Interest Rate Swap			55951P-BC-0	Magnette VII Ltd-MAGNE 2012-7A A2R2	1	8,790,000	8,532,506
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		13,560,000	13,286,278	12/06/2016	12/06/2046	Interest Rate Swap			40436V-AB-7	HIGHBRIDGE LOAN MANAGEME-HLM 11A-17 B	1	13,560,000	13,286,278
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,020,710	1,999,956	12/06/2016	12/06/2046	Interest Rate Swap			87230A-AD-8	TCI-FLATIRON CLO LTD-TFLAT 2016-1A D	3	2,020,710	1,999,956
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		8,200,000	8,118,000	12/06/2016	12/06/2046	Interest Rate Swap			04964H-AQ-1	ATRIUM VIII-DEF NT CL C-R	1	8,200,000	8,118,000
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,516,250	7,515,611	12/06/2016	12/06/2046	Interest Rate Swap			06759Y-AE-5	BARINGS CLO LTD-BABSN 2016-3A B LCM LTD PARTNERSHIP-SERIES 25A	1	7,516,250	7,515,611
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		2,500,000	2,428,145	12/06/2016	12/06/2046	Interest Rate Swap			50189P-AN-2	CLASS C2	1	2,500,000	2,428,145
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,765,357	6,739,987	12/06/2016	12/06/2046	Interest Rate Swap			87244A-BE-9	WIND RIVER CLO LTD-WINDR 2012-1A CR	1	6,765,357	6,739,987

S112.20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,700,000	6,699,585	12/06/2016	12/06/2046	Interest Rate Swap			14309Y-AY-0	CARLYLE GLOBAL MARKET ST-SERIES 2012-4A CLASS C1R	1	6,700,000	6,699,585
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		7,509,545	7,484,728	12/06/2016	12/06/2046	Interest Rate Swap			66704J-AJ-7	Northstar Education Fina-REVENUE BONDS	1	7,509,545	7,484,728
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		5,000,000	4,999,770	12/06/2016	12/06/2046	Interest Rate Swap			03328W-AE-8	ANCHORAGE CAPITAL CLO LT-ANCHC 2016-9A C	1	5,000,000	4,999,770
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,750,000	4,749,706	12/06/2016	12/06/2046	Interest Rate Swap			55820N-AE-1	MADISON PARK FUNDING LTD-MDPK 2016-24A C1	1	4,750,000	4,749,706
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,500,000	4,500,293	12/06/2016	12/06/2046	Interest Rate Swap			67091H-AP-6	OHIA LOAN FUNDING LTD-SERIES 2012-1A CLASS CR	1	4,500,000	4,500,293
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		6,750,000	6,528,688	12/06/2016	12/06/2046	Interest Rate Swap			77341D-AE-7	Rockford Tower CLO 2017--SERIES 17-3A CLASS B	1	6,750,000	6,528,688
57629*DC2	Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	1		4,375,000	4,291,617	12/06/2016	12/06/2046	Interest Rate Swap			48251B-AE-0	KKR FINANCIAL CLO LTD-KKR 16 B1 US TREASURY N/B Note 3.625% DUE 02/15/2021	1	4,375,000	4,291,617
Awaiting PPN	Inverse JPY Long Term Bond	1Z	50,000,000	60,184,776	62,480,088	03/24/2017	03/28/2019	Currency Forward	1,092,588		912828-PX-2	US TREASURY STRIP 0% DUE 05/15/2023	1	60,184,776	61,387,500
Awaiting PPN	Inverse JPY Long Term Bond	1Z	50,000,000	63,908,042	73,002,507	03/28/2017	04/01/2019	Currency Forward	1,421,126		912833-LN-8	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	63,908,042	71,581,381
Awaiting PPN	Inverse JPY Long Term Bond	1Z	50,000,000	55,169,378	57,877,031	04/11/2017	04/15/2019	Currency Forward	1,605,156		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	55,169,378	56,271,875
Awaiting PPN	Inverse JPY Long Term Bond	1Z	50,000,000	53,163,219	54,943,747	05/01/2017	05/08/2019	Currency Forward	718,122		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	53,163,219	54,225,625
Awaiting PPN	Inverse JPY Long Term Bond	1Z	75,000,000	79,243,289	81,590,464	05/02/2017	05/09/2019	Currency Forward	763,589		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	79,243,289	80,826,875
91283# AP8	Inverse JPY Long Term Bond	1	90,000,000	77,237,129	79,532,321	05/03/2017	05/09/2019	Currency Forward	751,696		912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	77,237,129	78,780,625
91283# AP8	Inverse JPY Long Term Bond	1		6,400,000	6,101,434	05/03/2017	05/09/2019	Currency Forward			01749B-AB-5	Allegro CLO VI Ltd-ALLEG 2017-2A B	1	6,400,000	6,101,434
91283# AP8	Inverse JPY Long Term Bond	1		4,400,000	4,257,018	05/03/2017	05/09/2019	Currency Forward			39729R-AC-2	Greenwood Park CLO Ltd-SERIES 18-1A CLASS B	1	4,400,000	4,257,018
91283# AP8	Inverse JPY Long Term Bond	1		5,095,000	4,760,483	05/03/2017	05/09/2019	Currency Forward			05616Z-AS-9	Babson CLO Ltd 2015-I-BABSN 2015-1A CR	1	5,095,000	4,760,483
91283# AP8	Inverse JPY Long Term Bond	1		4,000,000	3,873,080	05/03/2017	05/09/2019	Currency Forward			09628F-AE-9	BlueMountain Fuji US Clo-SERIES 2017-3A CLASS B	1	4,000,000	3,873,080
91283# AP8	Inverse JPY Long Term Bond	1		2,000,000	1,923,962	05/03/2017	05/09/2019	Currency Forward			22616C-AE-3	CRESTLINE DENALI CLO XV -SERIES 17-1A CLASS C	1	2,000,000	1,923,962
91283# AP8	Inverse JPY Long Term Bond	1		1,995,000	1,947,403	05/03/2017	05/09/2019	Currency Forward			06760E-AC-0	Babson CLO Ltd 2013-I-SERIES 2013-1S CLASS BR	1	1,995,000	1,947,403
Awaiting PPN	Inverse JPY Long Term Bond	1Z	50,000,000	59,497,473	58,041,205	05/10/2017	05/13/2019	Currency Forward	(297,076)		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	59,497,473	58,338,281
Awaiting PPN	Inverse JPY Long Term Bond	1Z	50,000,000	59,497,473	58,002,679	05/11/2017	05/15/2019	Currency Forward	(335,602)		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	59,497,473	58,338,281
Awaiting PPN	Inverse JPY Long Term Bond	1Z	25,000,000	34,706,859	34,034,256	05/16/2017	05/20/2019	Currency Forward	3,592		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	34,706,859	34,030,664
Awaiting PPN	Inverse JPY Long Term Bond	1Z	25,000,000	34,706,859	34,300,125	05/17/2017	05/20/2019	Currency Forward	269,461		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	34,706,859	34,030,664
Awaiting PPN	Inverse JPY Long Term Bond	1Z	25,000,000	34,706,859	34,450,673	05/17/2017	05/20/2019	Currency Forward	420,009		912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	34,706,859	34,030,664
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1	250,000,000	21,248,894	(1,347,382)	09/15/2017	09/15/2047	Interest Rate Swap		(21,641,834)	03073E-AM-7	Ameri sourceBergen Corp-SENIOR UNSECURED	2	21,248,894	20,294,452
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		28,617,087	32,751,225	09/15/2017	09/15/2047	Interest Rate Swap			055450-AH-3	BHP Billiton Finance USA-DEBTURE	1	28,617,087	32,751,225
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		31,148,558	30,369,967	09/15/2017	09/15/2047	Interest Rate Swap			12572Q-AG-0	ONE GROUP INC-SR UNSECURED	1	31,148,558	30,369,967
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		19,646,080	19,958,114	09/15/2017	09/15/2047	Interest Rate Swap			29364N-AS-7	ENTERGY MISSISSIPPI INC-SECURED NOTE	1	19,646,080	19,958,114
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		20,560,052	20,606,756	09/15/2017	09/15/2047	Interest Rate Swap			29365T-AA-2	ENTERGY TEXAS INC-NOTE	1	20,560,052	20,606,756
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		25,710,844	30,558,773	09/15/2017	09/15/2047	Interest Rate Swap			313747-AF-4	FEDERAL REALTY INVESTMEN-NOTE REID	1	25,710,844	30,558,773
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		20,833,097	20,815,165	09/15/2017	09/15/2047	Interest Rate Swap			375558-AH-3	UNSECURED NOTE	1	20,833,097	20,815,165
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		19,430,045	19,328,899	09/15/2017	09/15/2047	Interest Rate Swap			384780-AA-0	GRAIN SPECTRUM FUND II-SECURED NOTE	1	19,430,045	19,328,899
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		28,499,254	28,100,962	09/15/2017	09/15/2047	Interest Rate Swap			75972Y-AA-9	RENAISSANCEERE FINANCE-SR UNSECURED	1	28,499,254	28,100,962
57629* DMO	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		25,053,674	26,271,275	09/15/2017	09/15/2047	Interest Rate Swap			884315-AG-7	THOMAS & BETTS CORP-NOTE	1	25,053,674	26,271,275

SI1221

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629* DM0	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		19,099,379	19,291,441	09/15/2017	09/15/2047	Interest Rate Swap			958587-BJ-5	WEST MASS ELECTRIC CO-SENIOR UNSECURED NOTE	1	19,099,379	19,291,441
57629* DM0	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		3,200,000	2,949,584	09/15/2017	09/15/2047	Interest Rate Swap			22615E-AE-0	Crestline Denali CLO Ltd-SERIES 2018-1A CLASS C	1	3,200,000	2,949,584
57629* DM0	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		8,000,000	7,520,528	09/15/2017	09/15/2047	Interest Rate Swap			67104L-AG-2	OHA Loan Funding 2013-2 -OHALF 2013-2A CR	1	8,000,000	7,520,528
57629* DM0	Evergreen Basket of Inverse Floating Rate Corporate Bonds	1		7,000,000	6,919,290	09/15/2017	09/15/2047	Interest Rate Swap			39862E-AB-0	GRIPPEN PARK CLO LTD-SERIES 17-1A CLASS B	1	7,000,000	6,919,290
57629* DL2	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2	250,000,000	31,880,626	9,738,619	09/15/2017	09/15/2047	Interest Rate Swap		(21,261,669)	031162-CJ-7	AMGEN INC-SENIOR UNSECURED	2	31,880,626	31,000,288
57629* DL2	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		36,279,355	36,573,817	09/15/2017	09/15/2047	Interest Rate Swap			441077-AT-3	HOST HOTELS & RESORTS LP-SENIOR UNSECURED NOTE	2	36,279,355	36,573,817
57629* DL2	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		33,304,491	33,663,615	09/15/2017	09/15/2047	Interest Rate Swap			445658-CD-7	JB HUNT TRANSPRT SVCS-SENIOR UNSECURED NOTE	2	33,304,491	33,663,615
57629* DL2	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		35,204,599	36,167,566	09/15/2017	09/15/2047	Interest Rate Swap			456866-AM-4	INGERSOLL-RAND CO-DEBENTURE	2	35,204,599	36,167,566
57629* DL2	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		42,890,735	41,896,596	09/15/2017	09/15/2047	Interest Rate Swap			664397-AK-2	EVERSOURCE ENERGY-UNSECURED NOTE	2	42,890,735	41,896,596
57629* DL2	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		32,900,281	32,395,396	09/15/2017	09/15/2047	Interest Rate Swap			760759-AP-5	Republic Services Inc-SENIOR UNSECURED NOTE	2	32,900,281	32,395,396
57629* DL2	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		37,894,773	36,894,319	09/15/2017	09/15/2047	Interest Rate Swap			94106L-BA-6	Waste Management Inc-SR UNSECURED	2	37,894,773	36,894,319
57629* DL2	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		36,185,306	35,468,976	09/15/2017	09/15/2047	Interest Rate Swap			A05830-41-6	SPARC EM SPC PANAMA METR-SECURED	2	36,185,306	35,468,976
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2	250,000,000	23,439,642	1,958,103	09/15/2017	09/15/2047	Interest Rate Swap		(21,058,915)	00287Y-AL-3	AbbVie Inc-SENIOR UNSECURED NOTE	2	23,439,642	23,017,018
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		6,470,294	6,326,908	09/15/2017	09/15/2047	Interest Rate Swap			00507U-AS-0	ACTAVIS FUNDING SCS-SENIOR UNSECURED NOTE	2	6,470,294	6,326,908
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		38,705,681	36,677,816	09/15/2017	09/15/2047	Interest Rate Swap			03522A-AD-2	Anheuser-Busch Cos LLC /-SENIOR UNSECURED	2	38,705,681	36,677,816
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		50,093,481	47,612,002	09/15/2017	09/15/2047	Interest Rate Swap			254709-AM-0	DISCOVER FINANCIAL SVS-SENIOR UNSECURED	2	50,093,481	47,612,002
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		25,114,106	24,714,364	09/15/2017	09/15/2047	Interest Rate Swap			444859-BA-9	Humana Inc-SENIOR UNSECURED NOTE	2	25,114,106	24,714,364
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		23,550,876	23,285,810	09/15/2017	09/15/2047	Interest Rate Swap			61945C-AA-1	MOSAIC CO/THE-SENIOR UNSECURED NOTE	2	23,550,876	23,285,810
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		24,565,744	23,547,623	09/15/2017	09/15/2047	Interest Rate Swap			718549-AB-4	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED	2	24,565,744	23,547,623
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		26,494,881	26,286,354	09/15/2017	09/15/2047	Interest Rate Swap			756109-AN-4	REALTY INCOME CORP-SENIOR UNSECURED NOTE REID	1	26,494,881	26,286,354
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		17,906,864	17,983,079	09/15/2017	09/15/2047	Interest Rate Swap			09247X-AJ-0	BlackRock Inc-SENIOR UNSECURED NOTE	1	17,906,864	17,983,079
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		27,536,456	28,352,590	09/15/2017	09/15/2047	Interest Rate Swap			883203-BQ-3	Textron Inc-NOTE	2	27,536,456	28,352,590
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		19,613,100	19,312,119	09/15/2017	09/15/2047	Interest Rate Swap			760759-AP-5	Republic Services Inc-SENIOR UNSECURED NOTE	2	19,613,100	19,312,119
57629* DP3	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		8,800,000	8,533,334	09/15/2017	09/15/2047	Interest Rate Swap			05683L-AC-0	Bain Capital Credit CLO -BCC 2018-1A A2	1	8,800,000	8,533,334
57629* DN8	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2	250,000,000	22,499,157	970,105	09/15/2017	09/15/2047	Interest Rate Swap		(21,515,112)	032095-AC-5	AMPHENOL CORP-SENIOR UNSECURED NOTE	2	22,499,157	22,485,217
57629* DN8	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		22,533,440	22,419,112	09/15/2017	09/15/2047	Interest Rate Swap			045487-AA-3	ASSOC BANC-CORP-SR UNSECURED	2	22,533,440	22,419,112
57629* DN8	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		21,870,224	20,673,370	09/15/2017	09/15/2047	Interest Rate Swap			378272-AL-2	GLENCORE FUNDING LLC-SR UNSECURED	2	21,870,224	20,673,370
57629* DN8	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		22,880,064	23,235,819	09/15/2017	09/15/2047	Interest Rate Swap			45167R-AF-1	IDEX Corp-SENIOR UNSECURED NOTE	2	22,880,064	23,235,819
57629* DN8	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		22,093,696	21,403,275	09/15/2017	09/15/2047	Interest Rate Swap			49245P-AA-4	KERRY GROUP FIN SERVICES-SENIOR UNSECURED NOTE	2	22,093,696	21,403,275
57629* DN8	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		21,134,567	20,164,848	09/15/2017	09/15/2047	Interest Rate Swap			67103H-AF-4	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED	2	21,134,567	20,164,848
57629* DN8	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		22,272,021	21,941,925	09/15/2017	09/15/2047	Interest Rate Swap			72925P-AD-7	PLUM CREEK TIMBERLANDS-SENIOR UNSECURED NOTE	2	22,272,021	21,941,925

SI12.22

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
57629* DNB	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		25,467,318	25,429,174	09/15/2017	09/15/2047	Interest Rate Swap			759351-AG-4	Reinsurance Group of Ame-SENIOR UNSECURED NOTE	2	25,467,318	25,429,174
57629* DNB	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		25,868,407	25,524,863	09/15/2017	09/15/2047	Interest Rate Swap			806851-AG-6	SCHLUMBERGER HLDGS CORP-SR UNSECURED	2	25,868,407	25,524,863
57629* DNB	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		22,674,614	23,324,232	09/15/2017	09/15/2047	Interest Rate Swap			92936M-AB-3	WPP FINANCE 2010-SENIOR UNSECURED NOTE	2	22,674,614	23,324,232
57629* DNB	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		21,902,209	19,785,520	09/15/2017	09/15/2047	Interest Rate Swap			98310W-AL-2	WYNDHAM WORLDWIDE CORP-SENIOR UNSECURED NOTE	3	21,902,209	19,785,520
57629* DNB	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		21,116,320	20,102,092	09/15/2017	09/15/2047	Interest Rate Swap			98956P-AF-9	Zimmer Biomet Holdings I-SR UNSECURED	2	21,116,320	20,102,092
57629* DNB	Evergreen Basket of Inverse Floating Rate Corporate Bonds	2		21,052,841	21,152,880	09/15/2017	09/15/2047	Interest Rate Swap			EK5851-40-8	ISRAEL ELECTRIC CORP LTD-SECURED NOTE	2	21,052,841	21,152,880
Awaiting PPN	Sovereign Bond of Peru	1Z	5,000,000	10,854,013	9,995,290	06/20/2018	12/20/2023	5 Yr Credit Default Swap	18,893	15,993	912810-PP-5	UNITED STATES TREASURY 3.00% DUE 11/15/45	1	10,835,120	9,979,297
Awaiting PPN	Sovereign Bond of Mexico	1Z	15,000,000	16,057,124	17,645,869	06/20/2018	12/20/2023	5 Yr Credit Default Swap	(115,820)	(369,846)	912833-LL-2	US TREASURY DUE 2/15/2023	1	16,172,944	18,015,715
Awaiting PPN	Sovereign Bond of Panama	1Z	10,000,000	20,101,136	20,021,569	06/20/2018	12/20/2023	5 Yr Credit Default Swap	112,941	77,819	912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	19,988,195	19,943,750
Awaiting PPN	Sovereign Bond of India	1Z	15,000,000	29,661,722	29,682,018	06/20/2018	12/20/2023	5 Yr Credit Default Swap	(300,275)	(253,903)	912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	29,982,293	29,915,625
Awaiting PPN	Sovereign Bond of Columbia	1Z	15,000,000	29,879,519	29,539,473	06/20/2018	12/20/2023	5 Yr Credit Default Swap	(102,774)	(376,152)	912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	29,982,293	29,915,625
Awaiting PPN	Sovereign Bond of India	1Z	25,000,000	34,417,089	34,478,391	06/20/2018	12/20/2023	5 Yr Credit Default Swap	(562,253)	(423,172)	912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	34,979,342	34,901,563
Awaiting PPN	Sovereign Bond of India	1Z		14,874,368	14,584,570	06/20/2018	12/20/2023	5 Yr Credit Default Swap			912810-RU-4	US TREASURY N/B-UNSECURED 2.875% DUE 11/15/2046	1	14,874,368	14,584,570
Awaiting PPN	Sovereign Bond of Malaysia	1Z	10,000,000	14,822,303	14,543,996	06/20/2018	12/20/2023	5 Yr Credit Default Swap	(52,065)	(40,574)	912810-RU-4	US TREASURY N/B-UNSECURED 2.875% DUE 11/15/2046	1	14,874,368	14,584,570
Awaiting PPN	Sovereign Bond of Columbia	1Z	15,000,000	19,477,817	19,069,942	12/20/2018	12/20/2023	5 Yr Credit Default Swap	(354,674)	(376,152)	912810-RU-4	US TREASURY N/B-UNSECURED 2.875% DUE 11/15/2046	1	19,832,491	19,446,094
Awaiting PPN	Credit Default Indices (CDIG031/CDX.NA.IG.31)	2Z	517,000,000	272,547,889	271,951,742	06/20/2018	12/20/2023	5 Yr Credit Default Swap Index	8,737,953	2,869,867	912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	263,809,936	269,081,875
Awaiting PPN	Credit Default Indices (CDIG031/CDX.NA.IG.31)	2Z		253,784,793	267,283,709	06/20/2018	12/20/2023	5 Yr Credit Default Swap Index			76116F-AG-2	RFOSP PRINCIPAL STRIP	1	253,784,793	267,283,709
Awaiting PPN	Credit Default Indices (CDIG031/CDX.NA.IG.31)	2Z	226,000,000	254,907,056	257,035,776	06/20/2018	12/20/2023	5 Yr Credit Default Swap Index	4,137,155	1,254,526	912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	250,769,901	255,781,250
Awaiting PPN	Credit Default Indices (CDIG031/CDX.NA.IG.31)	2Z	257,000,000	94,636,099	93,507,857	06/20/2018	12/20/2023	5 Yr Credit Default Swap Index	4,358,935	1,426,607	912828-PX-2	US TREASURY N/B Note 3.625% DUE 02/15/2021	1	90,277,164	92,081,250
Awaiting PPN	Credit Default Indices (CDIG031/CDX.NA.IG.31)	2Z		79,195,254	83,407,682	06/20/2018	12/20/2023	5 Yr Credit Default Swap Index			76116F-AG-2	RFOSP PRINCIPAL STRIP	1	79,195,254	83,407,682
Awaiting PPN	Credit Default Indices (CDIG031/CDX.NA.IG.31)	2Z		87,369,274	109,090,429	06/20/2018	12/20/2023	5 Yr Credit Default Swap Index			912810-QK-7	US Treasury 3.875% DUE 8/15/2040	1	87,369,274	109,090,429
Awaiting PPN	Inverse JPY Long Term Bond	1Z	76,207,323	19,971,263	20,501,034	05/31/2018	05/20/2019	Currency Forward		(1,868,148)	912833-LN-8	US TREASURY STRIP 0% DUE 05/15/2023	1	19,971,263	22,369,182
Awaiting PPN	Inverse JPY Long Term Bond	1Z		87,758,772	86,048,965	05/31/2018	05/20/2019	Currency Forward			912810-RU-4	US TREASURY 2.875% DUE 11/15/2046	1	87,758,772	86,048,965
Awaiting PPN	Inverse JPY Long Term Bond	1Z	49,665,019	70,052,455	69,208,113	05/31/2018	04/15/2019	Currency Forward		(1,234,855)	912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455	70,442,968
Awaiting PPN	Inverse JPY Long Term Bond	1Z	167,790,725	180,134,883	176,875,159	05/31/2018	05/09/2019	Currency Forward		(4,263,903)	912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	180,134,883	181,139,062
Awaiting PPN	Inverse JPY Long Term Bond	1Z	49,878,194	70,052,455	69,133,540	05/31/2018	04/01/2019	Currency Forward		(1,309,428)	912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455	70,442,968
Awaiting PPN	Inverse JPY Long Term Bond	1Z	50,207,107	70,052,455	68,866,255	05/31/2018	03/28/2019	Currency Forward		(1,576,713)	912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455	70,442,968
Awaiting PPN	Inverse JPY Long Term Bond	1Z	50,616,145	70,052,455	68,852,285	05/31/2018	05/08/2019	Currency Forward		(1,590,683)	912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455	70,442,968
Awaiting PPN	Inverse JPY Long Term Bond	1Z	51,627,893	70,052,455	68,864,941	05/31/2018	05/13/2019	Currency Forward		(1,578,027)	912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455	70,442,968
Awaiting PPN	Inverse JPY Long Term Bond	1Z	51,630,473	70,052,455	68,875,384	05/31/2018	05/15/2019	Currency Forward		(1,567,584)	912828-LJ-7	US TREAS N/B-NOTE 3.625% 08/15/2019	1	70,052,455	70,442,968
Awaiting PPN	Credit Default Indices (CDIG031/CDX.NA.IG.31)	2Z	100,000,000	110,588,764	110,245,725	12/20/2018	12/20/2023	5 Yr Credit Default Swap Index	653,689	555,100	912810-RV-2	US TREASURY 3.0% DUE 2/15/2044	1	109,935,075	109,690,625
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	130,000,000	33,227,015	18,529,891	11/07/2018	11/07/2048	Interest Rate Swap		(13,333,908)	873050-OM-1	TTX CO-SENIOR UNSECURED	1	33,227,015	31,863,799
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		31,909,371	31,881,451	11/07/2018	11/07/2048	Interest Rate Swap			341081-FR-3	Florida Power & Light Co-SECURED	1	31,909,371	31,881,451
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		26,200,963	26,233,448	11/07/2018	11/07/2048	Interest Rate Swap			45866F-AH-7	Intercontinental Exchange-SENIOR UNSECURED	1	26,200,963	26,233,448

SI1223

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	9	10	11	12	13	14	15	16
								Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		26,133,480	26,372,465	11/07/2018	11/07/2048	Interest Rate Swap			010392-FS-2	Alabama Power Co-SENIOR UNSECURED	1	26,133,480	26,372,465
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		26,991,624	26,458,526	11/07/2018	11/07/2048	Interest Rate Swap			976843-BJ-0	WISCONSIN PUBLIC SERVICE-SECURED	1	26,991,624	26,458,526
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		10,591,843	10,316,629	11/07/2018	11/07/2048	Interest Rate Swap			235851-AR-3	DANAHER CORP-SR UNSECURED	1	10,591,843	10,316,629
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	170,000,000	42,300,000	24,185,351	11/07/2018	11/07/2048	Interest Rate Swap		(17,613,551)	45174X-AA-0	IHC Health Services Inc-SECURED	1	42,300,000	41,798,902
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		41,500,000	42,883,372	11/07/2018	11/07/2048	Interest Rate Swap			91412N-AK-6	UNIVERSITY OF CHICAGO-UNSECURED BOND	1	41,500,000	42,883,372
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		40,925,512	40,223,688	11/07/2018	11/07/2048	Interest Rate Swap			906548-CN-0	Union Electric Co-SECURED	1	40,925,512	40,223,688
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		40,990,016	41,245,425	11/07/2018	11/07/2048	Interest Rate Swap			575718-AB-7	MASS INSTITUTE OF TECH-UNSECURED BOND	1	40,990,016	41,245,425
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		29,340,233	29,325,831	11/07/2018	11/07/2048	Interest Rate Swap			39138Q-AC-9	GREAT-WEST LIFE CO FINANC-SENIOR UNSECURED	1	29,340,233	29,325,831
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	200,000,000	54,188,820	31,888,890	11/07/2018	11/07/2048	Interest Rate Swap		(20,596,953)	882508-BD-5	Texas Instruments Inc-SENIOR UNSECURED	1	54,188,820	52,485,843
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		50,400,449	51,362,965	11/07/2018	11/07/2048	Interest Rate Swap			745332-CG-9	PUGET SOUND ENERGY INC-SECURED	1	50,400,449	51,362,965
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		48,648,657	48,467,583	11/07/2018	11/07/2048	Interest Rate Swap			81373P-AA-1	Securian Financial Group-SENIOR UNSECURED	1	48,648,657	48,467,583
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		51,949,232	50,377,102	11/07/2018	11/07/2048	Interest Rate Swap			92826C-AF-9	VISA INC-SR UNSECURED	1	51,949,232	50,377,102
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		28,754,127	29,037,594	11/07/2018	11/07/2048	Interest Rate Swap			049560-AP-0	Atmos Energy Corp-SENIOR UNSECURED	1	28,754,127	29,037,594
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	300,000,000	56,729,328	27,401,342	11/08/2018	11/08/2048	Interest Rate Swap		(30,024,530)	12572Q-AH-8	QME Group Inc-SENIOR UNSECURED	1	56,729,328	57,425,872
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		58,762,998	56,167,284	11/08/2018	11/08/2048	Interest Rate Swap			00440E-AW-7	ACE INA HOLDINGS-SR UNSECURED	1	58,762,998	56,167,284
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		53,307,260	53,358,323	11/08/2018	11/08/2048	Interest Rate Swap			30231G-AW-2	EXXON MOBIL CORPORATION-SR UNSECURED	1	53,307,260	53,358,323
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		55,789,452	54,293,489	11/08/2018	11/08/2048	Interest Rate Swap			037833-BX-7	Apple Inc-SENIOR UNSECURED	1	55,789,452	54,293,489
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		58,560,916	53,672,361	11/08/2018	11/08/2048	Interest Rate Swap			91324P-CR-1	UNITEDHEALTH GROUP INC-SR UNSECURED	1	58,560,916	53,672,361
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		58,795,350	55,612,065	11/08/2018	11/08/2048	Interest Rate Swap			023135-AQ-9	AMAZON.COM INC-SR UNSECURED	1	58,795,350	55,612,065
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	320,000,000	101,965,492	67,484,583	11/08/2018	11/08/2048	Interest Rate Swap		(32,292,559)	82620K-AT-0	SIEMENS FINANCIERINGSMAT-SENIOR UNSECURED	1	101,965,492	99,777,142
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		89,421,417	82,575,295	11/08/2018	11/08/2048	Interest Rate Swap			585055-BU-9	MEDTRONIC INC-SR UNSECURED	1	89,421,417	82,575,295
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		68,102,459	69,223,676	11/08/2018	11/08/2048	Interest Rate Swap			141781-BF-0	CARGILL INC-SR UNSECURED	1	68,102,459	69,223,676
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		45,353,098	44,011,450	11/08/2018	11/08/2048	Interest Rate Swap			023135-BM-7	Amazon.com Inc-SENIOR UNSECURED	1	45,353,098	44,011,450
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		48,349,262	47,037,082	11/08/2018	11/08/2048	Interest Rate Swap			899043-AA-1	TUFTS UNIVERSITY-UNSECURED BOND	1	48,349,262	47,037,082
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		18,484,405	20,168,043	11/08/2018	11/08/2048	Interest Rate Swap			40728T-AA-1	HAMILTON COLLEGE-UNSECURED	1	18,484,405	20,168,043
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	160,000,000	40,344,481	22,253,275	11/08/2018	11/08/2048	Interest Rate Swap		(16,212,878)	57563A-AT-7	MASSACHUSETTS ELECTRIC-SENIOR UNSECURED	1	40,344,481	38,466,153
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		30,345,309	28,474,852	11/08/2018	11/08/2048	Interest Rate Swap			45138L-BD-4	IDAHO POWER CORP-SECURED NOTE	1	30,345,309	28,474,852
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		28,874,941	28,347,790	11/08/2018	11/08/2048	Interest Rate Swap			28246Q-AB-1	Empresa de Transporte de-SENIOR UNSECURED	1	28,874,941	28,347,790
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		28,332,384	28,948,919	11/08/2018	11/08/2048	Interest Rate Swap			771196-BH-4	ROCHE HOLDING INC-SENIOR UNSECURED NOTE	1	28,332,384	28,948,919
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		29,323,311	28,216,756	11/08/2018	11/08/2048	Interest Rate Swap			437076-BH-4	Home Depot Inc/The-SENIOR UNSECURED	1	29,323,311	28,216,756
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		28,275,000	28,450,795	11/08/2018	11/08/2048	Interest Rate Swap			57845A-AD-2	MAYO CLINIC-UNSECURED	1	28,275,000	28,450,795

SI12.24

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 1

Replication (Synthetic Asset) Transactions Open as of December 31 of Current Year

Replication (Synthetic Asset) Transactions								Components of the Replication (Synthetic Asset) Transactions							
1	2	3	4	5	6	7	8	Derivative Instrument(s) Open			Cash Instrument(s) Held				
Number	Description	NAIC Designation or Other Description	Notional Amount	Book/Adjusted Carrying Value	Fair Value	Effective Date	Maturity Date	Description	Book/Adjusted Carrying Value	Fair Value	CUSIP	Description	14 NAIC Designation or Other Description	Book/Adjusted Carrying Value	Fair Value
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	320,000,000	66,835,299	31,841,744	11/08/2018	11/08/2048	Interest Rate Swap		(32,292,559)	009279-AC-4	AIRBUS SE-SENIOR UNSECURED	1	66,835,299	64,134,303
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		68,452,004	64,830,031	11/08/2018	11/08/2048	Interest Rate Swap			701094-AL-8	Parker-Hannifin Corp-SENIOR UNSECURED	1	68,452,004	64,830,031
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		61,735,160	59,130,435	11/08/2018	11/08/2048	Interest Rate Swap			23338V-AE-6	DTE Electric Co-SECURED	1	61,735,160	59,130,435
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		62,213,515	58,006,347	11/08/2018	11/08/2048	Interest Rate Swap			66989H-AH-1	NOVARTIS CAPITAL CORP-SR UNSECURED	1	62,213,515	58,006,347
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		41,457,221	43,827,842	11/08/2018	11/08/2048	Interest Rate Swap			594918-CB-8	MICROSOFT CORP-SENIOR UNSECURED	1	41,457,221	43,827,842
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		23,531,018	23,537,445	11/08/2018	11/08/2048	Interest Rate Swap			69351U-AV-5	PPL Electric Utilities C-SECURED	1	23,531,018	23,537,445
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		22,883,195	22,805,346	11/08/2018	11/08/2048	Interest Rate Swap			084664-CO-2	Berkshire Hathaway Finan-SENIOR UNSECURED	1	22,883,195	22,805,346
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		21,479,389	20,982,314	11/08/2018	11/08/2048	Interest Rate Swap			110122-AX-6	BRISTOL-MYERS SQUIBB CO-SR UNSECURED	1	21,479,389	20,982,314
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	140,000,000	36,278,545	23,641,176	12/03/2018	12/03/2048	Interest Rate Swap		(9,770,544)	039483-BM-3	ARCHER-DANIELS-MIDLAND C-SENIOR UNSECURED	1	36,278,545	33,411,720
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		27,482,409	27,337,240	12/03/2018	12/03/2048	Interest Rate Swap			00401M-AB-2	ABU DHABI CRUDE OIL PIPE-SECURED	1	27,482,409	27,337,240
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		28,608,341	27,923,106	12/03/2018	12/03/2048	Interest Rate Swap			207597-EH-4	Connecticut Light & Powe-SECURED	1	28,608,341	27,923,106
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		27,346,399	26,197,329	12/03/2018	12/03/2048	Interest Rate Swap			29736R-AG-5	ESTEE LAUDER CO INC-SENIOR UNSECURED	1	27,346,399	26,197,329
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		25,067,908	27,073,376	12/03/2018	12/03/2048	Interest Rate Swap			04351L-AA-8	ASCENSION HEALTH-UNSECURED BOND	1	25,067,908	27,073,376
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		9,997,688	10,076,040	12/03/2018	12/03/2048	Interest Rate Swap			00115A-AJ-8	AEP Transmission Co LLC-SENIOR UNSECURED	1	9,997,688	10,076,040
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	160,000,000	34,348,711	20,983,600	12/03/2018	12/03/2048	Interest Rate Swap		(10,932,897)	02361D-AR-1	Ameren Illinois Co-SECURED	1	34,348,711	31,916,497
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		37,028,339	37,556,511	12/03/2018	12/03/2048	Interest Rate Swap			468223-AT-9	Jackson Laboratory/The-UNSECURED	1	37,028,339	37,556,511
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		34,970,497	34,058,040	12/03/2018	12/03/2048	Interest Rate Swap			743315-AS-2	PROGRESSIVE CORP-SENIOR UNSECURED	1	34,970,497	34,058,040
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		35,234,610	34,495,711	12/03/2018	12/03/2048	Interest Rate Swap			17858P-AB-7	City of Hope-SENIOR UNSECURED	1	35,234,610	34,495,711
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		35,017,540	32,876,156	12/03/2018	12/03/2048	Interest Rate Swap			44107H-AE-2	NY Society for Relief of-SECURED	1	35,017,540	32,876,156
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		9,969,810	9,716,988	12/03/2018	12/03/2048	Interest Rate Swap			458140-AV-2	INTEL CORP-SENIOR UNSECURED	1	9,969,810	9,716,988
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1	160,000,000	36,783,940	30,294,605	12/10/2018	12/10/2048	Interest Rate Swap		(5,332,341)	828907-CZ-8	SIMON PROPERTY GROUP LP-SENIOR UNSECURED	1	36,783,940	35,626,946
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		34,617,570	33,872,185	12/10/2018	12/10/2048	Interest Rate Swap			12189L-BB-6	BURLINGTON NORTH SANTA FE-SENIOR UNSECURED	1	34,617,570	33,872,185
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		29,541,464	27,947,251	12/10/2018	12/10/2048	Interest Rate Swap			391382-AB-4	GREAT-WEST LIFE CO FINANC-SENIOR UNSECURED	1	29,541,464	27,947,251
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		30,256,344	29,330,660	12/10/2018	12/10/2048	Interest Rate Swap			038222-AM-7	APPLIED MATERIALS INC-SENIOR UNSECURED	1	30,256,344	29,330,660
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		30,236,832	29,582,310	12/10/2018	12/10/2048	Interest Rate Swap			210518-DB-9	Consumers Energy Co-SECURED	1	30,236,832	29,582,310
Awaiting PPN	Evergreen Basket of Floating Rate Corporate Bonds	1		29,649,677	29,285,438	12/10/2018	12/10/2048	Interest Rate Swap			455434-BR-0	INDIANAPOLIS PWIR & LIGHT-SECURED BOND	1	29,649,677	29,285,438
999999999 - Totals				14,942,017,288	14,595,475,967	XXX	XXX	XXX	16,556,484	(239,386,308)	XXX	XXX	XXX	14,925,460,804	14,834,862,275

SI12.25

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART C - SECTION 2

Replication (Synthetic Asset) Transactions Open

	First Quarter		Second Quarter		Third Quarter		Fourth Quarter		Year To Date	
	1 Number of Positions	2 Total Replication (Synthetic Asset) Transactions Statement Value	3 Number of Positions	4 Total Replication (Synthetic Asset) Transactions Statement Value	5 Number of Positions	6 Total Replication (Synthetic Asset) Transactions Statement Value	7 Number of Positions	8 Total Replication (Synthetic Asset) Transactions Statement Value	9 Number of Positions	10 Total Replication (Synthetic Asset) Transactions Statement Value
1. Beginning Inventory	109	11,517,000,000	109	12,582,000,000	113	12,859,622,879	111	11,416,622,879	109	11,517,000,000
2. Add: Opened or Acquired Transactions.....	15	2,673,000,000	8	547,622,879	13	1,125,000,000	12	2,175,000,000	48	6,520,622,879
3. Add: Increases in Replication (Synthetic Asset) Transactions Statement Value.....	XXX		XXX		XXX		XXX		XXX	
4. Less: Closed or Disposed of Transactions.....	15	1,608,000,000	4	270,000,000	15	2,568,000,000	1	10,000,000	35	4,456,000,000
5. Less: Positions Disposed of for Failing Effectiveness Criteria.....										
6. Less: Decreases in Replication (Synthetic Asset) Transactions Statement Value.....	XXX		XXX		XXX		XXX		XXX	
7. Ending Inventory	109	12,582,000,000	113	12,859,622,879	111	11,416,622,879	122	13,581,622,879	122	13,581,622,879

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - VERIFICATION

Verification of Book/Adjusted Carrying Value, Fair Value and Potential Exposure of all Open Derivative Contracts

	Book/Adjusted Carrying Value Check
1. Part A, Section 1, Column 14.....	3,628,605,132
2. Part B, Section 1, Column 15 plus Part B, Section 1 Footnote - Total Ending Cash Balance .....	.....
3. Total (Line 1 plus Line 2)	3,628,605,132
4. Part D, Section 1, Column 5	8,741,308,632
5. Part D, Section 1, Column 6	(4,911,983,117)
6. Total (Line 3 minus Line 4 minus Line 5)	(200,720,383)
	Fair Value Check
7. Part A, Section 1, Column 16	3,372,662,433
8. Part B, Section 1, Column 13	200,720,383
9. Total (Line 7 plus Line 8)	3,573,382,816
10. Part D, Section 1, Column 8	8,965,790,035
11. Part D, Section 1, Column 9	(5,392,407,219)
12. Total (Line 9 minus Line 10 minus Line 11) .....	.....
	Potential Exposure Check
13. Part A, Section 1, Column 21	4,409,764,626
14. Part B, Section 1, Column 20	121,043,100
15. Part D, Section 1, Column 11	4,530,807,726
16. Total (Line 13 plus Line 14 minus Line 15) .....	.....

SCHEDULE E - PART 2 - VERIFICATION BETWEEN YEARS

(Cash Equivalents)

	1	2	3	4
	Total	Bonds	Money Market Mutual funds	Other (a)
1. Book/adjusted carrying value, December 31 of prior year	2,852,941,262	2,787,654,213	65,287,049	
2. Cost of cash equivalents acquired	79,209,684,010	73,610,544,812	5,599,139,198	
3. Accrual of discount	55,788,749	55,788,749		
4. Unrealized valuation increase (decrease)	36,646		36,646	
5. Total gain (loss) on disposals	97,456	97,456		
6. Deduct consideration received on disposals	78,423,415,179	73,128,889,034	5,294,526,146	
7. Deduct amortization of premium				
8. Total foreign exchange change in book/adjusted carrying value				
9. Deduct current year's other than temporary impairment recognized				
10. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9)	3,695,132,944	3,325,196,197	369,936,748	
11. Deduct total nonadmitted amounts				
12. Statement value at end of current period (Line 10 minus Line 11)	3,695,132,944	3,325,196,197	369,936,748	

(a) Indicate the category of such investments, for example, joint ventures, transportation equipment:

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE A - PART 1

Showing All Real Estate OWNED December 31 of Current Year

1	2	Location		5	6	7	8	9	10	Change in Book/Adjusted Carrying Value Less Encumbrances					16	17
		3	4							11	12	13	14	15		
Description of Property	Code	City	State	Date Acquired	Date of Last Appraisal	Actual Cost	Amount of Encumbrances	Book/Adjusted Carrying Value Less Encumbrances	Fair Value Less Encumbrances	Current Year's Depreciation	Current Year's Other-Than-Temporary Impairment Recognized	Current Year's Change in Encumbrances	Total Change in Book/Adjusted Carrying Value (13-11-12)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Gross Income Earned Less Interest Incurred on Encumbrances	Taxes, Repairs and Expenses Incurred
1504 HOME OFFICE - TEN FAN PIER BLVD	I	BOSTON	MA	07/01/2018	07/01/2018	58,411,562		58,411,562	58,411,562							
CONCTR HOME OFFICE - CONF CTR		CHICOPEE	MA	06/28/2001	06/28/2001	13,190,798		3,405,364	3,405,364	184,619			(184,619)			279,287
MEAD HOME OFFICE - BRIGHT MEADOW		ENFIELD	CT	05/24/2004	12/31/2004	111,769,086		57,273,674	57,273,674	5,951,944			(5,951,944)		8,494,990	1,230,713
STATE HOME OFFICE - STATE STREET		SPRINGFIELD	MA			228,402,141		76,433,076	76,433,076	9,717,345			(9,717,345)		8,699,318	2,222,917
0299999. Property occupied by the reporting entity - Administrative						411,773,587		195,523,676	195,523,676	15,853,908			(15,853,908)		17,194,308	3,732,917
0399999. Total Property occupied by the reporting entity						411,773,587		195,523,676	195,523,676	15,853,908			(15,853,908)		17,194,308	3,732,917
0015 RESTON ARBORETUM	I	RESTON	VA	08/20/2002	12/31/2016	84,715,792		47,337,480	90,900,000				(2,238,987)		5,262,111	2,866,544
0610 5301 WISCONSIN AVE		WASHINGTON	DC	10/01/2006	12/31/2012	1		1	1							
0612 THE RIDGE		WALTHAM	MA	10/01/2006	12/31/2012	1		1	1							
0902 ROCKVILLE TOWN CENTER	I	ROCKVILLE	MD	09/01/2009	06/30/2013	83,230,572	44,565,045	36,047,492	44,334,955	1,516,307		(9,544,331)	(11,060,638)		214,436	1,896,099
0904 GROVE AT WESLEY CHAPEL	I	WESLEY CHAPEL	FL	07/01/2010	12/31/2017	153,113,639		104,848,232	82,900,000	4,722,749			(4,722,749)		7,213,216	2,489,995
1124 RIVA PORTLAND	I	PORTLAND	OR	01/01/2015	03/31/2018	72,568,507	38,718,691	21,842,628	80,781,309	1,871,895		881,990	(989,905)		5,429,692	2,450,846
1405 300 SOUTH TRYON OFFICE	I	CHARLOTTE	NC	06/27/1991	12/31/2018	206,851,963	191,338,950	4,705,022	74,661,050	5,616,080		(31,341,411)	(36,957,491)		8,239,284	5,832,235
1406 300 SOUTH TRYON HOTEL	I	CHARLOTTE	NC	06/27/1991	06/30/2013	97,703,147	49,133,074	43,945,111	48,571,927	4,217,996		(6,978,750)	(11,196,746)		4,438,119	1,398,886
1407 230 SOUTH TRYON GARAGE	I	CHARLOTTE	NC	10/01/1991	12/31/2018	15,733,590		6,035,072	17,600,000	493,822			(493,822)		1,398,415	455,075
1928 MARCO ISLAND MARRIOTT	I	MARCO ISLAND	FL	06/15/1979	12/31/2013	931,655,747	480,000,000	(8,786,486)	335,000,000	37,842,820		(295,000,000)	(332,842,820)		33,495,012	3,669,186
9127 RIVERBANK WEST	I	NEW YORK	NY	12/31/1991	03/31/2016	119,327,122	100,000,000	(36,882,547)	186,900,000	4,443,718		(45,016,677)	(49,460,395)		14,042,470	13,463,916
9671 SOMERSET SQUARE	I	GLASTONBURY	CT	10/01/1991	03/31/2016	36,267,128		15,075,270	32,100,000	927,275			(927,275)		4,461,047	2,218,368
9905 THE MUSE HOTEL	I	NEW YORK	NY	02/24/1999	06/30/2016	96,465,468		38,537,483	77,600,000	3,463,274			(3,463,274)		4,569,048	2,342,467
0499999. Properties held for the production of income						1,897,632,677	903,755,760	272,704,759	1,071,349,243	67,354,923		(386,999,179)	(454,354,102)		88,762,850	39,083,617
1708 GILLEM LOGISTICS CENTER	I	FOREST PARK	GA	08/08/2017	08/08/2017	48,161,948	26,840,000	20,078,118	29,960,000	854,871			(854,871)		1,385,163	1,347,562
0599999. Properties held for sale						48,161,948	26,840,000	20,078,118	29,960,000	854,871			(854,871)		1,385,163	1,347,562
0699999 - Totals						2,357,568,212	930,595,760	488,306,553	1,296,832,919	84,063,702		(386,999,179)	(471,062,881)		107,342,321	44,164,096

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE A - PART 2

Showing All Real Estate ACQUIRED and Additions Made During the Year

1 Description of Property	2 Location		4 Date Acquired	5 Name of Vendor	6 Actual Cost at Time of Acquisition	7 Amount of Encumbrances	8 Book/Adjusted Carrying Value Less Encumbrances	9 Additional Investment Made After Acquisition
	City	State						
0015 RESTON ARBORETUM	RESTON	VA.	08/20/2002	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			47,337,480	4,306,409
0610 5301 WISCONSIN AVE	WASHINGTON	DC.	10/01/2006	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			.1	
0612 THE RIDGE	WALTHAM	MA.	10/01/2006	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			.1	
0613 THE COMMONS AT VALENCIA GATEWAY	VALENCIA	CA.	12/01/2006	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR				1,750
0902 ROCKVILLE TOWN CENTER	ROCKVILLE	MD.	09/01/2009	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR		44,565,045	36,047,492	9,112,623
0904 GROVE AT WESLEY CHAPEL	WESLEY CHAPEL	FL.	07/01/2010	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			104,848,232	4,380,038
1124 RIVA PORTLAND	PORTLAND	OR.	01/01/2015	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			38,718,691	391,209
1405 300 SOUTH TRYON OFFICE	CHARLOTTE	NC.	06/27/1991	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			191,338,950	23,871,592
1406 300 SOUTH TRYON HOTEL	CHARLOTTE	NC.	06/27/1991	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			49,133,074	6,152,748
1407 230 SOUTH TRYON GARAGE	CHARLOTTE	NC.	10/01/1991	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			6,035,072	528,800
1708 GILLEM LOGISTICS CENTER	FOREST PARK	GA.	08/08/2017	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR		26,840,000	20,078,118	1,930,106
1828 TOWER SQUARE OFFICE	SPRINGFIELD	MA.	06/06/1967	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR				782,824
1829 TOWER SQUARE HOTEL	SPRINGFIELD	MA.	06/06/1967	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR				16,197
1928 MARCO ISLAND MARRIOTT	MARCO ISLAND	FL.	06/15/1979	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			480,000,000	73,725,715
3353 HESTER	FORT WAYNE	IN.	01/29/2018	MATTHEW HESTER	136,450		(8,786,486)	
3354 AWAD	LONGMEADOW	MA.	07/31/2018	WILLIAM AWAD	919,593			
8711 ROSEMONT HILTON	ROSEMONT	IL.	03/03/1992	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR				115,545
8805 NEWPORT MARRIOTT	NEWPORT	RI.	08/14/1993	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR				144,218
9127 RIVERBANK WEST	NEW YORK	NY.	12/31/1991	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR		100,000,000	(36,882,547)	14,165,188
9667 SCOTTSDALE RESORT	SCOTTSDALE	AZ.	10/01/1997	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR				280,433
9671 SOMERSET SQUARE	GLASTONBURY	CT.	10/01/1991	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			15,075,270	1,416,244
9905 THE MUSE HOTEL	NEW YORK	NY.	02/24/1999	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			38,537,483	322,981
9911 SEDONA HILTON	SEDONA	AZ.	08/06/1999	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR				20,858
CONCTR HOME OFFICE - CONF CTR	CHICOPEE	MA.	06/28/2001	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			3,405,364	82,965
MEAD HOME OFFICE - BRIGHT MEADOW	ENFIELD	CT.	05/24/2004	CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			57,273,674	
STATE HOME OFFICE - STATE STREET	SPRINGFIELD	MA.		CAPITAL ADDITIONS FOR ASSET ACQUIRED IN PRIOR YEAR			76,433,076	9,025,959
0199999. Acquired by Purchase					1,056,043	930,595,760	429,894,991	150,774,402
1504 HOME OFFICE - TEN FAN PIER BLVD	BOSTON	MA.	07/01/2018	TRANSFERRED FROM SCHEDULE BA	56,615,096		58,411,562	1,796,466
0299999. Acquired by Internal Transfer					56,615,096		58,411,562	1,796,466
0399999 - Totals					57,671,139	930,595,760	488,306,553	152,570,868

E02

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE A - PART 3

Showing All Real Estate DISPOSED During the Year, Including Payments During the Final Year on "Sales Under Contract"

1	Location		4	5	6	7	8	Change in Book/Adjusted Carrying Value Less Encumbrances					14	15	16	17	18	19	20
	2	3						9	10	11	12	13							
Description of Property	City	State	Disposal Date	Name of Purchaser	Actual Cost	Expended for Additions, Permanent Improvements and Changes in Encumbrances	Book/Adjusted Carrying Value Less Encumbrances Prior Year	Current Year's Depreciation	Current Year's Other-Than-Temporary Impairment Recognized	Current Year's Change in Encumbrances	Total Change in Book/Adjusted Carrying Value (11-9-10)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Book/Adjusted Carrying Value Less Encumbrances on Disposal	Amounts Received During Year	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Gross Income Earned Less Interest Incurred on Encumbrances	Taxes, Repairs and Expenses Incurred
PYSL OTHER RE ADMINISTRATION	SPRINGFIELD	MA		ADJUSTMENT TO PRIOR YEAR SALE															
0613 COMMONS VALENCIA	VALENCIA	CA	.02/14/2018	COMMONS AT VALENCIA GATEWAY LLC	55,578,250	1,750	32,504,766					32,506,516	30,941,997		(1,564,519)	(1,564,519)		420,336	126,324
1828 TOWER SQUARE OFFICE	SPRINGFIELD	MA	.04/12/2018	MITTAS HOSPITALITY LLC	119,915,115	782,824	6,545,000		1,781,159		(1,781,159)	5,546,665	3,618,313		(1,928,352)	(1,928,352)		3,026,117	2,802,536
1829 TOWER SQUARE HOTEL	SPRINGFIELD	MA	.04/05/2018	MITTAS HOSPITALITY LLC	48,003,809	16,197	2,657,261					2,673,459	8,511,629		5,838,170	5,838,170		(769,545)	328,533
3349 RESIDENTIAL AMEZOUA	AURORA	IL	.02/16/2018	ANDREA & DAVID BELL	514,009		514,009					514,009	405,223		(108,786)	(108,786)			
3352 RESIDENTIAL LIN	BERNARDSVILLE	NJ	.07/19/2018	MELISA CIPRIANO	1,354,677		1,354,677					1,354,677	1,071,862		(282,815)	(282,815)			
3353 RESIDENTIAL HESTER	FORT WAYNE	IN	.03/16/2018	NICHOLAS & PATRICK DENICE	136,450		136,450					136,450	124,621		(11,829)	(11,829)			
3354 RESIDENTIAL AWAD	LONGMEADOW	MA	.09/28/2018	BARINGS	919,593		919,593					919,593	919,593						
8711 ROSEMONT HILTON O'HARE	ROSEMONT	IL	.01/30/2018	5550 N RIVER ROAD ROSEMONT LLC 25 AMERICA'S CUP AVENUE NEWPORT LLC	64,825,882	115,545	(14,917,567)					(14,802,022)	19,121,145		33,923,167	33,923,167		(114,571)	310,528
8805 NEWPORT MARRIOTT	NEWPORT	RI	.01/30/2018		124,972,253	144,218	52,108,645					52,252,863	120,455,398		68,202,535	68,202,535		(281,497)	243,177
9419 MAIN STREET LAND	SPRINGFIELD	MA	.04/12/2018	MITTAS HOSPITALITY LLC	559,077		427,015		427,014		(427,014)	1	96,044		96,043	96,043			4,968
9630 MARKET STREET LAND	EL PASO	TX	.04/02/2018	EP MARKET STREET HOLDINGS LLC	1		1					1	1						3,328
9667 SCOTTSDALE RESORT	SCOTTSDALE	AZ	.01/30/2018	7700 E McCORMICK PARKWAY SCOTTSDALE LLC	98,128,197	280,433	34,840,668					35,121,101	60,563,139		25,442,038	25,442,038		884,950	95,498
9911 SEDONA HILTON RESORT	SEDONA	AZ	.01/30/2018	90 RIDGE TRAIL DRIVE SEDONA LLC	62,888,526	20,858	(10,578,475)					(10,557,617)	28,766,440		39,324,057	39,324,057		24,216	424,573
0199999. Property Disposed					577,795,839	1,361,825	105,456,000		2,208,173		(2,208,173)	105,665,696	275,807,610		170,141,914	170,141,914		3,053,473	4,715,750
0399999 - Totals					577,795,839	1,361,825	105,456,000		2,208,173		(2,208,173)	105,665,696	275,807,610		170,141,914	170,141,914		3,053,473	4,715,750

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
00077AAB1		Var ious	MI.		12/22/2003	5.094	16,499,259		(151,032)				15,140,322	12/22/2003
00077ABC8		Var ious	MI.		03/22/2004	5.680	11,541,535		(12,671)				10,471,074	03/22/2004
00077ACD5		Var ious	NY.		12/23/2004	4.976	9,301,655		(59,086)				8,546,554	12/23/2004
00077ADE2		Var ious	OH.		03/29/2005	5.933	4,192,870		(24,018)				3,954,101	03/29/2005
00077AEF8		Var ious	NY.		09/27/2005	4.952	9,858,662		(48,984)				9,175,585	09/27/2005
00077AFG5		Var ious	OH.		03/28/2006	5.386	3,150,239		(10,209)				3,020,618	03/28/2006
00077AGH2		Var ious	NY.		06/26/2006	5.858	1,816,202		(11,091)				1,738,848	06/26/2006
00077AHI9		Var ious	OH.		09/26/2006	6.443	1,115,496		(7,220)				1,071,500	09/26/2006
00077AJ6		Var ious	MI.		12/22/2006	5.317	3,532,808		(13,569)				3,353,536	12/22/2006
026200BC8		Var ious	MD.		01/30/2012	5.517	1,644,555		3,883				1,591,413	01/30/2012
048703CC4		Var ious	IL.		12/23/1998	6.123	472,375		1,150				464,714	12/23/1998
048703EF5		Var ious	TX.		06/15/2001	6.563	1,640,907		(5,385)				1,593,330	06/15/2001
048703GF3		Var ious	TX.		11/30/2001	6.449	399,798		(2,606)				388,238	11/30/2001
048703HF2		Var ious	MI.		11/30/2001	6.458	454,710		602				436,333	11/30/2001
048703IH7		Var ious	NY.		11/30/2001	6.181	598,646		(3,394)				579,176	11/30/2001
051828AB7		Var ious	IL.		06/26/2000	9.180	62,926		(3,009)				63,533	06/26/2000
051828BX8		Var ious	TX.		11/30/2001	6.439	2,327,059		(27,479)				2,283,665	11/30/2001
054940AB7		Var ious	NC.		03/18/2005	5.685	2,840,781		(12,808)				2,669,609	03/18/2005
059610AB1		Var ious	PR.		01/31/2002	6.192	2,090,403		(15,370)				2,007,229	01/31/2002
059610BC8		Var ious	PR.		01/09/2003	5.773	9,468,934		(21,465)				9,063,780	01/09/2003
059610CD5		Var ious	PR.		10/03/2003	5.754	6,490,665		(24,219)				6,172,649	10/03/2003
059610DE2		Var ious	PR.		02/11/2004	5.553	3,761,061		(15,634)				3,549,481	02/11/2004
059610EF8		Var ious	PR.		08/12/2004	5.697	2,334,423		5,175				2,246,417	08/12/2004
059610FG5		Var ious	PR.		11/17/2004	5.579	1,734,015		(5,976)				1,639,601	11/17/2004
059610GH2		Var ious	PR.		01/14/2005	5.984	1,188,083		(2,956)				1,136,735	01/14/2005
059610HI9		Var ious	PR.		03/17/2005	5.662	1,110,286		(4,242)				1,057,777	03/17/2005
059610IJ6		Var ious	PR.		05/12/2005	5.016	1,061,596		(2,591)				1,003,867	05/12/2005
059610JK2		Var ious	PR.		06/13/2005	5.603	1,269,630		(1,934)				1,216,305	06/13/2005
059610KL8		Var ious	PR.		09/12/2005	6.466	1,067,163		(1,185)				1,042,242	09/12/2005
059610LLM5		Var ious	PR.		10/14/2005	5.815	679,576		(273)				650,263	10/14/2005
059610MNM2		Var ious	PR.		01/10/2006	5.904	523,037		(1,639)				502,839	01/10/2006
059610NNO9		Var ious	PR.		04/12/2006	5.827	1,224,167		(1,406)				1,190,680	04/12/2006
059610OOP5		Var ious	PR.		10/10/2006	6.282	1,722,261		2,076				1,684,667	10/10/2006
059610PQ2		Var ious	PR.		02/15/2007	6.230	1,094,102		(2,556)				1,069,746	02/15/2007
060504AB3		Var ious	NY.		09/17/2001	5.816	1,760,169		(12,380)				1,672,630	09/17/2001
073245AB8		Var ious	PA.		03/23/2007	4.965	1,780,375		3,369				1,686,525	03/23/2007
073245BC5		Var ious	IL.		07/27/2007	5.485	2,889,947		20,079				2,751,806	07/27/2007
073245CD2		Var ious	GA.		03/31/2008	4.613	1,647,624		(3,593)				1,570,256	03/31/2008
073245DE9		Var ious	LA.		03/31/2008	3.151	1,850,477		13,474				1,644,770	03/31/2008
151315AB4		Var ious	NY.		04/30/2003	5.583	347,459		6,482				316,728	04/30/2003
16371*ST5		Var ious	OH.		08/01/1991	8.718	133		4				134	08/01/1991
16371*SU2		Var ious	OH.		08/01/1991	8.718	72		2				72	08/01/1991
16371*TJ6		Var ious	AL.		07/01/1991	8.681	11,218		287				10,947	07/01/1991
16371*TP2		Var ious	PA.		10/01/1991	7.619	2,962		43				2,961	10/01/1991
16371*TS6		Var ious	VA.		10/01/1991	8.551	112		1				113	10/01/1991
16371*TT4		Var ious	VA.		10/01/1991	8.551	112		1				113	10/01/1991
201650AB4		Var ious	KS.		05/24/2001	5.420	135,025		(563)				131,858	05/24/2001
201650BC1		Var ious	TX.		05/24/2001	6.004	308,621		(861)				300,075	05/24/2001
201650CD8		Var ious	KS.		07/02/2001	5.557	1,105,056		(3,388)				1,059,004	07/02/2001
201650ED6		Var ious	GA.		11/30/2001	5.622	744,273		(3,656)				716,026	11/30/2001
201650EF1		Var ious	VA.		10/23/2001	7.392	182,999		(296)				182,253	10/23/2001
201650FG8		Var ious	NE.		11/19/2001	5.270	714,990		(3,434)				683,803	11/19/2001
201650GH5		Var ious	GA.		12/20/2001	5.221	1,042,379		(3,019)				992,358	12/20/2001
201650HI2		Var ious	KS.		03/20/2002	5.938	581,515		(4,466)				561,216	03/20/2002
201650IJ9		Var ious	KS.		06/20/2003	4.415	536,399		(3,110)				485,085	06/20/2003
201650JK5		Var ious	KS.		12/19/2003	4.913	2,033,699		(12,293)				1,914,712	12/19/2003
201650KL1		Var ious	NE.		02/17/2004	4.773	3,479,635		(13,063)				3,265,612	02/17/2004
201650LM8		Var ious	NE.		04/14/2004	5.268	1,257,474		(6,277)				1,198,569	04/14/2004
201650MNM5		Var ious	NE.		05/20/2004	5.295	1,087,862		(1,545)				1,036,116	05/20/2004
201650NO2		Var ious	NE.		06/25/2004	5.647	691,561		5,694				665,296	06/25/2004
222375AB3		Var ious	TX.		03/16/2004	5.398	108,141,454		(444,709)				99,711,896	03/16/2004

E04

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
2223750D7		Var ious	TX		06/29/2007	3.931	75,851,706		44,854				68,861,668	06/29/2007
222376B08		Var ious	GA		09/16/2005	3.785	1,743,909		1,956				1,558,018	09/16/2005
258125AB9		Var ious	PR		05/29/2002	3.346	1,530,678		(15,957)				1,357,388	05/29/2002
258125B06		Var ious	PR		10/18/2002	7.030	3,864,249		(42,694)				3,651,616	10/18/2002
258125C03		Var ious	PR		12/18/2002	7.050	2,000,569		(2,918)				1,951,512	12/18/2002
258125D02		Var ious	PR		05/07/2003	3.441	1,602,181		(24,236)				1,426,040	05/07/2003
258125E06		Var ious	PR		12/15/2003	6.875	1,809,247		35,671				1,669,881	12/15/2003
258125F03		Var ious	PR		05/12/2004	4.865	1,894,533		(6,203)				1,786,943	05/12/2004
258125G02		Var ious	PR		11/16/2004	3.010	1,370,928		(38,259)				1,160,318	11/16/2004
320400AB0		Var ious	TX		04/30/2013	4.326	883,293		(5,696)				849,248	04/30/2013
320400B07		Var ious	MD		09/30/2013	5.163	1,103,500		(2,134)				1,078,793	09/30/2013
320400C04		Var ious	TX		01/30/2015	4.347	3,191,473		(18,003)				3,134,259	01/30/2015
320400D01		Var ious	TX		03/31/2017	4.518	15,347,002		717				15,149,193	03/31/2017
320400E07		Var ious	FL		07/31/2017	4.591	9,036,044		(37,154)				8,927,890	07/31/2017
320400F04		Var ious	TX		10/30/2017	4.633	11,497,326		(44,429)				11,356,829	10/30/2017
320400G01		Var ious	FL		01/31/2018	4.618	26,928,072		52,887				26,705,276	01/31/2018
337163AA7		Var ious	NJ		12/29/1998	6.445	1,245,188		(1,037)				1,220,153	12/29/1998
337916AB6		Var ious	OH		12/15/1999	5.406	79,562		(435)				79,260	12/15/1999
33901#2H3		Var ious	IL		06/30/1997	6.862	902,949		(1,856)				872,006	06/30/1997
33903#AS6		Var ious	OR		09/01/1995	6.640	26,038		(30)				25,876	09/01/1995
339031AB2		Var ious	TX		07/17/2001	4.821	2,838,831		(12,852)				2,670,283	07/17/2001
356401AB5		Var ious	NY		09/30/2010	6.671	1,241,825		(15,090)				1,242,030	09/30/2010
356401BC2		Var ious	PA		01/24/2011	4.905	367,288		4,804				360,475	01/24/2011
356401CD9		Var ious	MD		06/28/2011	5.196	421,582		(2,695)				411,899	06/28/2011
356401DE6		Var ious	IL		10/26/2011	5.144	1,248,448		(31,868)				1,208,925	10/26/2011
356401EF2		Var ious	NY		01/26/2012	5.216	2,284,894		(16,850)				2,223,316	01/26/2012
356401FG9		Var ious	NC		07/31/2012	4.750	61,528		(2,393)				59,150	07/31/2012
356401GH6		Var ious	NY		11/28/2012	5.657	3,285,696		(21,853)				3,199,517	11/28/2012
356401HI3		Var ious	FL		10/30/2013	4.873	4,293,448		(13,829)				4,261,953	10/30/2013
356401IK7		Var ious	TX		03/30/2015	4.014	10,237,460		(62,882)				9,989,502	03/30/2015
36184*AL6		Var ious	IL		12/01/1991	9.750	11,260		29				11,400	12/01/1991
381441AB0		Var ious	NY		01/14/2008	4.754	7,915,319		44,907				7,534,371	01/14/2008
437609AB6		Var ious	TX		06/22/1999	5.972	3,386,577		105,859				3,201,356	06/22/1999
437609BC3		Var ious	NY		08/31/1999	6.170	1,690,064		(8,922)				1,666,792	08/31/1999
437609CD0		Var ious	TX		09/30/1999	5.349	1,922,416		(15,256)				1,888,859	09/30/1999
437609DE7		Var ious	TX		11/05/1999	9.230	265,004		(5,327)				259,877	11/05/1999
437609EF3		Var ious	TX		12/08/1999	5.613	1,017,521		(14,537)				959,357	12/08/1999
437609GD6		Var ious	TX		11/30/2001	5.717	364,039		(9,766)				354,256	11/30/2001
437609HG8		Var ious	GA		11/30/2001	5.603	374,445		(1,224)				353,855	11/30/2001
437609IF9		Var ious	OH		11/30/2001	6.624	268,683		(5,004)				270,051	11/30/2001
437609IH5		Var ious	MD		11/30/2001	5.042	302,578		(17,393)				307,354	11/30/2001
437609IJ1		Var ious	TX		05/25/2000	5.893	70,880		(176)				69,936	05/25/2000
437609JK7		Var ious	TN		06/30/2000	9.087	39,600		(464)				40,891	06/30/2000
437609KL3		Var ious	NC		08/25/2000	7.040	140,754		(2,668)				139,696	08/25/2000
437609LL2		Var ious	TX		12/22/2000	5.138	462,618		(7,599)				446,716	12/22/2000
437609MN7		Var ious	TX		07/31/2001	5.894	1,769,780		(15,981)				1,707,186	07/31/2001
437609NO4		Var ious	NY		09/26/2001	6.681	688,184		(32,146)				698,801	09/26/2001
446500AB6		Var ious	OH		06/29/2011	6.530	124,937		(28)				127,246	06/29/2011
51802JM01		Var ious	OH		06/20/1997	5.400	194,487		(7,521)				191,257	06/20/1997
521250AB6		Var ious	OH		09/18/2001	5.847	370,559		(2,697)				354,833	09/18/2001
521250BC3		Var ious	OH		10/29/2001	5.922	242,834		585				234,686	10/29/2001
521250CE8		Var ious	OH		12/18/2001	5.318	1,699,481		(11,874)				1,615,036	12/18/2001
576810AB1		Var ious	GA		09/23/2002	6.106	236,278		(6,629)				234,498	09/23/2002
576810BC8		Var ious	MO		05/15/2003	5.672	1,541,443		(27,952)				1,420,443	05/15/2003
576810CD5		Var ious	MO		06/27/2003	5.833	815,911		(5,203)				755,589	06/27/2003
576810DE2		Var ious	MO		12/17/2003	5.718	1,965,928		(13,856)				1,865,205	12/17/2003
585513CA0		Var ious	TX		06/25/1999	9.750	5,815		(5)				5,799	06/25/1999
595260AB6		Var ious	NY		10/27/2010	5.801	630,845		998				622,521	10/27/2010
595260BC3		Var ious	NY		04/27/2011	7.000	150,292		44				150,141	04/27/2011
596301AB7		Var ious	TX		10/27/2006	4.320	34,152,003		491,139				31,772,364	10/27/2006
617362*L4		Var ious	TX		09/01/1995	7.343	34,373		(293)				33,728	09/01/1995

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
638607AB7		Var ious	OH		06/19/2002	5.971	1,296,314		(8,651)				1,251,843	06/19/2002
638607BC4		Var ious	MN		09/16/2002	6.556	428,790		(1,403)				420,444	09/16/2002
638607CD1		Var ious	OH		09/16/2002	6.384	327,740		(1,982)				320,026	09/16/2002
638607DE8		Var ious	OH		09/16/2002	5.844	339,785		(3,695)				327,721	09/16/2002
638607EF4		Var ious	OH		12/20/2002	6.401	1,043,819		(6,026)				1,016,856	12/20/2002
638607FG1		Var ious	OH		03/20/2003	5.846	1,117,198		(4,848)				1,067,930	03/20/2003
638607GH8		Var ious	OH		08/20/2003	5.777	364,469		(1,696)				338,888	08/20/2003
638607HI5		Var ious	OH		10/21/2003	5.266	272,451		(877)				252,777	10/21/2003
638607IJ2		Var ious	IA		12/18/2003	5.480	576,919		(546)				567,004	12/18/2003
638607JK8		Var ious	OH		02/20/2004	5.990	442,613		(5,214)				415,287	02/20/2004
638607KL4		Var ious	OH		01/21/2005	7.625	185,795		(67)				181,979	01/21/2005
638607LM1		Var ious	IA		03/21/2005	6.216	318,893		(782)				310,337	03/21/2005
638607MN8		Var ious	KS		07/05/2005	6.910	44,795		(458)				43,791	07/05/2005
638607NO5		Var ious	OH		12/01/2005	5.759	1,019,245		(4,160)				982,206	12/01/2005
695041AB9		Var ious	FL		01/29/2018	3.684	16,289,074		686,236				16,058,959	01/29/2018
709301AB1		Var ious	TX		05/29/2014	4.650	5,024,008		(79,502)				4,967,521	05/29/2014
709301BC8		Var ious	NY		06/27/2014	4.490	2,262,303		(23,018)				2,182,713	06/27/2014
709301CD5		Var ious	NJ		08/28/2014	4.540	1,938,747		(12,759)				1,898,441	08/28/2014
709301DE2		Var ious	FL		09/29/2015	3.915	13,126,616		(118,995)				12,784,106	09/29/2015
709301EF8		Var ious	FL		01/31/2016	4.356	15,747,354		(100,444)				15,471,238	01/31/2016
709301FG5		Var ious	NJ		07/01/2016	4.322	25,403,818		(117,460)				24,944,629	07/01/2016
709301GH2		Var ious	FL		09/30/2016	4.120	27,949,345		(125,597)				27,433,749	09/30/2016
709301HI9		Var ious	CA		01/30/2017	4.400	30,757,592		(301,267)				30,200,542	01/30/2017
709301IJ6		Var ious	CA		06/28/2017	3.640	39,365,368		777,815				38,440,593	06/28/2017
709301JK2		Var ious	NJ		07/31/2017	4.120	31,930,247		413,705				31,205,530	07/31/2017
709301KLB		Var ious	NJ		08/30/2017	4.060	21,961,224		96,257				21,569,839	08/30/2017
709301LM5		Var ious	FL		10/04/2017	4.410	18,132,143		193,621				17,487,457	10/04/2017
709301MN2		Var ious	FL		11/08/2017	4.394	14,213,043		36,236				13,937,919	11/08/2017
709301NO9		Var ious	FL		12/06/2017	4.418	20,373,563		263,868				20,122,022	12/06/2017
709301OP5		Var ious	MD		01/17/2018	4.240	19,016,430		416,291				18,786,806	01/17/2018
709301PQ3		Var ious	FL		02/07/2018	4.210	28,883,927		659,132				28,596,635	02/07/2018
709301QR9		Var ious	FL		03/21/2018	4.180	28,435,710		587,524				28,199,942	03/21/2018
749549AB7		Var ious	PR		03/28/2002	5.355	4,941,539		(12,015)				4,779,713	03/28/2002
749549BC4		Var ious	PR		06/14/2002	6.082	2,617,594		(9,433)				2,540,277	06/14/2002
749549CD1		Var ious	PR		09/16/2002	5.166	4,985,657		(20,079)				4,728,217	09/16/2002
749549DE8		Var ious	PR		06/15/2004	5.637	6,694,261		1,941				6,398,299	06/15/2004
758970AB3		Var ious	NY		09/25/2001	7.079	346,655		(2,298)				337,580	09/25/2001
758970BC0		Var ious	FL		03/29/2012	6.250	106,781		(2,400)				103,709	03/29/2012
776450AB4		Var ious	PR		06/30/2015	4.500	11,150,901		13,080				11,006,449	06/30/2015
836154GA6		Var ious	NY		11/24/1998	6.205	1,779,217		(29,169)				1,757,668	11/24/1998
836154MN1		Var ious	NJ		04/30/1998	5.392	637,498		3,449				632,093	04/30/1998
836154MP6		Var ious	MD		04/30/1998	4.921	620,597		(1,230)				610,759	04/30/1998
853650AB5		Var ious	LA		11/30/2011	8.050	23,127		(595)				23,198	11/30/2011
853650BC2		Var ious	LA		07/02/2012	5.794	217,921		(434)				212,491	07/02/2012
857931AB5		Var ious	VA		03/28/2018	3.666	28,585,356		323,068				28,867,457	03/28/2018
867890AB1		Var ious	VA		12/20/2001	6.045	575,033		(1,891)				558,877	12/20/2001
872280AB8		Var ious	MIN		09/30/2003	4.879	431,753		(9,531)				390,571	09/30/2003
872280BC5		Var ious	MIN		02/27/2004	4.661	338,168		17,730				312,802	02/27/2004
872280CD2		Var ious	MIN		11/30/2004	4.735	179,205		(11,442)				168,063	11/30/2004
898500AB9		Var ious	MS		11/30/2010	6.552	3,270,841		3,938				3,265,126	11/30/2010
898500BC6		Var ious	MS		11/30/2010	5.959	2,216,294		710				2,194,715	11/30/2010
898500CD3		Var ious	MS		03/28/2013	5.086	6,418,069		(28,804)				6,226,560	03/28/2013
898500DE0		Var ious	MS		03/31/2015	5.074	7,496,977		(36,100)				7,422,072	03/31/2015
902975AB7		Var ious	LA		03/31/2006	4.603	6,554,989		1,133				6,137,611	03/31/2006
902975BC4		Var ious	LA		09/28/2006	5.185	9,742,161		12,642				9,231,944	09/28/2006
902975CD1		Var ious	OH		11/29/2006	4.673	6,400,865		(20,455)				5,987,390	11/29/2006
902975DE8		Var ious	NY		12/28/2006	5.056	4,856,010		4,222				4,607,759	12/28/2006
908069AB3		Var ious	MS		07/10/2001	5.804	1,757,874		3,369				1,679,195	07/10/2001
929225AB6		Var ious	TX		10/29/2003	5.007	26,529,805		(221,534)				24,565,446	10/29/2003
929225BC3		Var ious	GA		05/19/2005	4.735	11,918,645		11,157				11,233,636	05/19/2005
929225CC2		Var ious	TX		03/28/2006	4.432	12,646,038		(23,060)				11,760,503	03/28/2006

E04.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
929225DE7		Various	TX		04/25/2006	4.770	9,195,763		(28,819)				8,652,767	04/25/2006
929225EF3		Various	NY		05/25/2006	4.779	8,100,186		(25,013)				7,646,322	05/25/2006
949750AB9		Various	TX		03/09/2004	5.649	9,181,388		(11,822)				8,443,228	03/09/2004
949750BC6		Various	TX		01/06/2005	5.053	8,279,488		(45,182)				7,677,362	01/06/2005
949750CD3		Various	TX		06/07/2006	5.221	5,575,498		(28,004)				5,332,589	06/07/2006
949750DD2		Various	TX		07/06/2006	5.279	3,520,509		(10,810)				3,353,750	07/06/2006
949750EE9		Various	GA		08/10/2006	5.527	2,153,704		(6,032)				2,058,431	08/10/2006
949750EF6		Various	TX		08/15/2006	4.855	12,593,303		30,866				12,110,986	08/15/2006
949750FG3		Various	TX		09/07/2006	5.806	2,624,269		(3,190)				2,537,803	09/07/2006
949750GH0		Various	TX		11/07/2006	5.379	4,584,959		(9,633)				4,384,152	11/07/2006
949750HI7		Various	TX		12/21/2006	4.554	15,606,204		6,044				14,764,895	12/21/2006
949750IJ4		Various	TX		12/20/2006	5.227	4,750,327		(30,735)				4,532,922	12/20/2006
949750JK0		Various	TX		01/25/2007	4.819	5,754,039		(32,930)				5,443,608	01/25/2007
949750KL6		Various	TX		02/22/2007	5.370	3,134,116		472				3,010,615	02/22/2007
949750LM3		Various	TX		04/26/2007	5.283	4,918,774		(11,365)				4,664,994	04/26/2007
949750MNO		Various	TX		05/24/2007	5.721	5,580,802		(5,295)				5,312,587	05/24/2007
949750NOP		Various	TX		06/26/2007	5.620	5,863,373		(15,497)				5,602,025	06/26/2007
949750OP3		Various	TX		07/27/2007	3.739	45,543,266		(69,314)				42,850,874	07/27/2007
949750PQ0		Various	TX		10/23/2007	5.361	10,031,791		(49,694)				9,707,470	10/23/2007
949750QR7		Various	TX		11/27/2007	5.079	8,916,148		(43,468)				8,535,786	11/27/2007
949750RS4		Various	TX		12/20/2007	5.321	8,328,716		(55,197)				8,039,138	12/20/2007
949750ST1		Various	TX		01/24/2008	5.231	7,439,516		(48,685)				7,152,680	01/24/2008
949750TU7		Various	TX		09/26/2008	3.524	47,165,466		18,727				43,716,442	09/26/2008
0299999. Mortgages in good standing - Residential mortgages-insured or guaranteed							1,263,118,616		1,904,809				1,207,138,014	XXX
03332#AA7		Various	MA		03/01/1993	9.236	3,400		5				3,387	03/01/1993
03332#AB5		Various	VA		03/01/1993	7.266	7,470		7				7,401	03/01/1993
048703BB7		Various	GA		10/30/1998	5.267	294,521		(313)				288,441	10/30/1998
161610MY3		Various	NY		09/30/1996	3.657	27,796						26,004	09/30/1996
16371*SV0		Various	NY		08/01/1991	11.418	433		17				432	08/01/1991
16371*SW8		Various	NY		08/01/1991	11.418	204		833				203	08/01/1991
16371*SY4		Various	OH		06/01/1991	5.058	22,366		(149)				22,355	06/01/1991
16371*SZ1		Various	OH		06/01/1991	5.058	12,043		(80)				12,037	06/01/1991
320870MM7		Various	IL		04/11/1997	7.750	29,530		(60)				29,369	04/11/1997
33738*ZH6		Various	FL		06/19/1997	7.944	7,992		(214)				7,890	06/19/1997
498859A#3		Various	GA		12/01/1991	9.750	2,474		(5)				2,487	12/01/1991
693489MB9		Various	FL		03/30/1999	7.064	116,836		(352)				114,553	03/30/1999
749549EF4		Various	PR		06/30/2004	6.483	1,978,882		5,506				1,940,451	06/30/2004
765690AB8		Various	NY		08/30/2002	6.608	345,644		(693)				340,234	08/30/2002
805845AA2		Various	NY		05/16/2001	7.089	532,224		(3,949)				531,901	05/16/2001
805845BB9		Various	NY		05/16/2001	5.072	123,168		27,541				147,057	05/16/2001
836154B#0		Various	TX		12/27/1995	7.414	16,142		(961)				15,947	12/27/1995
836154UG7		Various	NE		02/27/1997	7.419	48,911		(951)				47,247	02/27/1997
0399999. Mortgages in good standing - Residential mortgages-all other							3,570,036		26,162				3,537,396	XXX
ND09031		Niagara Falls	CAN		11/01/2000	9.345	27,626		2,463			(718,678)	48,830,000	11/01/2000
ND20061		Philadelphia	PA		11/27/2002	5.780	6,079,168		3,306				30,583,077	11/27/2002
ND25011		University Park	IL		07/19/2002	7.990	4,831,702		2,957				17,062,905	07/19/2002
ND25181		Virginia Beach	VA		06/10/2004	7.160	2,652,947		2,935				5,868,902	06/10/2004
ND27031		Las Vegas	NV		08/07/2002	8.120	11,097,424		2,303				24,175,000	08/07/2002
ND27051		Las Vegas	NV		04/08/2003	7.890	5,474,772						11,393,182	04/08/2003
ND27061		Los Angeles	CA		11/27/2002	6.010	10,015,787		5,176				10,710,362	11/27/2002
ND27062		Los Angeles	CA		01/23/2018	3.780	36,183,470		10,520				38,781,421	01/23/2018
ND30011		Hazle Township	PA		11/17/2003	5.910	6,378,421						21,830,953	11/17/2003
ND35081		Brewster	NY		04/04/2006	6.485	2,480,246		2,330				15,337,394	04/04/2006
ND35101		Blacklick	OH		04/29/2005	6.670	4,645,295		5,010				14,118,139	04/29/2005
ND40031		Washington	DC		06/04/2004	5.630	16,477,627		8,367				43,430,876	06/04/2004
ND47131		San Diego	CA		09/23/2004	6.650	18,982,965		13,899				51,300,000	09/23/2004
ND49071		Walham	MA		10/01/2004	5.293	878,084						35,700,000	10/01/2004
ND55021		Spring Hill	FL		12/29/2006	6.110	3,773,403		1,914				11,574,312	12/29/2006
ND55041		Waldorf	MD		07/22/2008	6.540	2,166,913		910				8,200,000	07/22/2008
ND57321		North Las Vegas	NV		02/16/2006	5.990	19,666,140		5,048				31,070,376	02/16/2006
ND57322		North Las Vegas	NV		09/14/2007	5.950	6,089,824						9,602,624	09/14/2007

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
N063881		Denali	AK		03/13/2007	6.940	8,264,582		(39,750)				17,000,000	03/13/2007
N064141		Laredo	TX		02/29/2008	6.140	10,812,217		5,613				27,165,652	02/29/2008
N067011		Seattle	WA		05/11/2006	6.020	30,445,440		37,166				9,851,798	05/11/2006
N067013		Seattle	WA		04/03/2008	6.370	6,108,846						9,596,404	04/03/2008
N072011		South Bend	IN		03/15/2007	6.180	30,301,419		6,751				51,100,000	03/15/2007
N092011		Kalamazoo	MI		03/25/2009	8.750	6,928,652		1,020				21,100,000	03/25/2009
N097051		Sacramento	CA		01/19/2010	6.625	12,320,569		9,881				20,680,000	01/19/2010
N100011		Rosedale	MD		07/01/2010	5.720	13,301,588		4,406				27,500,000	07/01/2010
N102031		Chicago	IL		08/30/2010	5.000	56,815,029		9,060				92,300,000	08/30/2010
N102061		Brentwood	MO		09/02/2011	5.660	23,487,972		3,735				48,000,000	09/02/2011
N102091		Kansas City	MO		02/14/2011	3.890	6,940,166		1,680				31,300,000	02/14/2011
N104071		Katy	TX		09/23/2010	5.000	20,089,043		1,128				34,600,000	09/23/2010
N104131		Broomfield	CO		12/10/2010	4.290	27,449,052		16,190				47,500,000	12/10/2010
N105011		McDonough	GA		11/01/2012	6.570	3,450,440		2,227				13,979,000	11/01/2012
N105021		Dothan	AL		07/16/2012	6.840	1,849,424		1,272				11,055,000	07/16/2012
N105051		Davie	FL		09/27/2012	6.670	3,107,770		2,001				18,858,608	09/27/2012
N105061		Spring Hill	FL		01/15/2013	7.380	1,053,717		1,338				11,491,600	01/15/2013
N105071		Los Angeles	CA		12/22/2010	5.150	8,127,065		2,814				29,400,000	12/22/2010
N105091		Baltimore	MD		06/28/2013	7.110	1,952,807		1,185				16,470,000	06/28/2013
N107021		Mililani	HI		09/17/2010	5.450	11,206,721		13,841				18,497,916	09/17/2010
N107022		Mililani	HI		09/17/2010	5.450	30,239,832						49,802,084	09/17/2010
N107101		Tustin	CA		12/21/2010	4.470	66,170,592		4,045				99,500,000	12/21/2010
N109011		Garden City	NY		10/01/2010	4.550	29,608,012		9,072				50,100,000	10/01/2010
N109031		New York	NY		11/15/2010	5.050	116,911,978		8,229				147,391,358	11/15/2010
N109032		New York	NY		10/27/2016	4.090	26,955,957		2,808				34,008,642	10/27/2016
N110071		Washington	DC		06/23/2011	4.560	64,305,310		9,354				148,500,000	06/23/2011
N110081		Arlington	VA		07/02/2012	4.720	30,413,111		4,680				82,019,470	07/02/2012
N110082		Arlington	VA		09/12/2013	4.590	34,996,628		5,363				94,380,530	09/12/2013
N110091		Arlington	VA		11/01/2012	5.040	18,859,213		2,855				100,800,000	11/01/2012
N112011		Golden Valley	MN		04/01/2011	5.510	16,186,564		2,575				28,200,000	04/01/2011
N112021		Chicago	IL		04/21/2011	5.660	18,327,880		1,239				25,880,000	04/21/2011
N112031		Chicago	IL		06/30/2011	5.550	153,287,391		6,988				517,013,679	06/30/2011
N112033		Chicago	IL		11/30/2017	5.680	55,000,064		14,280				185,617,054	11/30/2017
N112041		Edina	MN		04/02/2012	4.560	11,793,753		1,989				19,506,764	04/02/2012
N112051		Edina	MN		05/01/2012	4.610	5,739,525		964				9,493,236	05/01/2012
N112061		Deer Park	IL		08/11/2011	4.840	65,783,493						128,400,000	08/11/2011
N112071		Northbrook	IL		10/14/2011	4.250	56,352,991		6,631				93,225,916	10/14/2011
N112081		Chicago	IL		05/01/2012	4.200	174,882,940		32,030				305,000,000	05/01/2012
N115011		Montgomery	AL		06/15/2012	7.180	1,431,169		911				10,516,000	06/15/2012
N115021		Amarillo	TX		03/18/2013	7.410	3,275,994		2,121				14,180,000	03/18/2013
N115031		Midland	TX		02/07/2013	7.410	2,201,950		1,431				10,706,000	02/07/2013
N117051		Pico Rivera	CA		10/03/2011	4.400	14,812,752		1,767				25,080,000	10/03/2011
N117061		Pico Rivera	CA		10/03/2011	4.400	8,229,306		962				13,965,000	10/03/2011
N117071		Pico Rivera	CA		10/03/2011	4.400	8,393,918		993				14,345,000	10/03/2011
N117081		Pico Rivera	CA		10/03/2011	4.400	6,583,510		763				11,020,000	10/03/2011
N117111		Carlsbad	CA		02/29/2012	4.250	87,269,662		9,695				180,500,000	02/29/2012
N119031		New York	NY		07/29/2011	5.050	295,016,014		56,977				538,134,039	07/29/2011
N119032		New York	NY		07/29/2011	4.070	9,682,540						17,643,740	07/29/2011
N119041		Boston	MA		04/17/2012	4.000	115,168,678		1,559				257,831,967	04/17/2012
N119061		Teaneck	NJ		08/01/2012	4.950	24,540,073		1,660				57,800,000	08/01/2012
N119071		Cambridge	MA		03/09/2012	4.950	138,467,555		10,973				279,100,000	03/09/2012
N120021		Miami	FL		04/09/2012	3.620	46,463,270		13,940				99,705,882	04/09/2012
N120022		Miami	FL		04/09/2012	3.620	46,467,967						99,705,882	04/09/2012
N120031		Davie	FL		05/03/2012	4.210	30,896,046		5,119				53,044,385	05/03/2012
N120041		Midlothian	VA		05/21/2012	4.000	7,723,690		1,019				24,500,000	05/21/2012
N120051		Roanoke	VA		05/21/2012	4.000	7,404,529		977				22,500,000	05/21/2012
N120061		Richmond	VA		05/21/2012	4.000	6,702,376		884				23,000,000	05/21/2012
N120071		Washington	DC		10/24/2012	4.400	156,143,420		8,702				313,160,221	10/24/2012
N120081		Columbia	MD		09/04/2012	3.950	150,412,680		10,946				292,754,286	09/04/2012
N120971		Secaucus	NJ		01/01/2013	5.720	39,887,911		(383,047)				56,000,000	01/01/2013
N120991		Edison	NJ		01/01/2013	5.270	13,393,881		(82,908)				46,700,000	01/01/2013

E04.4

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
N122061		Columbus	OH		09/24/2012	4.000	26,680,104		4,974				58,546,842	09/24/2012
N122081		Chicago	IL		08/01/2013	4.000	31,251,333		4,869				127,519,318	08/01/2013
N124021		New Orleans	LA		04/27/2012	5.000	55,934,732		4,633				79,565,894	04/27/2012
N124022		New Orleans	LA		06/26/2017	4.510	17,420,303		1,309				24,776,962	06/26/2017
N124041		Dallas	TX		08/22/2013	4.370	21,287,916		2,265				44,246,269	08/22/2013
N124051		Sedona	AZ		01/31/2013	4.750	22,858,201		3,963				44,883,810	01/31/2013
N124951		Carrollton	TX		01/01/2013	6.990	6,558,309		(61,663)				11,300,000	01/01/2013
N124961		Lewisville	TX		01/01/2013	6.750	7,316,794		(64,159)				12,000,000	01/01/2013
N124971		Carrollton	TX		01/01/2013	5.970	7,064,891		(32,091)				12,900,000	01/01/2013
N125031		St Paul	MN		11/16/2012	4.450	2,221,408		12,236				5,404,575	11/16/2012
N125032		St Paul	MN		11/16/2012	4.450	18,181,870						41,495,729	11/16/2012
N125033		St Paul	MN		11/30/2015	5.200	1,158,891		694				2,667,755	11/30/2015
N125041		San Jose	CA		09/01/2015	4.600	41,125,614		30,389				66,773,067	09/01/2015
N125051		Minneapolis	MN		12/15/2014	4.650	12,440,675		5,928				19,879,200	12/15/2014
N127011		Irvine	CA		06/28/2012	4.480	87,881,932		6,575				153,869,278	06/28/2012
N127031		Burbank	CA		03/23/2012	3.800	104,114,647		17,708				200,000,000	03/23/2012
N127061		Seattle	WA		08/02/2012	3.900	70,627,049		8,483				139,179,474	08/02/2012
N127081		Irvine	CA		09/13/2012	4.100	17,756,620		1,769				37,114,000	09/13/2012
N127111		Sun Valley	CA		02/13/2013	3.710	130,611,048		11,703				272,554,837	02/13/2013
N127112		Sun Valley	CA		02/13/2013	3.710	46,216,217		4,141				96,442,481	02/13/2013
N129021		Niagara Falls	CAN		02/26/2013	4.900	49,262,970		17,773			(3,700,934)	78,710,459	02/26/2013
N129022		Niagara Falls	CAN		11/02/2017	5.330	26,627,932		25,083			(2,296,462)	35,720,041	11/02/2017
N129031		New York	NY		05/17/2012	3.620	68,779,113		13,805				126,779,200	05/17/2012
N129981		New York	NY		01/01/2013	5.896	25,120,859		(14,369)				850,000,000	01/01/2013
N12E011		London	GBR		08/01/2012	3.690	97,961,640		15,529			(5,365,273)	249,641,729	08/01/2012
N130011		Washington	DC		06/27/2013	4.820	91,840,645						181,761,172	06/27/2013
N130021		Sarasota	FL		10/21/2013	4.580	34,516,263		6,579				70,494,000	10/21/2013
N130031		Washington	DC		09/26/2013	5.270	27,866,785		1,958				46,600,000	09/26/2013
N130041		Fairburn	GA		12/23/2013	3.920	45,079,052		6,466				57,429,417	12/23/2013
N130042		Fairburn	GA		07/31/2014	3.650	26,248,136		3,654				33,438,865	07/31/2014
N130051		Arlington	VA		05/01/2014	4.000	10,937,549		1,732				34,915,135	05/01/2014
N130052		Arlington	VA		12/01/2017	3.660	9,538,462						30,423,328	12/01/2017
N132021		Chicago	IL		11/25/2014	6.460	53,835,972		2,832				108,630,000	11/25/2014
N132031		Chicago	IL		07/11/2014	4.500	214,255,277		30,917				410,588,640	07/11/2014
N132041		Chicago	IL		08/08/2013	3.950	761,870,043		25,046				1,681,345,673	08/08/2013
N132081		Louisville	CO		02/27/2014	4.800	33,886,115		6,129				24,967,108	02/27/2014
N132082		Louisville	CO		08/03/2016	3.730	33,687,536		9,427				24,826,109	08/03/2016
N132083		Louisville	CO		11/30/2017	5.000	11,384,934		33,038				8,442,969	11/30/2017
N134011		Houston	TX		03/07/2013	5.000	34,717,885		5,353				60,311,061	03/07/2013
N134021		Tucson	AZ		03/28/2013	3.970	29,317,269		12,328				48,772,096	03/28/2013
N134022		Tucson	AZ		03/28/2013	5.203	7,050,000						11,722,135	03/28/2013
N134041		Houston	TX		11/21/2013	3.570	31,283,087		3,172				58,339,722	11/21/2013
N134051		Houston	TX		09/26/2013	5.180	47,579,456						94,926,040	09/26/2013
N134071		Austin	TX		09/26/2013	3.900	31,292,466		4,079				57,700,000	09/26/2013
N134091		Houston	TX		12/13/2013	3.530	42,635,432		6,935				76,770,000	12/13/2013
N134101		Dallas	TX		12/13/2013	4.140	40,275,909		4,251				74,378,571	12/13/2013
N134111		Phoenix	AZ		12/02/2013	3.720	24,273,915		4,066				44,909,091	12/02/2013
N135011		Marysville	WA		07/17/2015	5.180	21,420,087		9,706				40,692,171	07/17/2015
N135021		Vancouver	WA		02/07/2017	5.980	8,798,833		3,464				18,933,157	02/07/2017
N135031		Minneapolis	MN		10/10/2013	5.200	25,023,902		11,395				71,647,971	10/10/2013
N135032		Minneapolis	MN		05/17/2017	5.700	2,474,484						7,032,029	05/17/2017
N135041		Orlando	FL		08/27/2013	5.650	15,009,805		8,425				39,670,000	08/27/2013
N135051		Lake Forest	CA		12/18/2015	5.730	20,329,361		5,500				52,274,664	12/18/2015
N135061		Federal Way	WA		12/17/2015	6.070	29,895,925		12,517				53,809,374	12/17/2015
N135071		Mukilteo	WA		05/29/2015	5.770	21,107,015		9,541				37,768,260	05/29/2015
N137011		Santa Fe Springs	CA		04/04/2013	3.250	11,429,438		2,291				22,025,478	04/04/2013
N137021		San Jose	CA		03/28/2013	3.500	36,478,411		11,009				206,942,500	03/28/2013
N137031		Portland	OR		03/29/2013	3.730	25,355,074		2,974				41,486,735	03/29/2013
N137041		Portland	OR		03/29/2013	4.160	18,910,710						29,185,693	03/29/2013
N137042		Portland	OR		03/29/2013	4.160	2,185,327						3,372,707	03/29/2013
N137051		Glendale	CA		07/01/2013	4.070	72,933,683		8,297				110,768,824	07/01/2013

E04.5

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
N137061		Bakersfield	CA		04/25/2013	3.750	88,570,226		37,873				348,570,000	04/25/2013
N137071		Los Angeles	CA		06/27/2013	3.490	113,998,323		19,265				355,212,000	06/27/2013
N137081		Los Angeles	CA		07/18/2013	3.280	95,172,477		17,647				165,443,553	07/18/2013
N137091		Oceanside	CA		10/31/2013	3.850	45,225,953		7,911				74,907,327	10/31/2013
N137101		Long Beach	CA		10/31/2013	5.170	62,859,836		4,315				108,197,571	10/31/2013
N137121		Bellevue	WA		11/14/2013	3.680	72,637,489		5,961				146,057,500	11/14/2013
N137131		Bellevue	WA		11/14/2013	3.680	69,788,960		5,727				139,860,000	11/14/2013
N137141		Los Angeles	CA		12/23/2013	4.750	10,042,235		607				20,100,000	12/23/2013
N137151		Irvine	CA		12/13/2013	3.580	74,873,831		12,440				146,804,000	12/13/2013
N137161		Renton	WA		02/10/2014	3.910	26,811,675		3,755				45,428,000	02/10/2014
N139021		Whippany	NJ		02/28/2013	4.050	28,479,113		6,964				58,446,787	02/28/2013
N139031		New York	NY		03/28/2013	3.900	136,000,000						249,424,000	03/28/2013
N139041		New York	NY		04/11/2013	3.820	70,600,000						135,075,663	04/11/2013
N139051		Cambridge	MA		04/15/2014	6.080	25,605,831						52,788,461	04/15/2014
N139061		Burlington	MA		05/22/2013	4.400	10,963,349		697				19,157,662	05/22/2013
N139101		Bolton Landing	NY		10/11/2013	4.700	52,950,315		6,298				104,660,735	10/11/2013
N139121		New York	NY		06/19/2013	3.780	144,976,347		3,176				235,274,194	06/19/2013
N139131		New York	NY		10/07/2013	5.090	170,640,334		2,742				369,297,297	10/07/2013
N139151		Calgary	CAN		01/07/2014	4.936	47,341,769		3,155			(3,709,047)	116,300,000	01/07/2014
N139161		Toronto	CAN		11/12/2013	5.140	21,698,986		7,761			(1,640,883)	54,400,000	11/12/2013
N139171		Cranbury	NJ		10/31/2013	3.680	42,000,000						98,000,000	10/31/2013
N13E011		London	GBR		09/17/2013	5.475	109,444,377		60,652			(6,006,000)	221,266,032	09/17/2013
N13E012		London	GBR		09/17/2013	5.788	71,046,067					(3,885,332)	143,138,853	09/17/2013
N13E013		London	GBR		04/08/2014	5.528	11,129,933					(608,668)	23,721,915	04/08/2014
N13E031		London	GBR		01/31/2014	4.778	146,365,893		69,281			(8,029,000)	380,284,683	01/31/2014
N144031		Chicago	IL		04/10/2014	5.410	52,585,624						110,574,627	04/10/2014
N144041		Tempe	AZ		03/26/2014	3.850	26,505,763		4,118				41,496,552	03/26/2014
N144051		Chicago	IL		03/28/2014	4.290	174,871,231		21,401				280,000,000	03/28/2014
N144061		Houston	TX		04/22/2014	3.700	39,761,474		5,186				64,000,000	04/22/2014
N144071		Houston	TX		07/01/2014	3.180	43,324,714		10,773				297,756,800	07/01/2014
N144081		Phoenix	AZ		07/29/2014	3.540	14,443,356		2,412				27,936,666	07/29/2014
N144091		Indianapolis	IN		06/17/2014	4.070	38,866,521		4,658				38,530,538	06/17/2014
N144092		Indianapolis	IN		04/02/2015	3.700	39,084,814		5,048				38,748,507	04/02/2015
N144101		New Albany	OH		07/16/2014	3.630	27,993,620		2,349				43,364,105	07/16/2014
N144111		Dallas	TX		07/08/2014	3.940	32,034,636		3,581				50,515,867	07/08/2014
N144121		Irving	TX		10/15/2014	4.960	33,070,031		4,184				54,547,450	10/15/2014
N144131		Chicago	IL		12/11/2014	3.530	156,686,477		21,314				396,353,577	12/11/2014
N144141		Chicago	IL		11/12/2014	4.030	10,333,602		780				21,381,500	11/12/2014
N144151		Houston	TX		10/01/2014	3.760	29,241,708		3,484				49,291,667	10/01/2014
N144161		Chicago	IL		11/13/2014	3.970	19,823,131		2,658				31,653,819	11/13/2014
N144171		Tempe	AZ		11/21/2014	4.170	22,787,651		2,490				40,421,534	11/21/2014
N144191		Denver	CO		11/25/2014	3.610	49,615,851		5,167				78,481,839	11/25/2014
N145011		Austin	TX		09/23/2014	4.870	21,132,313		5,235				38,445,908	09/23/2014
N146311		Beverly Hills	CA		04/02/2015	7.849	19,412,546				1,317,362		28,855,912	04/02/2015
N147011		Cypress	CA		03/20/2014	3.860	28,739,703		4,369				57,500,000	03/20/2014
N147021		Rancho Cucamonga	CA		09/05/2014	4.560	204,322,096		105,199				410,000,024	09/05/2014
N147031		City Of Industry	CA		06/06/2014	3.820	9,045,083		494				21,504,000	06/06/2014
N147041		City Of Industry	CA		08/01/2014	3.820	3,361,942		494				7,992,000	08/01/2014
N147051		City Of Industry	CA		08/01/2014	3.820	6,896,984		494				15,840,000	08/01/2014
N147061		City Of Industry	CA		08/01/2014	3.820	7,152,529		494				16,808,000	08/01/2014
N147071		City Of Industry	CA		08/01/2014	3.820	4,980,395		494				13,056,000	08/01/2014
N147081		City Of Industry	CA		10/16/2014	3.920	8,681,128		492				19,680,000	10/16/2014
N147091		City Of Industry	CA		10/16/2014	3.920	15,344,588		491				40,320,000	10/16/2014
N147101		City Of Industry	CA		10/16/2014	3.920	7,133,485		492				16,224,000	10/16/2014
N147111		Laguna Beach	CA		07/02/2014	3.900	139,009,079		24,037				294,500,000	07/02/2014
N147121		Beverly Hills	CA		06/30/2014	3.900	101,779,935		17,694				232,845,000	06/30/2014
N147131		Santa Monica	CA		07/15/2014	4.310	39,470,768		3,171				80,286,042	07/15/2014
N147141		San Francisco	CA		10/14/2014	3.740	144,925,850		11,164				378,933,307	10/14/2014
N147161		Ontario	CA		10/01/2014	3.910	48,115,383		4,965				69,118,191	10/01/2014
N147171		Irvine	CA		12/09/2014	3.830	83,581,877		9,582				149,211,000	12/09/2014
N147191		Woodland Hills	CA		12/23/2014	3.550	49,923,781		8,135				81,986,897	12/23/2014

E04.6

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
N147201		Honolulu	HI		12/19/2014	3.750	108,564,964		11,474				204,838,226	12/19/2014
N149011		Alexandria	VA		04/23/2014	4.550	83,400,585		8,394				139,917,833	04/23/2014
N149021		Boston	MA		05/22/2014	4.830	70,150,000						144,976,667	05/22/2014
N149031		New York	NY		03/25/2014	3.110	71,445,542		15,712				119,750,200	03/25/2014
N149041		New York	NY		05/27/2014	4.620	45,881,848		8,010				75,727,500	05/27/2014
N149051		Boston	MA		03/28/2014	3.890	166,928,013		29,590				297,294,792	03/28/2014
N149071		Brooklyn	NY		06/13/2014	4.140	94,366,421		10,342				155,013,000	06/13/2014
N149081		Jersey City	NJ		11/07/2014	4.360	111,015,203		5,822				194,028,000	11/07/2014
N149091		Washington	DC		07/30/2014	4.480	43,671,311		4,631				73,546,175	07/30/2014
N149111		New York	NY		09/12/2014	3.900	144,935,782		9,770				290,000,010	09/12/2014
N149121		Arlington	VA		09/16/2014	3.810	17,590,710		2,616				59,460,750	09/16/2014
N149131		Boston	MA		09/17/2014	4.430	50,651,161		4,637				87,122,552	09/17/2014
N149141		Glen Mills	PA		11/25/2014	3.680	32,258,445		5,278				64,595,360	11/25/2014
N149151		Tampa	FL		12/04/2014	4.020	91,859,067		4,855				171,207,290	12/04/2014
N149161		Arlington	VA		05/28/2015	3.800	106,063,873		10,721				162,098,577	05/28/2015
N154011		Minneapolis	MN		02/12/2015	3.630	36,617,611		6,228				58,374,715	02/12/2015
N154021		Chicago	IL		04/10/2015	3.330	17,760,884		3,090				33,978,623	04/10/2015
N154031		Chicago	IL		04/10/2015	3.330	10,893,466		1,895				22,000,846	04/10/2015
N154051		Dallas	TX		07/28/2015	3.750	48,856,836		4,043				98,227,699	07/28/2015
N154061		Chicago	IL		06/10/2015	3.720	18,953,454		1,069				36,036,460	06/10/2015
N154071		Lake Orion	IL		05/13/2015	3.540	17,031,839		2,063				37,625,000	05/13/2015
N154081		Dallas	TX		07/20/2015	3.960	45,000,000						81,720,000	07/20/2015
N154091		San Antonio	TX		06/10/2015	3.700	21,844,840		2,019				36,472,891	06/10/2015
N154101		Woodridge	IL		09/02/2015	3.620	23,000,000						59,350,000	09/02/2015
N154111		Denver	CO		06/30/2015	3.870	81,139,847		8,317				138,000,000	06/30/2015
N154121		Arlington	TX		07/22/2015	3.750	31,279,386		3,257				61,858,683	07/22/2015
N154151		Dallas	TX		08/28/2015	3.800	14,989,379		1,373				27,800,000	08/28/2015
N154161		Houston	TX		08/31/2015	3.720	18,641,713		1,830				28,830,770	08/31/2015
N154171		Carmel	IN		10/14/2015	3.420	30,982,261		4,302				47,900,000	10/14/2015
N154181		Tucson	AZ		11/20/2015	3.640	48,324,313		4,245				78,000,000	11/20/2015
N154191		Tucson	AZ		01/25/2016	3.640	40,114,915		3,561				64,800,000	01/25/2016
N154201		College Station	TX		11/05/2015	3.640	34,229,819		2,995				55,250,000	11/05/2015
N154211		Houston	TX		12/22/2015	3.790	81,564,620		7,349				163,292,243	12/22/2015
N154221		Dallas	TX		12/08/2015	3.750	81,840,809		7,716				148,909,091	12/08/2015
N154231		Columbus	OH		12/10/2015	3.790	92,000,003						160,342,862	12/10/2015
N154241		Dallas	TX		01/20/2016	3.880	64,975,720		2,921				130,000,000	01/20/2016
N155011		Midland	TX		11/17/2017	4.500	17,949,219		7,817				30,044,345	11/17/2017
N155021		Covington	WA		05/19/2017	4.460	19,478,728						34,017,856	05/19/2017
N156061		New York	NY		06/03/2015	8.637	65,747,184				1,545,631		350,015,189	06/03/2015
N156063		New York	NY		02/20/2018	8.882	781,446					3,844,556	3,844,556	02/20/2018
N156065		New York	NY		02/20/2018	8.882	110,088,845				4,867,288		541,614,548	02/20/2018
N156132		West Hollywood	CA		02/15/2018	7.849	149,255,861				4,956,016		243,355,603	02/15/2018
N157021		Newport Coast	CA		03/13/2015	4.180	219,688,020		13,436				806,012,000	03/13/2015
N157031		Tacoma	WA		06/15/2015	3.600	23,871,488		1,850				47,530,718	06/15/2015
N157041		Oakland	CA		05/15/2015	3.630	42,718,757		4,340				93,378,078	05/15/2015
N157042		Oakland	CA		05/15/2015	3.760	33,968,533		8,732				74,328,607	05/15/2015
N157043		Oakland	CA		10/01/2015	3.760	12,832,510						28,031,229	10/01/2015
N157051		Pasadena	CA		04/02/2015	3.830	77,726,314		12,383				125,222,873	04/02/2015
N157061		San Francisco	CA		05/21/2015	3.790	96,875,536		7,757				176,256,514	05/21/2015
N157071		Santa Monica	CA		07/30/2015	3.530	98,539,490		8,021				246,499,987	07/30/2015
N157101		Mira Loma	CA		09/01/2015	4.320	49,850,073		2,319				114,902,500	09/01/2015
N157111		Seattle	WA		07/01/2015	4.000	185,049,410		10,388				429,849,200	07/01/2015
N157121		San Bernardino	CA		09/29/2015	3.800	129,912,172		13,819				218,200,000	09/29/2015
N157151		San Mateo	CA		09/09/2015	3.070	34,142,829		7,004				73,600,000	09/09/2015
N157161		San Diego	CA		12/22/2015	3.770	57,814,784		4,893				96,092,305	12/22/2015
N157171		Seattle	WA		10/27/2015	3.860	58,950,994		3,289				130,000,000	10/27/2015
N157181		Seattle	WA		10/09/2015	3.670	71,948,328		6,585				144,000,000	10/09/2015
N157191		Redmond	WA		10/29/2015	3.710	33,473,977		2,455				74,000,000	10/29/2015
N157201		San Diego	CA		12/23/2015	3.760	81,286,675		6,217				147,438,040	12/23/2015
N157211		San Francisco	CA		12/21/2015	3.910	220,663,979		21,734				447,204,000	12/21/2015
N159011		Toronto	CAN		04/01/2015	3.802	25,939,354		4,694			(2,215,159)	49,508,960	04/01/2015

E04.7

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
N159031		Mississauga	CAN		06/01/2015	3.764	6,804,178		1,017			(591,293)	24,550,923	06/01/2015
N159051		Mississauga	CAN		06/01/2015	3.764	9,165,207		1,372			(796,470)	33,015,000	06/01/2015
N159061		Mississauga	CAN		06/01/2015	3.764	9,220,760		1,379			(801,297)	25,296,000	06/01/2015
N159071		West Palm Beach	FL		05/28/2015	3.630	154,085,541		11,862				239,524,012	05/28/2015
N159081		New York	NY		07/01/2015	3.780	84,137,363		6,455				143,051,370	07/01/2015
N159091		Philadelphia	PA		07/31/2015	3.720	78,445,108		7,222				157,100,000	07/31/2015
N159101		Boston	MA		08/06/2015	4.260	59,522,845		6,090				98,115,465	08/06/2015
N159111		Ny	NY		11/05/2015	3.850	59,950,040		3,326				118,000,000	11/05/2015
N159121		Franklin Township	NJ		10/23/2015	3.740	16,266,027		1,694				26,500,000	10/23/2015
N159131		Monroe	NJ		10/23/2015	3.740	6,863,699		715				11,400,000	10/23/2015
N159141		Washington	DC		09/24/2015	4.090	27,407,987		1,380				50,300,000	09/24/2015
N159151		Charlotte	NC		10/07/2015	3.750	31,474,449		1,907				48,613,510	10/07/2015
N159161		Savannah	GA		09/30/2015	3.250	21,589,658		3,590				36,200,000	09/30/2015
N159171		Laurel	MD		06/10/2016	3.850	25,979,876		2,377				50,900,000	06/10/2016
N159181		Atlanta	GA		09/29/2015	3.450	44,474,837		6,177				85,700,000	09/29/2015
N159191		Cambridge	MA		12/02/2015	3.700	24,762,476		2,558				47,866,091	12/02/2015
N159201		Washington	DC		12/03/2015	3.980	58,146,360		1,543				115,739,586	12/03/2015
N159211		Atlanta	GA		12/08/2015	3.770	170,263,995		12,976				309,519,900	12/08/2015
N159221		Washington	DC		04/01/2016	3.750	40,840,008						101,877,256	04/01/2016
N15E011		London	GBR		04/08/2015	3.676	123,005,695		72,385			(6,763,833)	313,070,997	04/08/2015
N15E041		London	GBR		09/16/2015	4.803	20,480,000		75,243			(1,120,000)	43,949,850	09/16/2015
N15E061		London	GBR		12/15/2015	6.469	10,961,686		20,212			(602,000)	21,213,683	12/15/2015
N164011		Chicago	IL		11/29/2016	3.660	229,811,255		20,177				570,124,000	11/29/2016
N164021		Dallas	TX		03/31/2016	3.720	19,135,726		1,831				30,639,999	03/31/2016
N164031		Chicago	IL		05/26/2016	3.850	49,158,531		4,165				115,731,426	05/26/2016
N164041		Englewood	CO		08/18/2016	3.990	43,219,683		4,328				80,891,460	08/18/2016
N164081		Edina	MIN		11/14/2016	3.730	27,872,676		3,896				43,562,442	11/14/2016
N164091		Austin	TX		09/01/2016	3.450	109,388,824		10,717				200,291,674	09/01/2016
N164101		Glendale Heights	IL		10/05/2016	3.440	29,676,039		2,619				59,542,791	10/05/2016
N164111		Dallas	TX		09/29/2016	3.380	30,477,477		2,976				51,081,600	09/29/2016
N164121		Austin	TX		10/20/2016	3.300	110,535,505		9,844				221,295,844	10/20/2016
N164131		Waukesha	WI		01/26/2017	4.690	21,534,263		2,054				37,092,500	01/26/2017
N165021		Tacoma	WA		08/02/2018	4.000	17,434,730		530				30,884,304	08/02/2018
N165031		San Ysidro	CA		09/20/2018	3.740	54,320,739		292				116,713,888	09/20/2018
N166011		Washington	DC		02/24/2016	6.599	107,239,922				5,300,063		186,977,873	02/24/2016
N167021		Portland	OR		04/28/2016	3.800	38,270,631		3,452				74,608,400	04/28/2016
N167041		Costa Mesa	CA		06/13/2016	3.860	51,768,905		4,757				80,269,233	06/13/2016
N167042		Costa Mesa	CA		12/21/2016	4.690	3,188,406						4,939,645	12/21/2016
N167043		Costa Mesa	CA		08/24/2018	7.849	1,021				21		1,582	08/24/2018
N167051		La Jolla	CA		07/21/2016	4.130	73,250,294		9,999				120,384,479	07/21/2016
N167061		Huntington Beach	CA		09/01/2016	3.710	40,819,682		5,619				52,651,663	09/01/2016
N167062		Huntington Beach	CA		09/01/2016	3.710	49,829,432		6,859				64,272,977	09/01/2016
N167063		Huntington Beach	CA		11/01/2016	3.710	28,591,821		4,004				36,879,881	11/01/2016
N167064		Huntington Beach	CA		09/01/2016	4.883	14,051,414		4,625				18,143,479	09/01/2016
N167141		Los Angeles	CA		11/29/2016	3.570	161,069,626		15,144				299,073,414	11/29/2016
N167151		San Diego	CA		12/08/2016	3.840	45,562,348		3,943				91,385,743	12/08/2016
N167171		Montebello	CA		12/22/2016	3.840	20,266,412		1,076				20,064,507	12/22/2016
N167172		Montebello	CA		12/22/2016	3.840	16,809,527		1,475				27,495,806	12/22/2016
N167181		Des Moines	IA		02/15/2017	3.950	30,476,770		3,973				60,730,881	02/15/2017
N169011		Jersey City	NJ		03/03/2016	3.550	157,629,111		22,608				255,515,950	03/03/2016
N169041		Willistown Township	PA		06/20/2016	3.800	28,133,551		3,999				44,025,461	06/20/2016
N169051		Roseland	NJ		06/20/2016	3.800	28,133,551		3,999				44,047,877	06/20/2016
N169061		Pittsburgh	PA		08/04/2016	3.750	94,724,824		7,391				175,344,235	08/04/2016
N169071		Ponte Vedra Beach	FL		02/13/2017	4.200	72,663,986		3,734				143,600,000	02/13/2017
N169081		Washington	DC		08/01/2016	3.250	71,149,074		10,230				147,750,791	08/01/2016
N169101		Savannah	GA		08/19/2016	3.400	19,038,069		3,083				31,800,000	08/19/2016
N169121		Queens	NY		10/25/2016	3.950	37,466,534		1,347				109,740,500	10/25/2016
N169131		Boston	MA		10/27/2016	3.350	70,000,000						140,000,000	10/27/2016
N169141		Carlstadt	NJ		01/19/2017	3.860	36,371,337		4,075				66,339,000	01/19/2017
N16E011		London	GBR		04/04/2016	3.958	106,302,484		74,882			(5,852,000)	221,919,554	04/04/2016
N16E031		London	GBR		04/11/2016	3.778	97,363,965		128,871			(5,355,000)	136,665,800	04/11/2016

E04.8

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value		
N16E032		London	GBR		12/14/2016	4.806	48,661,859		28,401			(2,677,500)	61,345,403	12/14/2016
N16E051		London	GBR		02/14/2017	7.313	18,624,648		20,363			(1,023,750)	24,477,231	02/14/2017
N174021		Bloomfield Hills	MI		05/19/2017	4.490	42,962,977		3,789				68,700,000	05/19/2017
N174031		Edgerton	KS		05/15/2017	3.960	132,304,934		19,179				203,841,905	05/15/2017
N174041		Lansing	MI		05/01/2017	4.230	39,198,531		3,737				85,500,000	05/01/2017
N174051		Kinloch	MO		06/23/2017	3.640	61,750,239		8,022				102,326,166	06/23/2017
N174061		Chicago	IL		05/30/2017	4.310	26,683,529		2,565				54,343,331	05/30/2017
N174071		Farmers Branch	TX		10/25/2017	4.110	24,164,411		1,046				36,818,987	10/25/2017
N174081		Tempe	AZ		08/23/2017	3.880	68,349,544		5,952				124,200,000	08/23/2017
N174091		Livonia	MI		08/03/2017	3.930	21,363,370		1,771				39,199,999	08/03/2017
N174101		Dallas	TX		10/12/2017	3.730	31,471,796		2,736				66,800,000	10/12/2017
N174111		Dunedin	FL		12/28/2018	4.740	12,427,592						17,733,280	12/28/2018
N174121		Dallas	TX		01/03/2018	3.800	89,917,658		7,658				156,420,000	01/03/2018
N174131		Sugar Land	TX		12/22/2017	3.950	25,876,344		2,221				51,799,997	12/22/2017
N174141		Hazelwood	MO		02/14/2018	3.920	64,042,896		6,998				89,727,021	02/14/2018
N176021		New York	NY		12/22/2017	10.599	23,933,105				2,532,273		154,317,946	12/22/2017
N176111		Seattle	WA		04/11/2018	8.349	548				22		167,109,579	04/11/2018
N177011		Burlingame	CA		04/20/2017	4.630	106,309,040		9,353				218,813,915	04/20/2017
N177021		San Diego	CA		06/12/2017	3.990	105,908,018		9,216				183,300,000	06/12/2017
N177031		San Diego	CA		06/12/2017	3.990	54,452,707		4,738				98,600,000	06/12/2017
N177041		Seattle	WA		07/21/2017	3.440	134,887,925		17,890				232,778,568	07/21/2017
N177051		Fontana	CA		05/30/2017	3.950	34,244,727		2,918				59,524,339	05/30/2017
N177052		Fontana	CA		05/30/2017	3.950	22,178,778		1,890				38,551,252	05/30/2017
N177053		Fontana	CA		05/30/2017	3.950	20,312,462		1,731				35,307,213	05/30/2017
N177054		Fontana	CA		05/30/2017	3.950	17,881,911		1,524				31,082,418	05/30/2017
N177061		Seattle	WA		10/16/2017	3.540	52,753,053		4,898				87,824,000	10/16/2017
N177071		Seattle	WA		07/17/2017	3.560	154,914,988		8,318				311,162,500	07/17/2017
N177081		San Diego	CA		08/02/2017	3.580	63,843,743		5,436				127,893,283	08/02/2017
N177101		Portland	OR		09/25/2017	3.360	33,571,956		4,422				56,000,000	09/25/2017
N177121		Beverly Hills	CA		12/28/2017	3.860	44,658,972		3,663				130,077,000	12/28/2017
N179021		Edison	NJ		06/21/2017	4.070	75,932,752		5,857				125,171,578	06/21/2017
N179022		Edison	NJ		06/21/2017	4.488	1,323,990		517				2,190,503	06/21/2017
N179031		Washington	DC		06/08/2017	3.950	154,861,667		10,873				258,268,750	06/08/2017
N179041		Ny	NY		06/29/2017	3.950	194,907,425		3,331				433,777,500	06/29/2017
N179051		Washington	DC		07/21/2017	3.940	234,778,069		9,292				427,042,000	07/21/2017
N179071		Jersey City	NJ		11/07/2017	3.640	30,271,642		1,712				53,292,355	11/07/2017
N179081		Cherry Hill	NJ		12/20/2017	3.900	94,909,983		4,950				165,028,571	12/20/2017
N179091		Boston	MA		12/13/2017	3.740	42,457,721		223				84,999,996	12/13/2017
N179101		Clarksburg	MD		12/14/2017	3.950	149,863,245		12,852				258,656,250	12/14/2017
N179111		Miami	FL		03/23/2017	3.300	46,692,390		22,329				65,737,049	03/23/2017
N179112		Miami	FL		05/25/2017	3.280	18,653,349		9,685				26,261,951	05/25/2017
N17E011		Croydon	GBR		10/11/2017	4.754	53,711,059		6,509			(2,957,500)	95,000,975	10/11/2017
N17E021		Liverpool	GBR		03/16/2017	4.730	37,116,328		41,525			(2,076,625)	58,704,000	03/16/2017
N17E041		London	GBR		08/29/2017	8.470	16,468,634		9,282		1,029,169	(1,017,649)	36,818,496	08/29/2017
N17E051		London	GBR		12/19/2017	4.470	209,587,767		247,780			(11,550,000)	466,600,000	12/19/2017
N17E061		London	GBR		11/30/2017	9.455	35,799,981				1,789,988	(1,637,426)	112,138,480	11/30/2017
N17E071		London	GBR		08/31/2017	4.657	141,206,387		173,731			(8,536,707)	322,048,706	08/31/2017
N17E081		Manchester	GBR		09/15/2017	6.932	12,512,392				502,095	(161,186)	72,591,960	09/15/2017
N17E091		Exeter	GBR		12/20/2017	8.504	49,718,457				1,375,736	(1,641,580)	172,280,890	12/20/2017
N17E101		Manchester	GBR		10/25/2017	3.910	103,311,349		41,785			(5,670,000)	265,979,385	10/25/2017
N184021		Houston	TX		02/08/2018	3.900	27,474,519		2,018				45,514,242	02/08/2018
N184031		San Antonio	TX		05/01/2018	4.860	40,660,746		1,447				68,471,763	05/01/2018
N184041		Dallas	TX		05/15/2018	4.550	44,457,795		2,295				72,136,842	05/15/2018
N184051		Chicago	IL		07/03/2018	4.540	18,435,096		1,201				30,708,072	07/03/2018
N184061		Houston	TX		05/31/2018	4.430	29,873,254		3,156				54,864,124	05/31/2018
N184071		Goodyear	AZ		07/26/2018	4.290	37,113,851		1,003				57,065,915	07/26/2018
N184081		Austin	TX		06/15/2018	4.220	47,454,520		2,021				83,886,791	06/15/2018
N184091		Phoenix	AZ		08/29/2018	4.690	31,769,038		837				53,449,153	08/29/2018
N184101		Mesa	AZ		07/26/2018	4.120	18,682,084		784				32,951,942	07/26/2018
N184111		Houston	TX		07/23/2018	4.130	163,929,269		2,490				296,298,203	07/23/2018
N184121		Edgerton	KS		10/23/2018	4.550	59,693,399						119,997,360	10/23/2018

E04.9

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 1

Showing All Mortgage Loans OWNED December 31 of Current Year

1 Loan Number	2 Code	3 Location		5 Loan Type	6 Date Acquired	7 Rate of Interest	8 Book Value/Recorded Investment Excluding Accrued Interest	Change in Book Value/Recorded Investment					14 Value of Land and Buildings	15 Date of Last Appraisal or Valuation	
		3 City	4 State					9 Unrealized Valuation Increase (Decrease)	10 Current Year's (Amortization)/ Accretion	11 Current Year's Other-Than-Temporary Impairment Recognized	12 Capitalized Deferred Interest and Other	13 Total Foreign Exchange Change in Book Value			
N184131		Houston	TX		09/17/2018	4.140	39,361,968		1,363				67,813,470	09/17/2018	
N184141		Jefferson	IN		12/20/2018	4.490	86,913,183		185				132,024,740	12/20/2018	
N186012		San Francisco	CA		03/28/2018	6.249	69,286,322				1,032,772		104,639,212	03/28/2018	
N186121		San Francisco	CA		09/07/2018	6.849	47,475,576				693,512		146,734,390	09/07/2018	
N187011		Portland	OR		03/14/2018	4.300	46,830,580		2,272				103,159,639	03/14/2018	
N187021		Riverside	CA		03/13/2018	3.830	25,327,174		2,524				42,191,216	03/13/2018	
N187031		Vancouver	WA		06/28/2018	4.080	21,779,121		921				36,696,665	06/28/2018	
N187041		Santa Clara	CA		07/12/2018	4.030	144,858,339		3,339				237,800,000	07/12/2018	
N187051		Portland	OR		10/01/2018	4.370	63,825,571		1,396				107,981,500	10/01/2018	
N187061		Portland	OR		10/01/2018	4.320	15,285,016		316				27,710,000	10/01/2018	
N187071		Portland	OR		08/16/2018	4.630	41,959,251		1,251				70,800,000	08/16/2018	
N187081		Huntington Beach	CA		09/06/2018	4.349	89,781,929		6,924				162,342,865	09/06/2018	
N187091		Seattle	WA		09/20/2018	4.470	90,861,980		1,945				177,676,483	09/20/2018	
N187101		City Of Commerce	CA		10/31/2018	4.400	159,842,197		2,199				264,807,615	10/31/2018	
N187111		Los Angeles	CA		10/12/2018	4.370	29,073,890		570				57,164,371	10/12/2018	
N189011		New York	NY		02/08/2018	3.970	79,924,608		4,607				171,111,113	02/08/2018	
N189021		Washington	DC		02/15/2018	4.550	35,966,609		2,609				63,800,000	02/15/2018	
N189041		Charlotte	NC		06/19/2018	4.270	89,913,857		3,857				229,410,000	06/19/2018	
N189051		Long Island City	NY		09/07/2018	4.340	99,666,873		707				156,181,817	09/07/2018	
N189061		New York	NY		09/27/2018	4.260	84,513,488		2,697				186,200,000	09/27/2018	
N189081		Doral	FL		11/28/2018	4.360	26,723,470		219				48,238,850	11/28/2018	
N189101		Charlotte	NC		11/30/2018	4.540	103,848,088		36				186,089,555	11/30/2018	
N189121		Stamford	CT		12/04/2018	4.610	31,884,068		18				63,800,000	12/04/2018	
N18E011		London	GBR		04/11/2018	4.718	100,234,312		113,053			(10,556,738)	172,953,491	04/11/2018	
N18E051		Leeds	GBR		05/16/2018	4.219	54,365,144		56,764			(3,280,641)	85,141,082	05/16/2018	
N18E061		Borehamwood	GBR		09/17/2018	4.169	37,788,175		25,273			(922,482)	76,365,922	09/17/2018	
N18E071		London	GBR		06/13/2018	4.740	54,911,852		20,766			(2,548,800)	95,336,800	06/13/2018	
N18E081		Oxfordshire	GBR		06/06/2018	3.990	255,427,162		94,162			(10,800,000)	713,690,000	06/06/2018	
N851091		Atlanta	GA		12/28/1995	7.820	2,726,063						21,000,000	12/28/1995	
N859041		New York	NY		11/14/1995	8.000	6,895,561						45,800,000	11/14/1995	
N861051		Montgomery	AL		06/25/1996	8.250	1,579,607						9,600,000	06/25/1996	
N881041		Greenville	SC		11/23/1999	7.360	1,769,619		642				26,300,000	11/23/1999	
N882091		Saint Louis	MO		01/28/1999	6.910	41,677						3,432,000	01/28/1999	
N882101		Dayton	OH		03/25/1999	6.910	94,151						3,799,000	03/25/1999	
N882111		Saint Charles	MO		03/25/1999	6.910	70,040						3,046,000	03/25/1999	
N882121		St Louis	MO		06/25/1999	6.910	112,962						3,434,000	06/25/1999	
N882131		East Peoria	IL		04/29/1999	6.910	99,665						4,387,000	04/29/1999	
N882141		Garfield Hts	OH		02/26/1999	6.910	76,151						4,416,000	02/26/1999	
N882151		Canton	OH		05/21/1999	6.910	114,185						3,869,000	05/21/1999	
N889121		New York	NY		08/20/1998	6.840	15,618,831						160,000,000	08/20/1998	
N892011		Springfield	MO		12/09/1999	7.000	155,050						2,535,000	12/09/1999	
N892021		Springfield	MO		09/30/1999	7.000	173,850						2,999,000	09/30/1999	
0599999		Mortgages in good standing - Commercial mortgages-all other						22,287,149,477		2,917,663		26,941,948	(127,115,913)	46,507,860,969	XXX
N146281		Philadelphia	PA		03/31/2015	12.000	52,513,593				3,852,234		326,257,512	03/31/2015	
N166131		Boston	MA		09/01/2016	11.349	17,455,807		57,286				97,808,218	09/01/2016	
0699999		Mortgages in good standing - Mezzanine Loans						69,969,400		57,286		3,852,234		424,065,730	XXX
0899999		Total - Mortgages in good standing						23,623,807,529		4,905,920		30,794,182	(127,115,913)	48,142,602,109	XXX
1699999		Total - Restructured Mortgages													XXX
2499999		Total - Mortgages with overdue interest over 90 days													XXX
3299999		Total - Mortgages in the process of foreclosure													XXX
3399999		Totals						23,623,807,529		4,905,920		30,794,182	(127,115,913)	48,142,602,109	XXX

General Interrogatory:

- Mortgages in good standing \$ unpaid taxes \$ interest due and unpaid.
- Restructured mortgages \$ unpaid taxes \$ interest due and unpaid.
- Mortgages with overdue interest over 90 days not in process of foreclosure \$ unpaid taxes \$ interest due and unpaid.
- Mortgages in process of foreclosure \$ unpaid taxes \$ interest due and unpaid.

E04.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 2

Showing All Mortgage Loans ACQUIRED AND ADDITIONS MADE During the Current Year

1 Loan Number	2 Location		4 Loan Type	5 Date Acquired	6 Rate of Interest	7 Actual Cost at Time of Acquisition	8 Additional Investment Made After Acquisition	9 Value of Land and Buildings
	City	3 State						
059610N09	Various	PR		05/15/2018	5.819		5,552	1,190,680
073245B05	Various	IL		10/25/2018	5.485		1,887	2,751,806
201650H12	Various	KS		04/16/2018	5.910		1,086	561,216
320400GH1	Various	FL		01/31/2018	4.618	44,087,030		6,706,608
339031AB2	Various	TX		02/26/2018	4.816		195	2,670,283
437609AB6	Various	TX		06/18/2018	5.997		16,243	3,201,356
437609CD0	Various	TX		02/20/2018	5.305		24,581	1,888,859
437609DE7	Various	TX		09/18/2018	9.230		3,534	259,877
437609GD6	Various	TX		03/19/2018	8.776		17,181	354,256
437609IF9	Various	OH		10/18/2018	6.732		2,762	270,051
437609IH5	Various	MD		05/18/2018	4.976		5,931	307,354
437609JK7	Various	TN		10/18/2018	9.087		7,561	40,891
437609NO4	Various	NY		08/20/2018	6.567		4,239	698,801
576810AB1	Various	GA		09/17/2018	6.113		13,567	234,498
638607FG1	Various	OH		03/15/2018	5.839		1,016	1,067,930
638607NO5	Various	OH		12/17/2018	5.749		1,251	982,206
695041AB9	Various	FL		01/29/2018	3.684	36,995,077		4,018,964
709301OP5	Various	MD		01/17/2018	4.240	61,442,379		4,620,479
709301PQ3	Various	FL		02/07/2018	4.210	93,639,745		7,768,602
709301QR9	Various	MD		03/21/2018	4.180	62,455,967		28,199,941
749549AB7	Various	PR		04/16/2018	5.338		10,067	4,779,713
836154GA6	Various	NY		12/14/2018	6.174		16,095,358	1,757,668
857931AB5	Various	VA		03/28/2018	3.666	47,160,706		28,867,458
908069AB3	Various	MS		06/25/2018	5.861		13,585	1,679,195
949750EE9	Various	GA		09/18/2018	5.527		1,903	2,537,803
949750GH0	Various	TX		09/18/2018	5.390		51	4,384,152
0299999. Mortgages in good standing - Residential mortgages-insured or guaranteed						345,780,904	16,227,550	111,800,647
048703BB7	Various	GA		02/15/2018	5.268		1,288	288,441
0399999. Mortgages in good standing - Residential mortgages-all other							1,288	288,441
N027062	Los Angeles	CA		01/23/2018	3.780	36,172,949		38,781,421
N130052	Arlington	VA		09/20/2018	3.660		9,538,462	30,423,328
N156065	New York	NY		02/20/2018	8.880		86,117,967	199,945,595
N156066	New York	NY		02/20/2018	8.880		67,024,239	341,668,953
N156131	West Hollywood	CA		03/07/2018	7.570	2,695,725	16,285,209	373,300,000
N156132	West Hollywood	CA		06/04/2018	7.850		36,545,167	239,978,571
N156133	West Hollywood	CA		12/11/2018	7.850	(2,901,425)	35,923,956	243,355,603
N156181	Watertown	MA		04/05/2018	7.330	103,069	3,054,077	67,031,083
N156182	Watertown	MA		08/17/2018	7.330	(104,466)	12,912,284	13,205,992
N165021	Tacoma	WA		08/02/2018	4.000	17,511,633		30,884,304
N165031	San Ysidro	CA		09/20/2018	3.740	54,485,783		116,713,888
N166011	Washington	DC		12/03/2018	6.600		9,811,718	186,977,873
N167043	Costa Mesa	CA		08/24/2018	7.850	1,000		1,582
N16E021	London	GBR		07/26/2018	7.330	(204,958)	11,629,792	129,575,040
N174111	Dunedin	FL		12/28/2018	4.740	12,459,856		17,733,280
N174121	Dallas	TX		01/03/2018	3.800	89,910,000		156,420,000
N174141	Hazelwood	MO		02/14/2018	3.920	64,035,898		89,727,021
N176021	New York	NY		12/18/2018	10.600	1,153,125	10,548,281	154,317,946
N176111	Seattle	WA		04/11/2018	8.350	929		167,061,779
N17E041	London	GBR		10/23/2018	8.470		4,042,161	36,618,496
N17E061	London	GBR		12/18/2018	9.460	(1,094,506)	36,741,925	112,138,480
N17E081	Manchester	GBR		12/21/2018	6.930	159,965	12,011,518	72,591,960
N17E091	Exeter	GBR		12/20/2018	8.500		49,323,831	172,280,890
N184021	Houston	TX		02/08/2018	3.900	27,472,501		45,514,242
N184031	San Antonio	TX		05/01/2018	4.860	40,659,299		68,471,763
N184041	Dallas	TX		05/15/2018	4.550	44,455,500		72,136,842
N184051	Chicago	IL		07/03/2018	4.540	18,531,450		30,708,072
N184061	Houston	TX		05/31/2018	4.430	29,870,098		54,864,124
N184071	Goodyear	AZ		07/26/2018	4.290	37,112,848		57,065,915
N184081	Austin	TX		06/15/2018	4.220	47,452,499		83,886,791
N184091	Phoenix	AZ		08/29/2018	4.690	31,768,201		53,449,153
N184101	Mesa	AZ		07/26/2018	4.120	18,681,300		32,951,942
N184111	Houston	TX		07/23/2018	4.130	163,926,780		296,298,203
N184121	Edgerton	KS		10/23/2018	4.550	59,693,399		119,997,360
N184131	Houston	TX		09/17/2018	4.140	39,360,605		67,813,470

E05

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 2

Showing All Mortgage Loans ACQUIRED AND ADDITIONS MADE During the Current Year

1 Loan Number	2 Location		4 Loan Type	5 Date Acquired	6 Rate of Interest	7 Actual Cost at Time of Acquisition	8 Additional Investment Made After Acquisition	9 Value of Land and Buildings
	City	3 State						
N184141	Jefferson	IN		12/20/2018	4.490	86,912,998		332,024,740
N186011	San Francisco	CA		03/28/2018	6.250	109,903,480	22,617,243	104,639,212
N186012	San Francisco	CA		03/28/2018	6.250	(823,738)	3,391,735	104,639,212
N186121	San Francisco	CA		09/07/2018	6.850	40,394,533	6,387,531	146,734,390
N187011	Portland	OR		03/14/2018	4.300	47,352,601		103,159,639
N187021	Riverside	CA		03/13/2018	3.830	25,324,649		42,191,216
N187031	Vancouver	WA		06/28/2018	4.080	21,778,199		36,696,665
N187041	Santa Clara	CA		07/12/2018	4.030	144,855,000		237,800,000
N187051	Portland	OR		10/01/2018	4.370	63,824,175		107,981,500
N187061	Portland	OR		10/01/2018	4.320	15,284,700		27,710,000
N187071	Portland	OR		08/16/2018	4.630	41,958,000		70,800,000
N187081	Huntington Beach	CA		09/06/2018	4.350	89,775,004		162,342,865
N187091	Seattle	WA		09/20/2018	4.470	90,860,035		177,676,483
N187101	City Of Commerce	CA		10/31/2018	4.400	159,839,998		264,807,615
N187111	Los Angeles	CA		10/12/2018	4.370	29,073,320		57,164,371
N189011	New York	NY		02/08/2018	3.970	79,920,001		171,111,113
N189021	Washington	DC		02/15/2018	4.550	35,964,000		63,800,000
N189041	Charlotte	NC		06/19/2018	4.270	89,910,000		229,410,000
N189051	Long Island City	NY		09/07/2018	4.340	99,899,999		156,181,817
N189061	New York	NY		09/27/2018	4.260	84,745,000		186,200,000
N189081	Doral	FL		11/28/2018	4.360	26,723,250		48,238,850
N189101	Charlotte	NC		11/30/2018	4.540	103,848,051		186,089,555
N189121	Stamford	CT		12/04/2018	4.610	31,884,050		63,800,000
N18E011	London	GBR		04/11/2018	4.720	111,626,106		172,953,491
N18E051	Leeds	GBR		05/16/2018	4.220	57,589,021		85,141,082
N18E061	Borehamwood	GBR		09/17/2018	4.170	38,685,383		76,365,922
N18E071	London	GBR		06/13/2018	4.740	57,439,886		95,336,800
N18E081	Oxfordshire	GBR		06/06/2018	3.990	266,133,000		713,690,000
0599999	Mortgages in good standing - Commercial mortgages-all other					2,884,049,758	433,907,096	7,998,577,500
N146281	Philadelphia	PA		06/01/2018	12.000		18,434,749	326,257,512
0699999	Mortgages in good standing - Mezzanine Loans						18,434,749	326,257,512
0899999	Total Mortgages in good standing					3,229,830,662	468,570,683	8,436,924,100
1699999	Total - Restructured Mortgages							
2499999	Total - Mortgages with overdue interest over 90 days							
3299999	Total - Mortgages in the process of foreclosure							
3399999	Totals					3,229,830,662	468,570,683	8,436,924,100

E05.1

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 3

Showing All Mortgage Loans DISPOSED, Transferred or Repaid During the Current Year

1 Loan Number	2 Location		4 Loan Type	5 Date Acquired	6 Disposal Date	7 Book Value/ Recorded Investment Excluding Accrued Interest Prior Year	8 Change in Book Value/Recorded Investment					14 Book Value/ Recorded Investment Excluding Accrued Interest on Disposal	15 Consid- eration	16 Foreign Exchange Gain (Loss) on Disposal	17 Realized Gain (Loss) on Disposal	18 Total Gain (Loss) on Disposal	
	2 City	3 State					8 Unrealized Valuation Increase (Decrease)	9 Current Year's (Amortization) /Accretion	10 Current Year's Other- Than- Temporary Impairment Recognized	11 Capitalized Deferred Interest and Other	12 Total Change in Book Value (8+9-10+11)						13 Total Foreign Exchange Change in Book Value
16371*RL3	Various	FL		03/01/1991	04/18/2018	614		1				615	615				
16371*RR0	Various	FL		03/01/1991	04/18/2018	421		1				422	422				
16371*TE7	Various	TX		09/01/1991	03/19/2018	843		3				846	846				
16371*TF4	Various	TX		09/01/1991	03/19/2018	590		2				592	592				
16371*TG2	Various	TX		08/01/1991	05/18/2018	1,246		5				1,251	1,251				
16371*TH0	Various	TX		08/01/1991	05/18/2018	1,869		8				1,877	1,877				
172905B#7	Various	CA		07/01/1994	10/29/2018	5,080		7				5,087	5,087				
32037#AA4	Various	TX		08/01/1992	10/25/2018	17,142						17,142	17,142				
410764MM3	Various	AZ		10/31/1996	05/23/2018	4,980						4,980	4,980				
41151#AA5	Various	TX		01/01/1993	08/20/2018	7,099		7				7,106	7,106				
669370DB1	Various	MA		05/12/1999	07/02/2018	832		(2)				830	830				
78376#AB4	Various	TX		09/01/1991	04/02/2018	253		1				254	254				
91224MM1	Various	FL		12/30/1997	04/02/2018	1,568		(25)				1,543	1,543				
N004041	Boulder	CO		11/30/2000	12/06/2018	4,287,705		1,726				4,289,432	4,289,432				
N015221	Lawrenceville	GA		06/04/2004	09/27/2018	6,181,034		10,601				6,191,635	6,191,635				
N025191	Raynham	MA		06/30/2005	12/10/2018	12,247,668		33,040				12,280,707	12,280,707				
N030031	Rockville	MD		06/19/2003	04/03/2018	14,462,231						14,462,231	14,462,231				
N032071	Bloomington	IN		12/29/2004	01/31/2018	9,923,017		12,395				9,935,413	9,935,413				
N035131	San Juan Capistrano	CA		01/09/2004	10/18/2018	3,499,012		2,108				3,501,120	3,501,120				
N039061	Ottawa	CAN		08/11/2003	08/31/2018	14,396,910		5,224				14,426,815	16,245,228	1,818,413		1,818,413	
N039062	Ottawa	CAN		02/28/2007	08/31/2018	9,751,876		4,416				10,363,790	10,363,790				
N069031	Buffalo	NY		06/29/2006	06/06/2018	8,149,631		743				8,150,374	8,150,374				
N080021	Cary	NC		04/29/2008	02/08/2018	14,024,764		4,345				14,029,110	14,029,110				
N087031	Jessup	MD		04/25/2008	02/02/2018	24,121,969		3,797				24,125,766	24,125,766				
N104031	Dallas	TX		07/19/2010	01/29/2018	23,050,332		125				23,050,457	23,050,457				
N107111	Long Beach	CA		12/01/2010	05/03/2018	31,246,034		332				31,246,367	31,246,367				
N107131	Fontana	CA		03/08/2011	03/27/2018	49,998,904		1,096				50,000,000	50,000,000				
N110011	Washington	DC		03/03/2011	07/02/2018	34,322,387		17,263				34,339,651	34,339,651				
N110141	Tampa	FL		01/11/2012	08/13/2018	22,504,441		5,233				22,509,673	22,509,673				
N114031	San Antonio	TX		07/29/2011	05/01/2018	14,934,399		5,278				14,939,676	14,939,676				
N117091	Seattle	WA		11/16/2011	09/20/2018	73,940,371		39,453				73,979,824	73,979,824				
N117121	Los Angeles	CA		01/18/2012	02/07/2018	54,033,199						54,033,199	54,033,199				
N119021	Medford	MA		05/13/2011	05/30/2018	104,169,148		9,957				104,179,105	104,179,105				
N119051	Boston	MA		12/20/2011	12/27/2018	58,996,689						58,996,689	58,996,689				
N120961	Hobe Sound	FL		01/01/2013	03/01/2018	20,594,616		(109,616)				20,485,000	20,485,000				
N122071	Columbia	MO		01/02/2013	02/16/2018	10,914,848		1,956				10,916,803	10,916,803				
N127051	Irvine	CA		06/28/2012	09/25/2018	26,689,158		8,044				26,697,202	26,697,202				
N127911	Oakdale	CA		01/01/2013	07/25/2018	1,681,950		276,940				1,958,890	1,958,890				
N132022	Chicago	IL		12/30/2013	06/26/2018	7,175,330		24,670				7,200,000	7,200,000				
N134031	New Orleans	LA		06/28/2013	12/28/2018	12,781,356		55,900				12,837,256	12,837,256				
N134061	Tempe	AZ		10/31/2013	05/16/2018	24,522,876		9,228				24,532,104	24,532,104				
N134081	Dallas	TX		01/28/2014	05/15/2018	30,557,763		21,860				30,579,623	30,579,623				
N144181	The Woodlands	TX		09/24/2014	07/25/2018	41,842,919		19,059				41,861,978	41,861,978				
N154041	Baton Rouge	LA		07/15/2015	04/20/2018	18,635,361		14,639				18,650,000	18,650,000				
N154131	Carrollton	TX		07/17/2015	09/27/2018	25,279,881		20,119				25,300,000	25,300,000				
N156091	Washington	DC		08/10/2015	08/31/2018	105,983,576		478,524				106,462,100	106,462,100				
N156181	Watertown	MA		01/08/2016	08/29/2018	39,335,752		429,221				42,922,119	42,922,119				
N156182	Watertown	MA		03/01/2018	08/29/2018	326,522		326,522	158,638			13,292,978	13,292,978				
N159041	Mississauga	CAN		06/01/2015	06/07/2018	6,443,054		5,089				6,438,025	6,408,320	(22,605)		(22,605)	
N15E021	London	GBR		04/01/2015	06/08/2018	24,047,892		142,478				26,699,000	26,699,000				
N16E021	London	GBR		03/01/2016	08/01/2018	15,038,882		674,604				28,029,135	28,029,135				
N877091	Portland	OR		02/26/1998	03/14/2018	13,035,735						13,035,735	13,035,735				
N889061	Boston	MA		09/29/1998	10/01/2018	1,815,071						1,815,071	1,815,071				
N889062	Boston	MA		06/19/2000	10/01/2018	152,887		481				153,369	153,369				
N889063	Boston	MA		12/23/2003	10/01/2018	140,510						140,510	140,510				
N895061	Corpus Christi	TX		06/06/2001	08/22/2018	4,089,548		6,449				4,095,997	4,095,997				
Foreign Exchange Coupon Adj												(2,209,146)	(2,209,146)	(3,009,870)		(3,009,870)	
0199999. Mortgages closed by repayment						1,019,043,223		2,563,307			158,638	2,721,945	2,218,601	1,050,960,228	1,049,746,166	(1,214,062)	(1,214,062)
N156131	West Hollywood	CA		02/15/2018		61,820,730				5,076,577		5,076,577	61,820,730	61,820,730			
N176021	New York	NY		12/22/2017		19,444,307						19,444,307	19,444,307	19,444,307			

E06

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE B - PART 3

Showing All Mortgage Loans DISPOSED, Transferred or Repaid During the Current Year

1 Loan Number	Location		4 Loan Type	5 Date Acquired	6 Disposal Date	7 Book Value/ Recorded Investment Excluding Accrued Interest Prior Year	Change in Book Value/Recorded Investment					14 Book Value/ Recorded Investment Excluding Accrued Interest on Disposal	15 Consid- eration	16 Foreign Exchange Gain (Loss) on Disposal	17 Realized Gain (Loss) on Disposal	18 Total Gain (Loss) on Disposal	
	2 City	3 State					8 Unrealized Valuation Increase (Decrease)	9 Current Year's (Amortization) /Accretion	10 Current Year's Other- Than- Temporary Impairment Recognized	11 Capitalized Deferred Interest and Other	12 Total Change in Book Value (8+9-10+11)						13 Total Foreign Exchange Change in Book Value
N176111	Seattle	WA		04/11/2018		413					11	11		413	413		
N156061	New York	NY		02/20/2018		45,144,238								45,144,238	45,144,238		
N156065	New York	NY		02/20/2018		47,920,649								47,920,649	47,920,649		
N174031	Edgerton	KS		05/15/2017		92,008,200								92,008,200	92,008,200		
N186011	San Francisco	CA		03/28/2018		69,822,811					2,987,642	2,987,642		69,822,811	69,822,811		
Residential														900,540,102	900,540,102		
Commercial														288,367,722	288,367,722		
0299999. Mortgages with partial repayments						336,161,348					8,064,230	8,064,230		1,525,069,172	1,525,069,172		
0599999 - Totals						1,355,204,571		2,563,307			8,222,868	10,786,175	2,218,601	2,576,029,400	2,574,815,338	(1,214,062)	(1,214,062)

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20
			4 City	5 State								13	14	15	16	17			
CUSIP Identification	Name or Description	Code	City	State	Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost	Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership
26861F-10-9	2288 EM Opportunities LLC		Springfield	MA	Massachusetts Mutual Life Ins Co	3	06/26/2018	1	178,018,201	178,018,201	178,018,201	5,028,204			(2,687,882)				100.000
0899999. Fixed or Variable Rate - Bonds - Affiliated																			
000000-00-0	1374 Wrightwood Capital LLC		Chicago	IL	Cohen Financial Limited Partnership		06/03/2004	1				2,969,138					2,969,138		32.990
000000-00-0	1521 Square Mile Partners LP		New York	NY	Square Mile GP LLC		07/05/2006	3	338,828	338,828	338,828	50,993							5.076
000000-00-0	2307 Barings Affordable Housing Mortgage Fund II LLC		Plano	TX	BAHMF Manager II LLC		10/26/2018	2									301,220	100,000,000	100.000
0999999. Fixed or Variable Rate - Mortgage Loans - Unaffiliated																			
000000-00-0	1995 Cornerstone Permanent Mortgage Fund II		Boston	MA	CPMF Associates III LLC		12/17/2015	2	69,476,770	69,476,770	69,476,770	1,545,093					750,700	13,239,316	100.000
000000-00-0	1997 Cornerstone Permanent Mortgage Fund		Boston	MA	CPMF Associates III LLC		10/21/2011	2	64,713,709	64,713,709	64,713,709	6,486,123					5,835,488	15,675,676	100.000
000000-00-0	2118 Cornerstone California Mortgage Fund I LLC		Glendale	CA	California Community Reinvestment Corpor		09/10/2015	2	93,882,026	93,882,026	93,882,026	2,162,534					2,164,375	3,512,223	100.000
000000-00-0	2119 Cornerstone Permanent Mortgage Fund III		Boston	MA	CPMF Associates III LLC		11/20/2015	2	74,846,278	74,846,278	74,846,278	481,306					643,274	23,916,150	100.000
000000-00-0	2120 Cornerstone Permanent Mortgage Fund IV		Boston	MA	CPMF Associates III LLC		02/10/2017	2	6,143,937	6,143,937	6,143,937	(225,027)					410,890	93,845,471	100.000
000000-00-0	2129 Cornerstone California Mortgage Fund II LLC		Glendale	CA	California Community Reinvestment Corpor		09/28/2016	2	23,316,047	23,316,047	23,316,047	211,233					63,822	31,293,286	100.000
000000-00-0	2130 MM Debt Participations LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		07/19/2016	3	6,193	6,192	6,193	242,963					125,000		100.000
000000-00-0	2170 Barings Real Estate Credit Strategies VII LP		Hartford	CT	BRECS VII GP LLC		03/30/2017	3	24,956,505	24,956,506	24,956,505	1,467,392					1,321,540	75,587,643	49.546
000000-00-0	2228 Cornerstone California Mortgage Fund III LLC		Glendale	CA	California Community Reinvestment Corpor		11/10/2017	2	19,707,798	19,707,798	19,707,798	(81,016)						99,917,314	100.000
000000-00-0	2256 Barings Affordable Housing Mortgage Fund I LLC		Plano	TX	BAHMF Manager I LLC		01/22/2018	2	(355,980)		(355,980)							99,949,000	100.000
000000-00-0	2272 MM Mortgage Lending LLC		Wilmington	DE	Massachusetts Mutual Life Ins Co		06/20/2018	2	31,483,096	31,483,096	31,483,096								100.000
1099999. Fixed or Variable Rate - Mortgage Loans - Affiliated																			
06759F-10-6	1761 Barings US Loan Fund Series		Charlotte	NC	Barings LLC		09/10/2010	8	118,195	118,195	118,195	1,275					2,073		0.022
55330F-10-1	1819 MML Mezzanine Investor III LLC		London	GBR	Massachusetts Mutual Life Ins Co	55	06/02/2010	2	26,370,806	26,370,806	26,370,806	(2,410,542)					4,139,191		88.889
08471F-10-3	1859 Berkshire Way LLC		Springfield	MA	Berkshire Way LLC	2	03/06/2013	10	673,524,911	673,524,911	673,524,911	(7,406,482)				(35,517,421)			100.000
36764F-10-6	2045 Gateway Mezzanine Partners II LP		Springfield	MA	Mezzco Australia II LLC	58	03/26/2015	2	7,314,155	7,314,155	7,314,155	1,256,400						13,686,792	36.777
L0523F-10-1	2068 Babson Global Private Loan Fund		Springfield	MA	Babson GPC GP S à r l	5	10/16/2015	3	71,532,814	71,532,814	71,532,814	6,596,832					7,000,062		13.194
1499999. Joint Venture Interests - Fixed Income - Affiliated																			
000000-00-0	2 Massachusetts Capital Resource Company		Boston	MA	Massachusetts Mutual Life Ins Co		12/30/1977	2	28,587,993	28,587,993	28,587,993	819,363					819,363		29.367
000000-00-0	1121 Mass Ventures Equity Fund LP		Boston	MA	Kestrel Ventures LLC		07/14/1997	1	162,280	162,280	162,280	(94,241)							35.587
000000-00-0	1146 Israel Infinity Venture Capital Fund (Delaware) LP		Tel Aviv	ISR	Israel Infinity Venture Capital Partners		02/12/1998	3	840,695										11.461
000000-00-0	1204 Life Insurance Community Investment Initiative LLC		Boston	MA	Massachusetts Capital Resource Company		09/15/1999	2	32,034,531	32,034,531	32,034,531	607,646					685,481		31.538
000000-00-0	1224 Park Avenue Equity Partners LP		New York	NY	Park Avenue Equity GP LLC		03/29/2000	3	190,929	190,929	190,929								9.212
000000-00-0	1233 Weston Presidio Capital IV LP		Boston	MA	Weston Presidio Capital Management IV LL		06/21/2000	3	39,959	39,959	39,959	8,202					8,145		0.748
000000-00-0	1338 Lineage Capital LP		Boston	MA	Lineage Partners LLC		09/05/2003	3	10,985,444	10,985,444	10,985,444	(12,776)							30.560
000000-00-0	1344 Infinity I Annex Fund LP		Tel Aviv	ISR	Infinity I Annex Fund Ltd		09/26/2003	3	147,510										18.610
000000-00-0	1399 Alerion Investment Partners I LP		Darien	CT	Alerion Investment Managers I LLC		09/15/2004	3	4,172,032	4,172,032	4,172,032	(339,575)							70.124
000000-00-0	1425 Tenaska Power Fund LP		Omaha	NE	Tenaska PF G LLC		03/23/2005	3	68,361	68,361	68,361	(2,718)							2.983
000000-00-0	1431 PAI Europe IV LP		St Peter Port	GBR	PAI Europe IV General Partner Limited		04/06/2005	3	2,343,646	1,087,740	1,255,906	73,487				1,625,955			1.517
000000-00-0	1440 Linsalata Capital Partners Fund V LP		Mayfield Heights	OH	Lincap V GP LLC		05/31/2005	3	886,138	886,138	886,138	(699,304)					(1,950)		5.150
000000-00-0	1448 Jefferies Capital Partners IV LP		New York	NY	JCP IV LLC		07/11/2005	3	383,072	383,072	383,072	15,300					100,932		2.880
000000-00-0	1455 AEA Investors Small Business Fund LP		New York	NY	AEA Investors SBF Partners LP		08/03/2005	3	1,736,201	1,736,201	1,736,201	(221,190)						174,695	5.479
000000-00-0	1467 FIMI Opportunity Fund II LP		Tel Aviv	ISR	Ishay Davidi Managing Partner		10/05/2005	2	951,000	951,000	951,000	(43,205)						173,000	16.858
000000-00-0	1481 Rosemount Global Trade Finance Fund LP		White Plains	NY	Rosemount Finance Partners LLC		12/01/2005	7	866,150	62,774	10,821			803,375			(21,667)		58.731
000000-00-0	1486 Excelsior Capital Asia Partners III LP		Hong Kong	HKG	Excelsior Capital Asia GP III LP		01/04/2006	3	2,411,691	2,411,691	2,411,691	445,751							4.004
000000-00-0	1509 Strength Capital Partners II LP		Birmingham	MI	Strength GP, LLC		05/05/2006	3									(221,109)		3.558
000000-00-0	1514 River Capital Partners V LP		Atlanta	GA	River General Partners V LLC		05/31/2006	3											80.143
000000-00-0	1526 Orpheus Holding LLC		New York	NY	Guggenheim Partners Investment Mgmt LLC		06/30/2006	3	1,443,195	1,443,195	1,443,195	(139,668)					(77,956)		2.667
000000-00-0	1530 Seidler Equity Partners III LP		Marina Del Rey	CA	SEM III LLC		07/28/2006	3	31,507	31,507	31,507	70,032							6.923

E07

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20				
			City	State								Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost				Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership
000000-00-0	1532 Thompson Street Capital Partners II LP		St Louis	MO	Thompson Street Capital II GP LP		08/14/2006	3											4.544				
000000-00-0	1533 Caltius Equity Partners II LP		Los Angeles	CA	CEP II LP		08/15/2006	3	184,910	184,910	184,910	(270,220)				(16,610)			1.258				
000000-00-0	1550 Silver Oak Services Partners LP		Evanston	IL	Silver Oak Management LP		11/09/2006	3	534,640	534,640	534,640	(545,390)							10.070				
000000-00-0	1559 Arbor Investments II LP		Chicago	IL	Arbor Private Investment Company II LLC		12/22/2006	3											11.397				
000000-00-0	1568 AP Cayman Partners II LP		Minato-Ku	JPN	AP Cayman Partners II General Partner LP		01/30/2007	3	622,494	111,634	510,860	280,442						348,980	207,274	0.555			
000000-00-0	1570 Saw Mill Capital Partners LP		Briarcliff Manor	NY	Saw Mill Capital Associates LP		02/01/2007	3	1,246,713	1,246,713	1,246,713	1,792,611							4,894,392	2.413			
000000-00-0	1571 HKW Capital Partners III LP		New York	NY	HKW Management III LP		01/29/2007	3	1,667,428	1,667,428	1,667,428	144,694							358,084	7.150			
000000-00-0	1582 AACF China Growth Inv LP		San Francisco	CA	Asia Alternatives GP Sidecar, LLC		03/22/2007	12	310,389	310,389	310,389	(171,476)							(45,211)	6.471			
000000-00-0	1583 Special Value Opportunities Fund LLC		Santa Monica	CA	Tennenbaum Capital Partners LLC		03/21/2007	13	1,550,928	1,550,928	1,550,928	(1,280,636)							(226,556)	4.974			
000000-00-0	1585 Tennenbaum Opp Fund V LLC		Santa Monica	CA	SVOF/MM LLC		03/21/2007	13	17,973,698	17,973,698	17,973,698	(2,366,827)							(470,944)	5.461			
000000-00-0	1588 Clearwater Capital Partners Fund III LP		Singapore	SGP	Clearwater Capital Partners Fund III GP		04/04/2007	11	2,685,952	2,685,952	2,685,952	(59,626)							401,068	0.332			
000000-00-0	1601 Kohlberg Investors VI LP		Mount Kisco	NY	Kohlberg Management VI LLC		06/20/2007	3	483,459	483,459	483,459	(48,195)							40,143	1.464			
000000-00-0	1602 Validus Pharmaceuticals LLC		Parsippany	NJ	Konanda General Partner LLC		06/19/2007	3	7,565,778	7,565,778	7,565,778	(1,178,000)							80,307	61.501			
000000-00-0	1603 KKR Asian Fund LP		New York	NY	KKR Associates Asia LP		07/03/2007	3	389,103	389,103	389,103	11,177							137,576	0.731			
000000-00-0	1606 China Seed Ventures LP		Grand Cayman	CYM	China Seed Ventures Management Limited		06/29/2007	3	5,776,852	5,776,852	5,776,852	(424,119)								28.768			
000000-00-0	1609 Syntaxis Mezzanine Fund I LP		St Peter Port	GBR	Syntaxis Capital GP Limited		08/03/2007	2	2,270,062	2,270,062	2,270,062	(138,122)							(88,997)	3.842			
000000-00-0	1618 Olympus Capital Asia III LP		New York	NY	Olympus Capital Asia III GP LP		08/22/2007	3	4,678,562	4,678,562	4,678,562	(2,398,588)								1.662			
000000-00-0	1622 Braemar Energy Ventures II LP		New York	NY	Braemar Power & Comms Management II LP		09/06/2007	3	16,068,466	16,068,466	16,068,466	(4,274,140)								14.918			
000000-00-0	1635 Trilantic Capital Partners IV LP		New York	NY	Trilantic Capital Partners IV LP		10/22/2007	3	1,292,803	1,292,803	1,292,803	62,152								0.368			
000000-00-0	1642 High Road Capital Partners Fund I LP		New York	NY	High Road Associates I LLC		11/16/2007	3	620,908	620,908	620,908	50,676								1.388			
000000-00-0	1648 Long River Ventures II LP		Amherst	MA	Long River Capital Partners II LLC		12/14/2007	3												37.520			
000000-00-0	1650 Zana China Fund LP		Grand Cayman	CYM	Zana Capital Cayman Limited		12/14/2007	12				69,288								4.277			
000000-00-0	1653 Atlanta Equity Fund LP		Atlanta	GA	Atlanta Equity Investors LLC		01/02/2008	3												9.363			
000000-00-0	1656 Corsair III FSC Partners LP		New York	NY	Corsair III Management LP		12/24/2007	3	3,617,331	3,617,331	3,617,331	(183,201)								4.412			
000000-00-0	1657 Corsair III F50C Partners LP		New York	NY	Corsair III Offshore Management LP		12/24/2007	3	2,397,710	2,397,710	2,397,710	(82,533)								(58,134)	1.207		
000000-00-0	1662 FIMI Opportunity Fund IV LP		Tel Aviv	ISR	FIMI IV 2007 Ltd		01/08/2008	2												14.321			
000000-00-0	1667 Guardian Capital Partners Fund I LP		Wayne	PA	Guardian Capital Partners GP LP		02/15/2008	3												44.296			
000000-00-0	1670 Asia Alternative Capital Partners II LP		San Francisco	CA	Asia Alternatives PE Partners II LLC		03/06/2008	12	20,139,056	20,139,056	20,139,056	5,942,636							6,753,836	1.486			
000000-00-0	1678 Pacific Equity Partners Fund IV LP		Jersey Channel Island	JEY	Pacific Equity Partners Fund IV GP Ltd		04/21/2008	3	329,630	329,630	329,630	(264)								(35,997)	0.233		
000000-00-0	1679 Pacific Equity Partners Supplementary Fund IV LP		Jersey Channel Island	JEY	Pacific Equity Partners Fund IV GP Ltd		04/21/2008	3	116,674	116,674	116,674	(176)								(12,743)	0.146		
000000-00-0	1682 SPC Partners IV LP		San Francisco	CA	Swander Pace Capital IV LP		04/28/2008	3	3,584,799	3,584,799	3,584,799	494,758								494,758	4.472		
000000-00-0	1684 Asia Strategic Capital Fund LP		Admiralry	HKG	Asia Strategic Capital Fund GP		05/08/2008	2	3,542,896	174,288										10.472			
000000-00-0	1686 CDH Venture Partners II LP		Grand Cayman	CYM	CDH Venture GP II Company Limited		05/27/2008	1	4,394,809	4,394,809	4,394,809	479,355								800,457	0.990		
000000-00-0	1694 Stone Arch Capital II LP		Minneapolis	MN	Stone Arch Capital Management II LP		07/29/2008	3	577,319	577,319	577,319	29,314								29,314	0.556		
000000-00-0	1698 Hamilton Robinson Capital Partners III LP		Stamford	CT	Hamilton Robinson Associates III LLC		09/15/2008	3												18.949			
000000-00-0	1703 Brazos Equity Fund III LP		Dallas	TX	Brazos Equity Fund GP III LLC		10/17/2008	3	3,202,197	3,202,197	3,202,197	1,959,326								1,959,326	2.239		
000000-00-0	1705 ADM Maculus Fund V LP		Hong Kong	HKG	ADM Maculus Investments V Limited		10/28/2008	3	132,547	132,547	132,547	(18,020)									1.196		
000000-00-0	1706 Capvent India Private Equity Fund Limited		Port Louis	MUS	Capvent Management Limited		10/31/2008	3	11,897,557	11,897,557	11,897,557	(257,936)								(67,148)	22.773		
000000-00-0	1717 Unison Capital Partners III (F) LP		Grand Cayman	CYM	UCGP III (F) LP		02/05/2009	3	1,820,921	1,820,921	1,820,921	463,246								49,068	773,096	1.721	
000000-00-0	1718 UCP III Co-Invest (f) LP		Grand Cayman	CYM	UCGP III (F) LP		02/05/2009	3	631,100	631,100	631,100	188,394								47,870	241,231	2.073	
000000-00-0	1722 Riverside Capital Appreciation Fund V LP		New York	NY	RCAF V Associates LP		04/17/2009	3	574,436	574,436	574,436	104,002										0.255	
000000-00-0	1731 Westview Capital Partners II LP		Boston	MA	Westview Capital Management II LP		08/25/2009	3	4,450,697	4,450,697	4,450,697	3,430,168								85,239	3.419		
000000-00-0	1742 AEA Investors SBF II LP		New York	NY	AEA Investors SBF II Partners LP		12/28/2009	3													2.651		
000000-00-0	1744 Hudson Ferry Capital II LP		New York	NY	Hudson Ferry Capital GP II LP		01/22/2010	3	9,016,854	9,016,854	9,016,854	2,553,252									5.675		
000000-00-0	1745 Linden Capital Partners II LP		Chicago	IL	Linden Manager II LP		02/02/2010	13													3.065		
000000-00-0	1757 Mill City Fund LP		Minneapolis	MN	Washburn LP		07/13/2010	3													(3,341)	17.607	
000000-00-0	1770 Tennenbaum Opportunities Fund VI LLC		Santa Monica	CA	SVOF/MM LLC		10/28/2010	13	4,282,556	4,282,556	4,282,556	(29,685)								106,576	1.795		
000000-00-0	1773 Cablecraft Equity LLC		Chicago	IL	MCP Opportunity Management II LLC		06/30/2014	3													1,766,566	13.540	
000000-00-0	1775 Techquity LP		Austin	TX	TQCAP GP LLC		12/10/2010	3	22,687,370	22,687,370	22,687,370	11,144,662									138,682	1,824,143	15.628

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20
			City	State								Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost				Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership
000000-00-0	1777 Filtration Group Equity LLC		Chicago	IL	MCP Opportunity Management II LLC		06/30/2014	3	25,719,744	81,821,190	25,719,744								4.592
000000-00-0	1780 HKW Capital Partners III Supplemental LP		New York	NY	HKW Management III Supplemental LP		12/29/2010	3									(2,375)		19.543
000000-00-0	1786 JFL Equity Investors III LP		Arlington	VA	JFL GP Investors III LLC		02/14/2011	3											1.585
000000-00-0	1795 Braemar Energy Ventures III LP		New York	NY	Braemar Power & Comm Mgmt III LP		06/17/2011	3	5,963,953	5,963,953	5,963,953	909,613							0.710
000000-00-0	1796 Asia Alternatives Capital Partners III LP		San Francisco	CA	Asia Alt Private Equity Ptnr III LLC		07/11/2011	12	6,508,619	6,508,619	6,508,619	1,012,704							2.352
000000-00-0	1797 Gridiron Capital Fund II LP		New Canaan	CT	Gridiron GP II LLC		07/25/2011	3	2,291,514	2,291,514	2,291,514	695,270							6.639
000000-00-0	1799 Linsalata Capital Partners VI LP		Mayfield Heights	OH	LinCap VI GP LLC		08/11/2011	3	3,338,003	3,338,003	3,338,003	1,090,026							4.722
000000-00-0	1804 Thompson Street Capital Partners III LP		Saint Louis	MO	Thompson Street Capital III GP LP		10/03/2011	3	6,994,575	6,994,575	6,994,575	170,844							1.322
000000-00-0	1807 Industrial Growth Partners IV LP		San Francisco	CA	IGP Capital Partners IV LLC		10/21/2011	3	646,231	646,231	646,231	1,705,761							1.267
000000-00-0	1822 River VI Parallel LP		Chattanooga	TN	River Associates VI LLC		12/09/2011	3	1,605,669	1,605,669	1,605,669	783,279							4.982
000000-00-0	1823 Trinity Hunt Partners IV LP		Dallas	TX	Trinity Hunt IV LP		12/12/2011	3	11,138,544	11,138,544	11,138,544	2,960,357							4.810
000000-00-0	1827 Gryphon Partners 3.5 LP		San Francisco	CA	Gryphon GenPar 3.5 LP		12/22/2011	3	5,082,811	5,082,811	5,082,811	3,124,112							3.703
000000-00-0	1828 Hony Capital Fund V LP		Central	HK	Hony Capital Fund V GP LP		12/29/2011	3	17,190,837	17,190,837	17,190,837	(2,426,023)							0.594
000000-00-0	1829 Incline Equity Partners III LP		Pittsburgh	PA	Incline GP III LLC		01/20/2012	3	12,534,860	12,534,860	12,534,860	1,965,773							6.390
000000-00-0	1834 Falfurrias Capital Ptnrs II LP		Charlotte	NC	Falfurrias Equity Partners II LLC		03/26/2012	3	7,427,802	7,427,802	7,427,802	10,229,679							11.877
000000-00-0	1836 Trailhead Fund LP		Minneapolis	MN	Odysseus MN LLC		03/28/2012	3	7,927,976	7,927,976	7,927,976	1,867,498							4.504
000000-00-0	1837 Archer Capital VOP 5 LP		Sydney	AUS	Archer Capital VOP 5 LP		04/03/2012	3	1,200,833	1,065,564	135,269	218,105				38,996	1,142,421		0.525
000000-00-0	1838 Archer Capital Offshore 5 LP		Sydney	AUS	Archer Capital GP 5 LP		04/03/2012	3	1,388,363	879,018	509,346	23,443				253,966			1.511
000000-00-0	1841 LaSalle Capital Group II-A LP		Chicago	IL	LaSalle Capital Group Ptr IIA LP		05/01/2012	3	4,291,691			622,202							7.295
000000-00-0	1843 CIP Capital Fund LP		New York	NY	CIP Capital GP, L.P.		06/01/2012	3	2,288,621	2,288,621	2,288,621	1,161,540							2.176
000000-00-0	1846 Maui Capital Aqua LP		Auckland	NZ	Maui Capital Aqua GP Limited		06/11/2012	3	3,294,968	3,294,968	3,294,968	39,600				(190,444)			0.652
000000-00-0	1848 Kohlberg Investors VII LP		Mount Kisco	NY	Kohlberg Management VII LP		06/27/2012	3	8,548,660	8,548,660	8,548,660	1,386,337							2.987
000000-00-0	1849 SPC Partners V LP		San Francisco	CA	Swander Pace Capital V LP		07/03/2012	3	12,601,059	12,601,059	12,601,059	788,347							4.305
000000-00-0	1851 Dyal US Investors LP		New York	NY	NB Dyal Associates LP		08/17/2012	10	6,624,527	6,624,527	6,624,527	(756,353)							6.474
000000-00-0	1853 Global Infrastructure Partners II-A LP		New York	NY	Global Infrastructure GP II LP		08/09/2012	3	52,651,453	52,651,453	52,651,453	7,509,500							1.731
000000-00-0	1854 The Energy & Minerals Group Fund II LP		Dallas	TX	EMG Fund II GP LP		08/30/2012	3	59,434,479	59,434,479	59,434,479	3,869,911							2.665
000000-00-0	1855 FIMI Opportunity V LP		Tel Aviv	ISR	FIMI V 2012 LLC		08/24/2012	3	8,115,646	8,115,646	8,115,646	1,299,000							1.290
000000-00-0	1856 MCP Opportunity III GP LLC		Chicago	IL	MCP Opportunity Management III LLC		08/27/2012	3	58,987,499	58,987,499	58,987,499	21,309,598							8.354
000000-00-0	1857 Quad-C Partners VIII LP		Charlottesville	VA	Quad-C Advisors VIII LP		09/07/2012	3	4,235,386	4,235,386	4,235,386	1,346,710							0.680
000000-00-0	1858 Haddington Energy Ptnrs IV LP		Houston	TX	Haddington Ventures IV GP LLC		09/17/2012	3	4,326,533	4,326,533	4,326,533	(244,077)							2.159
000000-00-0	1862 EMG Baffin CI LP		Dallas	TX	EMG Baffin CI GP LLC		09/18/2012	3											32.646
000000-00-0	1863 Warburg Pincus Private Equity XI LP		New York	NY	Warburg Pincus XI LP		09/20/2012	3	47,218,905	47,218,905	47,218,905	7,684,247							5.017
000000-00-0	1864 Kayne Anderson Energy Fund VI LP		Houston	TX	KAEFTX VI LLC		09/25/2012	3	17,844,032	17,844,032	17,844,032	234,999							3.119
000000-00-0	1867 Aviation Holding II LP		New York	NY	Aviation Holdings GenPar II LLC		10/15/2012	3	76,087	76,087	76,087	1,368,213							17.131
000000-00-0	1871 Arbor Investments III LP		Chicago	IL	Arbor Private Investment Company III LLC		11/02/2012	3											2.316
000000-00-0	1872 One Rock Capital Partners LP		New York	NY	One Rock Capital Partner GP LLC		11/14/2012	3	1,288,885	1,288,885	1,288,885	456,779							0.609
000000-00-0	1874 Camcor Energy Fund VII B LP		Calgary	CAN	Camcor Partners Fund VII GP Inc		11/28/2012	3	13,192,913	13,192,913	13,192,913	1,575,905							14.767
000000-00-0	1875 Blackrock NTR Renewable Power Fund A LP		New York	NY	BlackRock NTR Renewable Power Fund LP		12/05/2012	3	10,660,223	10,660,223	10,660,223	1,185,976							22.644
000000-00-0	1876 HKW Capital Partners IV LP		New York	NY	HKW Management IV LP		11/28/2012	3											(2,375)
000000-00-0	1880 Equis Asia Fund LP		Grand Cayman	CYM	Equis Asia Fund General Partner		01/07/2013	3	1,963,385	1,963,385	1,963,385	1,625,208							3.475
000000-00-0	1882 Oaktree Value Opportunities Feeder Fund LP		Los Angeles	CA	Oaktree Value Opportunities Fund GP LP		01/02/2013	11	9,330,431	9,330,431	9,330,431	2,976,319							3.479
000000-00-0	1883 Marathon European Credit Opportunity Fund LP		New York	NY	Marathon European Crdt Opp Fund GP LLC		01/02/2013	11	550,067	550,067	550,067	1,442,046							12.265
000000-00-0	1886 NB Strategic Co-Investment Partners II LP		New York	NY	NB Strategic Co-Investment Assoc II LP		01/11/2013	3				821,742							1.588
000000-00-0	1887 Stonepeak Infrastructure Fund LP		New York	NY	Stonepeak Associates LLC		02/19/2013	3	16,799,526	16,799,526	16,799,526	3,085,059							1.119
000000-00-0	1889 West Street Energy Partners LP		Jersey City	NJ	Broad Street Energy Advisors LLC		03/06/2013	3	6,702,725	6,702,725	6,702,725	495,755							1.349
000000-00-0	1890 Basalt Infrastructure Partners LP		St Peter Port	GBR	Basalt Infrastructure Partners GP Ltd		03/13/2013	3	7,056,883	7,056,883	7,056,883	932,858							12.140
000000-00-0	1891 EMG Utica II Co Investment LP		Dallas	TX	EMG Utica Co Investment GP LLC		03/18/2013	3	6,643,238	6,643,238	6,643,238	145,712							2.246
000000-00-0	1893 Actis Energy 3 LP		London	GBR	Actis GP LLP		04/04/2013	3	14,319,000	14,319,000	14,319,000	(864,881)							4.872
000000-00-0	1894 Fifth Cinvn Fund No 4Limited Partnership		St Peter Port	GBR	Cinvn UK GP LLP		04/05/2013	3	12,544,167	12,544,167	12,544,167	5,662,466							2.128

E07.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20
			4	5								13	14	15	16	17			
CUSIP Identification	Name or Description	Code	City	State	Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost	Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership
000000-00-0	1897 Canyon Midstream Co-Investment LLC		Houston	TX	Kayne Anderson Capital Advisors LP		04/15/2013	3	3,971,985	3,971,985	3,971,985	(2,008,656)							3.401
000000-00-0	1898 MBK Partners Fund III LP		Hong Kong	HKG	MBK Partners GP III LP		04/16/2013	3	3,664,124	3,664,124	3,664,124						902,818		0.358
000000-00-0	1900 Advent VI Fund		Southbank	AUS	Advent Private Capital Pty Ltd		05/06/2013	3	3,612,430	3,612,430	3,612,430				(64,682)		2,486,396		5.390
000000-00-0	1901 High Road Capital Partners Fund II P		New York	NY	High Road Associates II LLC		05/03/2013	3	3,876,249	3,876,249	3,876,249						3,860,513	1,470,970	1.302
000000-00-0	1902 iCON Infrastructure Partners II LP		St Peter Port	GBR	iCON Infrastructure Management II		04/29/2013	3	20,212,337	20,212,337	20,212,337				(514,188)		9,065,640		4.294
000000-00-0	1903 CD Capital Natural Resources Fund II Master LP		London	GBR	CD Capital Natural Resources Fund II GP		05/10/2013	3	9,488,635	9,488,635	9,488,635				(649,875)				3.923
000000-00-0	1905 TPH Partners II LP		Houston	TX	TPH Partners II GP LP		05/10/2013	3	1,647,047	1,647,047	1,647,047				(41,849)		8,166		5.125
000000-00-0	1906 Hamilton Lane Secondary Fund III LP		Denver	CO	Hamilton Lane Secondary Fund III GP LLC		05/28/2013	3	4,598,298	4,598,298	4,598,298						421,432		1.201
000000-00-0	1911 New Heritage Capital Fund LP		Boston	MA	New Heritage Capital GP LLC		07/16/2013	3	1,597,375	1,597,375	1,597,375						41,673	657,943	3.022
000000-00-0	1912 Lone Star Fund VIII US LP		Dallas	TX	Lone Star Partners VIII LP		07/01/2013	11	8,011,766	8,011,766	8,011,766				332,195			2,495,658	1.194
000000-00-0	1913 PIMCO Bravo Fund II LP		Newport Beach	CA	PIMCO GP XII LLC		07/19/2013	3	833,364	833,364	833,364				909,195		3,864,755	3,352,393	0.423
000000-00-0	1922 EIG Energy Fund XVI LP		Washington	DC	EIG Energy Fund XVI GP LLC		09/23/2013	3	29,072,576	29,072,576	29,072,576				3,860,587				1.034
000000-00-0	1924 KKR Asian Fund II LP		New York	NY	KKR Associates Asia II LP		10/04/2013	3							286,977		254,900		0.515
000000-00-0	1925 Black River Agriculture Fund 2 LP		Hopkins	MN	Black River Agriculture Fund 2 GP LP		10/16/2013	3	8,739,033	8,739,033	8,739,033				(2,972,027)				3.478
000000-00-0	1926 Mill City Fund II LP		Minneapolis	MN	Washburn II LP		10/30/2013	3	1,386,332	1,386,332	1,386,332				(356,555)				12.397
000000-00-0	1929 Oaktree Emerging Market Opportunities Fund LP		Los Angeles	CA	Oaktree Emerging Market Opp Fund GP LP		10/09/2013	11	1,272,784	1,272,784	1,272,784				(752,050)		1,320,630	4,875,000	9.242
000000-00-0	1932 Brookfield Infrastructure Fund II B LP		New York	NY	Brookfield Infrastructure Fund GP II LLC		11/19/2013	3	47,504,280	47,504,280	47,504,280				3,127,916		2,546,947		2.941
000000-00-0	1933 CID Capital Opportunity Fund II		Indianapolis	IN	CID Capital Opportunity Partners II LLC		11/22/2013	3	2,287,427	2,287,427	2,287,427				179,664		109,997	562,521	1.491
000000-00-0	1934 Long River Ventures III LP		Amherst	MA	Long River Capital Partners III LLC		11/22/2013	3	6,549,733	6,549,733	6,549,733				368,974		1,055,026	3,700,000	29.762
000000-00-0	1935 Riverside Capital Appreciation Fund VI-A LP		New York	NY	RCAF VI Associates LP		12/06/2013	3	4,836,898	4,836,898	4,836,898				363,317		452,745		1.829
000000-00-0	1937 Nexxus Capital Private Equity Fund VI LP		Toronto	CAN	Nexxus Capital VI General Partner LLC		11/21/2013	3	15,945,080	15,945,080	15,945,080				3,107,990		1,872,477		8.315
000000-00-0	1938 Guardian Capital Partners Fund II LP		Wayne	PA	Guardian Capital Partners II GP LP		12/12/2013	3	2,767,952	2,767,952	2,767,952				740,497		13,428		4.612
000000-00-0	1941 Brookfield Timberlands Fund V LP		New York	NY	Brookfield Timberlands Fund V GP LLC		12/23/2013	3	1,864,126	1,864,126	1,864,126				204,376		135,812		9.980
000000-00-0	1942 Palladium Equity Partners IV LP		New York	NY	Palladium Equity Partners IV LLC		12/20/2013	3	1,518,677	1,518,677	1,518,677				367,975		344,136		3.480
000000-00-0	1945 DFW Capital Partners IV LP		Teaneck	NJ	DFW IV-GP LLC		12/19/2013	3							288,283		64,402		7.231
000000-00-0	1947 Kayne Saybrook Municipal Opportunity Fund LP		Los Angeles	CA	Kayne Municipal Opportunity Advisors LLC		12/20/2013	3	1,302,257	1,302,257	1,302,257				(598,443)		(413,054)		14.083
000000-00-0	1948 Sterling Investment Partners III LP		Westport	CT	Sterling Investment Partner Mgmt III LLC		01/03/2014	3	2,670,791	2,670,791	2,670,791				960,072		809,091	1,667,507	13.281
000000-00-0	1949 Landmark Equity Partners XV LP		Simsbury	CT	Landmark Partners XV LLC		01/06/2014	3	8,329,629	8,329,629	8,329,629				1,748,610		1,748,610		0.642
000000-00-0	1951 Greenstone Resources LP		St Peter Port	GBR	Greenstone Management Limited		01/13/2014	3	2,292,917	2,292,917	2,292,917				(168,350)		465,769		1.887
000000-00-0	1952 The Energy & Minerals Group Fund III LP		Dallas	TX	EMG Fund III GP LP		01/16/2014	3	41,298,220	41,298,220	41,298,220				1,967,319			2,550,253	1.425
000000-00-0	1954 Clayton Dubilier & Rice Fund IX LP		New York	NY	CD&R Associates IX LP		01/23/2014	3	3,598,812	3,598,812	3,598,812				42,758		(287,272)	641,080	0.327
000000-00-0	1956 Blue Point Capital Partners III LP		Cleveland	OH	BPCP Management III LP		01/16/2014	3	2,255,330	2,255,330	2,255,330				46,236		10,077		3.365
000000-00-0	1957 Tower Arch Partners I LP		Draper	UT	Tower Arch Partners I GP LLC		01/22/2014	3	1,759,269	1,759,269	1,759,269				770,411		556,657	874,798	1.698
000000-00-0	1958 Actis Africa 4 LP		London	GBR	Actis GP LLP		01/24/2014	3	2,306,000	2,306,000	2,306,000				321,629		205,132		2.604
000000-00-0	1959 Blue Sea Capital Fund I LP		West Palm Beach	FL	Blue Sea Capital Management I LP		01/29/2014	3	1,739,760	1,739,760	1,739,760				490,620		336,038	467,034	3.095
000000-00-0	1962 EMG White Star Co-Investment LP		Dallas	TX	EMG White Star Co-Investment GP LLC		02/06/2014	3	10,928,089	10,928,089	10,928,089				(1,552,024)				9.095
000000-00-0	1963 Harbert Power Fund V LLC		Birmingham	AL	Harbert Power MM V LLC		02/10/2014	3	6,060,481	6,060,481	6,060,481				1,045,607		764,213		1.564
000000-00-0	1964 HCl Equity Partners IV LP		Washington	DC	HCl Management IV LP		03/13/2014	3									11,988		1.240
000000-00-0	1968 Riverview Strategic Opportunities Fund I LP		Chicago	IL	SOF I GP Ltd		04/04/2014	3	2,168,775	2,168,775	2,168,775				738,225		786,836	1,516,677	10.544
000000-00-0	1973 GFL Holdings LLC		New Haven	CT	Barings LLC		04/14/2014	3	28,978,730	28,978,730	28,978,730				2,240,574		43,228		8.644
000000-00-0	1975 TDR Capital III B LP		London	GBR	TDR Capital General Partner III LP		05/02/2014	3	15,805,932	15,805,932	15,805,932				4,661,419		(1,131,615)	6,878,920	1.754
000000-00-0	1976 River Cities Capital Fund V LP		Cincinnati	OH	River Cities Management V LLC		05/07/2014	3	22,741,723	22,741,723	22,741,723				1,987,485		660,000		13.419
000000-00-0	1977 GenNx360 Capital Partners II LP		New York	NY	GenNx360 GP II LLC		05/12/2014	3	2,095,347	2,095,347	2,095,347				241,129		239,300	214,918	1.738
000000-00-0	1978 TPG Asia VI LP		Fort Worth	TX	TPG Asia GenPar VI LP		05/13/2014	3	4,174,715	4,174,715	4,174,715				573,736		515,912	1,045,397	2.801
000000-00-0	1984 Money Mailer Equity LLC		New York	NY	MCP Opportunity Management II LLC		06/30/2014	3											13.464
000000-00-0	1985 Caltius Equity Partners III LP		Los Angeles	CA	Caltius GPE III LP		07/01/2014	3	2,333,082	2,333,082	2,333,082				543,702		528,794	522,710	2.047

E07.3

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20		
			City	State								Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost				Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership
000000-00-0	1986 WestView Capital Partners III LP		Boston	MA	WestView Capital Management III LP		09/23/2014	3	4,372,223	4,372,223	4,372,223	885,022					2,874,836	612,137	3.419		
000000-00-0	1987 Starwood Energy Infrastructure Fund II		Greenwich	CT	SEI Management II LP		06/25/2014	3	17,813,255	17,813,255	17,813,255	1,224,932					1,753,572	6,500,000	13.955		
000000-00-0	1988 Pacific Equity Partners Fund V LP		St Helier	JEY	Pacific Equity Partners Fund V GP Ltd		02/13/2015	3	5,129,082	5,129,082	5,129,082	1,904,707			(472,592)		903,514	3,427,286	0.892		
000000-00-0	1989 Lake AIV LP		St Peter Port	GBR	Basalt Infrastructure Partners GP Ltd		08/12/2014	3	3,640,431	3,640,431	3,640,431	(53,875)					102,119		12.571		
000000-00-0	1990 Warburg Pincus Energy LP		New York	NY	Warburg Pincus Energy GP LP		07/25/2014	3	32,302,576	32,302,576	32,302,576	6,084,413					1,318,042	15,570,000	6.776		
000000-00-0	1991 SunE Dessie Equity Holdings LLC		Beltsville	MD	SunEdison NC Utility, LLC		11/05/2014	3	7,950,139	7,950,139	7,950,139								69.730		
000000-00-0	1993 Carlyle Power Partners II LP		Washington	DC	CPP II General Partner LP		09/29/2014	3	20,300,923	20,300,923	20,300,923	3,236,630					2,544,129	31,257,036	6.438		
000000-00-0	1998 Exponent Private Equity Partners III LP		London	GBR	Exponent Private Equity Ptnrs GP III LP		02/18/2015	3	22,674,156	22,674,156	22,674,156	4,281,126			(1,541,034)		1,201,542		1.513		
000000-00-0	2000 Polytex Holdings LLC		Los Angeles	CA	Callius Equity Partners		07/31/2014	3	315,725	315,725	315,725								1.303		
000000-00-0	2001 Avantech Testing Services LLC		Chicago	IL	LaSalle Capital Group IIA LP		07/31/2014	3	922,145	922,145	922,145								5.573		
000000-00-0	2005 Turnbridge Capital Partners I LP		Washington	DC	Turnbridge Capital GP I LLC		10/16/2014	3	6,148,022	6,148,022	6,148,022	1,380,684						1,304,301		9.700	
000000-00-0	2006 Citree Holdings 1 LLC		Suwanee	GA	Barings LLC		08/25/2014	2	1,283,161	1,283,161	1,283,161	134,548								0.511	
000000-00-0	2007 EOG Topco Holdings LLC		San Francisco	CA	Gryphon GenPar III LP		11/19/2014	3	453,708	453,708	453,708	50,834								15.240	
000000-00-0	2014 GoldenTree Distressed Fund 2014 LP		New York	NY	GoldenTree Distressed Fund 2014 GP LLC		11/10/2014	11	11,757,678	11,757,678	11,757,678	3,174,885					2,000,000	645,611		3.510	
000000-00-0	2016 DCCP Peterson Party Holding LLC		Boston	MA	DCCP Peterson Party Holding LLC		11/20/2014	3	1,514,172	851,509	1,514,172									15.105	
000000-00-0	2019 CPP II Southeast Gen Coinvestment LP		Washington	DC	CPP II General Partner LP		11/25/2014	3												4.206	
000000-00-0	2020 Kayne Private Energy Income Fund LP		Houston	CA	KPEIF GP LLC		04/01/2016	3	36,854,055	36,854,055	36,854,055	5,692,761					4,733,350	8,470,000			
000000-00-0	2021 Asia Alt Private Equity Ptr IV LP		San Francisco	CA	Asia Alt Private Equity Partners IV LLC		11/28/2014	1				2,168,334					724,358			3.120	
000000-00-0	2024 Tennenbaum Special Situations Fund IX LLC		Santa Monica	CA	Tennenbaum Special Situations IX LLC		07/10/2015	13	17,103,942	17,103,942	17,103,942	954,436					1,000,072	6,359,172		5.964	
000000-00-0	2025 Insight Venture Partners IX LP		New York	NY	Insight Venture Associates IX LP		03/24/2015	3	60,659,383	60,659,383	60,659,383	18,941,113					3,208,916	1,974,873		1.781	
000000-00-0	2026 HQ Acquisition Holdings LLC		North Salt Lake	UT	Blue Point Capital Partners		12/19/2014	3	718,778	926,737	718,778									1.254	
000000-00-0	2027 Fortistar Energy Recycling LLC		White Plains	NY	Fortistar LLC		12/18/2014	3				42,500					42,500			85.000	
000000-00-0	2031 Madison Industries Holdings LLC		Chicago	IL	Madison Industries Holdings LLC		11/06/2015	3	41,500,000	41,500,000	41,500,000	12,375,000						25,000,000		6.205	
000000-00-0	2032 Equis Asia Fund II LP		Grand Cayman	CYM	Equis Asia Fund II General Partner		01/15/2015	3	3,206,148	3,206,148	3,206,148	8,893,971					9,408,565	13,240,816		2.778	
000000-00-0	2033 Stone Arch Capital III LP		Minneapolis	MN	Stone Arch Capital Management III LP		09/08/2015	3	805,938	805,938	805,938	(7,212)					(4,390)	1,156,000		4.999	
000000-00-0	2035 TPHP Laurel Mountain LP		Houston	TX	TPH Partners II GP LP		01/23/2015	3												11.109	
000000-00-0	2036 1901 Partners LP		New York	NY	1901 Partners GP LLC		06/22/2015	3	14,836,059	14,836,059	14,836,059	1,239,812								2.626	
000000-00-0	2037 Hamilton Robison Capital Partners LP IV		Stamford	CT	Hamilton Robison Associates IV LLC		11/17/2015	3												14.346	
000000-00-0	2040 Newport HFP LLC		Irvine	CA	Pacific Alternative Asset Mgmt Co LLC		01/30/2015	13	10,267,325	10,267,325	10,267,325	989,920					4,347,325			88.000	
000000-00-0	2041 Dyal II US Investors LP		New York	NY	NB Dyal Associates II LP		01/09/2015	10	1,051,153	1,051,153	1,051,153	(154,217)							645,611		1.266
000000-00-0	2042 CCI Investor Holdings LLC		New York	NY	One Rock Capital Partner GP LLC		03/05/2015	3	(599,645)			166,250					100,593			1.776	
000000-00-0	2046 Master Cutlery Investment Company LLC		San Francisco	CA	Master Cutlery Investment Company		04/17/2015	3	2,790,149	2,790,149	2,790,149									18.880	
000000-00-0	2047 EnCap Energy Capital Fund X LP		Houston	TX	EnCap Energy Fund X GP LP		04/22/2015	3	25,170,132	25,170,132	25,170,132	980,386					980,386	8,028,965		0.486	
000000-00-0	2052 Agriculture Fund II LP		New York	NY	Agriculture Fund II GP LLC		01/20/2017	3	6,273,954	6,273,954	6,273,954	(1,185,000)						31,217,046		44.718	
000000-00-0	2053 Avenue Energy Opportunities Fund LP		Dover	DE	Avenue Capital		05/28/2015	3	6,682,920	6,682,920	6,682,920	1,402,484								1.840	
000000-00-0	2054 Blackstone Capital Partners VII LP		New York	NY	Blackstone Management Associates VII LP		10/17/2016	3	6,304,099	6,304,099	6,304,099	1,251,386					516,582	11,357,496		0.178	
000000-00-0	2059 iCON Infrastructure Partners III LP		St Peter Port	GBR	iCON GP III LLP		07/17/2015	3	20,317,021	20,317,021	20,317,021	1,851,768			(927,833)		1,922,026	8,960,118		3.138	
000000-00-0	2060 Gryphon Partners IV LP		San Francisco	CA	Gryphon GenPar IV LP		11/25/2015	3	6,238,562	6,238,562	6,238,562	2,119,321					3,078,446	453,399		2.808	
000000-00-0	2064 AEA Investors Small Business Fund III LP		New York	NY	AEA Investors SBF III Partners LP		03/24/2016	3	3,610,092	3,610,092	3,610,092	336,757							1,532,116		1.178
000000-00-0	2065 Aquiline Financials Services Fund III LP		New York	NY	Aquiline Cap Prtrs III GP (Offshore) Ltd		08/11/2015	3	2,587,351	2,587,351	2,587,351	1,289,561					1,216,434	2,578,979		1.569	
000000-00-0	2066 Oaktree Opportunities Fund XB LP		George Town	CYM	Oaktree GP		06/18/2018	11	6,202,803	6,202,803	6,202,803	(47,197)						43,750,000		43.000	
000000-00-0	2067 Pacific Private Equity Fund I LP		Newport Beach	CA	Pacific Private Equity I GP		07/10/2015	3	39,641	39,641	39,641	2,331,985					2,331,985			9.739	
000000-00-0	2071 Westminster Foods II LLC		Rutland	VT	LaSalle Capital Group II-A LP		08/03/2015	3	680,375	597,081	680,375									2.398	
000000-00-0	2073 Warburg Pincus Private Equity XII LP		New York	NY	Warburg Pincus XII LP		12/21/2015	3	30,987,306	30,987,306	30,987,306	3,879,294					1,171,988	11,720,000		0.880	
000000-00-0	2077 Gryphon Co-Invest Fund IV LP		San Francisco	CA	Gryphon GenPar IV LP		11/25/2015	3	558,280	558,280	558,280	241,142					326,568	44,603		5.120	
000000-00-0	2079 Saw Mill Capital Partners II LP		Briarcliff Manor	NY	Saw Mill Capital Associates II LP		04/18/2016	3				(57,663)					(29,980)			3.079	
000000-00-0	2080 Stonepeak Communications Partners LP		New York	NY	Stonepeak Associates LLC		11/09/2015	3	22,531,376	22,531,376	22,531,376	2,941,373							903,659		10.370
000000-00-0	2082 Team Drive-Away Holdings LLC		Indianapolis	IN	CID Capital Partners		10/15/2015	3	105,869	560,920	105,869									1.362	
000000-00-0	2084 JFL Equity Investors IV LP		Springfield	MA	JFL GP Investors IV LLC		03/15/2016	3												2.418	

E07.4

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20
			4	5								13	14	15	16	17			
CUSIP Identification	Name or Description	Code	City	State	Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost	Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership
000000-00-0	2085 Next Capital Fund III LP		Sydney	AUS.	Next Capital III Management Partners LP		11/02/2015	3	5,003,352	5,003,352	5,003,352	1,383,961			(528,752)	1,354,374	1,884,002	3.509	
000000-00-0	2088 RCF Netsertive LLC		Cincinnati	OH.	River Cities Management V LLC		11/06/2015	3										77.778	
000000-00-0	2090 Marathon CLO Equity Fund LP		New York	NY.	Marathon Risk Retention GP		11/10/2015	3	1,838,860	1,838,860	1,838,860	905,681				905,681		7.547	
000000-00-0	2091 NB Strategic Co-Investment Partners III LP		New York	NY.	NB Strat Co-Invest Assoc GP Ltd		01/28/2016	3	14,846,109	14,846,109	14,846,109	3,177,998				1,726,844	5,908,327	2.566	
000000-00-0	2092 Stonepeak Finland Co-Invest Holdings LP		New York	NY.	Stonepeak Associates II LLC		06/28/2016	3	11,949,005	11,949,005	11,949,005	1,880,565				1,257,552		12.417	
000000-00-0	2093 ASC Investors LP		Stamford	CT.	ASC Associates LLC		11/18/2015	3	61,735	17,035	61,735	(52,357)						1.409	
000000-00-0	2096 Agspring LP		Leawood	KS.	Agspring GP		12/15/2015	3	25,000,216	1,576,454	1,576,454			23,423,762				11.588	
000000-00-0	2099 Thompson Street Capital Partners IV LP		St Louis	MO.	Thompson Street Capital IV GP LP		01/25/2016	3				264,594				51,230		0.780	
000000-00-0	2100 AG Asia Realty Fund III LP		Camana Bay	CVM.	AG Asia III LLC		03/16/2016	3	27,083,080	27,083,080	27,083,080	3,673,816				3,673,816	1,875,000	3.858	
000000-00-0	2104 Ampersand 2014 LP		Wellesley	MA.	AMP 14 Management Company Limited Partne		02/03/2016	3	16,071,526	16,071,526	16,071,526	8,346,854				6,429,812	3,412,500	6.084	
000000-00-0	2105 Stonepeak Infrastructure Fund II LP		New York	NY.	Stonepeak Associates II LLC		02/12/2016	3	16,001,151	16,001,151	16,001,151	1,205,853				1,191,739		0.845	
000000-00-0	2106 FIMI Opportunity 6 LP		Tel Aviv	ISR.	FIMI 6 2016 Ltd		07/21/2016	3				16,000				(1,500)		0.972	
000000-00-0	2107 Terra Co-Investment LLC		Houston	TX.	KPEIF GP LLC		04/01/2016	3	8,105,681	8,105,681	8,105,681	2,973,514				2,941,221		6.667	
000000-00-0	2111 Blue Cloud Ventures II LP		New York	NY.	Blue Cloud Advisors II LLC		03/14/2016	3	11,502,322	11,502,322	11,502,322	1,032,560						29.647	
000000-00-0	2112 Greenstone Resources II LP		St Peter Port	CIV.	Greenstone Capital LLP		04/19/2016	3	9,104,188	9,104,188	9,104,188	(2,007,974)				940,479	14,756,505	7.774	
000000-00-0	2116 JFL-API Co-Invest Partners LP		Arlington	VA.	JFL GP Investors IV LLC		04/20/2016	3	4,774,899	5,110,588	4,774,899	1,944,089				2,032,661		4.988	
000000-00-0	2117 Industrial Growth Partners V LP		San Francisco	CA.	IGP Capital Partners V LLC		07/01/2016	3	2,281,446	2,281,446	2,281,446	298,143				157,974	3,248,295	1.063	
000000-00-0	2123 Brookfield Infrastructure Fund III-B LP		New York	NY.	Brookfield Infrastructure III GP LLC		07/07/2016	3	9,279,692	9,279,692	9,279,692	642,192				642,192	4,614,223	6.652	
000000-00-0	2124 Torquest Partners Fund (US) IV LP		Toronto	CAN.	Torquest Fund IV GP Inc		09/01/2016	3	6,215,555	6,215,555	6,215,555	492,088			(487,812)	4,831	9,354,371	5.044	
000000-00-0	2126 SPC Partners VI LP		San Francisco	CA.	SPC Management VI LLC		11/16/2017	3	984,183	984,183	984,183							0.980	
000000-00-0	2128 Pharma Investment Holdings LLC		Trevoze	PA.	Swander Pace Capital V LP		07/18/2016	3	1,338,093	1,560,785	1,338,093							1.607	
000000-00-0	2131 Kohlberg Investors VIII LP		Mount Kisco	NY.	Kohlberg Management VIII LCC		08/30/2017	3	2,731,876	2,731,876	2,731,876	264,608				205,989	4,283,274	4.756	
000000-00-0	2132 OneSmile HoldCo LLC		Irvine	CA.	Gryphon Partners		08/17/2016	3				(941,521)						6.132	
000000-00-0	2137 Providence Strategic Growth II LP		Providence	RI.	Providence Strat Growth Capital Ptrs LLC		12/07/2016	3	12,775,027	12,775,027	12,775,027	4,259,424				3,446,525	3,910,836	3.021	
000000-00-0	2141 PIMCO Corporate Opportunities Fund II LP		Newport Beach	CA.	PIMCO GP XV, LLC		08/31/2016	11	13,904,831		13,904,831	1,733,616					15,509,250	3.379	
000000-00-0	2142 ASM SIP LP		New Haven	CT.	WDCRK SIP Cayman Ltd		10/01/2016	3	124,660	124,660	124,660	62,329				41,142		13.162	
000000-00-0	2143 AMERRA Agri Fund LP		New York	NY.	AMERRA Capital GP LLC		10/01/2016	3	152,548	152,548	152,548	(71,253)						2.605	
000000-00-0	2144 Aviation Holdings I LP		New York	NY.	WDCRK SIP Cayman Ltd		10/01/2016	3	110,452	110,452	110,452	(30,451)				2,423		6.557	
000000-00-0	2145 Delta-V Capital 2011 LP		Boulder	CO.	Delta-V Capital 2011 Holdings LP		10/01/2016	3	153,380	153,380	153,380	143,828				116,809		2.480	
000000-00-0	2152 WC Aircraft Holdings US LLC		New Haven	CT.	Lakewater LLC		10/01/2016	3	75,901	75,901	75,901	125,693				48,802		11.483	
000000-00-0	2157 Del Real Holdco LLC		New York	NY.	Palladium Equity Partners IV LLC		10/07/2016	3	1,071,777	675,850	1,071,777							0.619	
286610-10-3	2158 Elite Sportsweat Holding LLC		Reading	PA.	Riverside Company		10/14/2016	3	498,357	135,451	498,357							0.480	
000000-00-0	2160 PSG PS Co-Investors LP		Providence	RI.	PSG PS GP LLC		10/14/2016	3	25,634,794	25,634,794	25,634,794	9,303,502					5,965,014	7.212	
000000-00-0	2161 Noronha Co-Invest LLC		New York	NY.	Brookfield Asset Management Inc		03/31/2017	3	8,865,547	8,865,547	8,865,547	1,045,082				1,133,621		3.571	
000000-00-0	2167 Incline Equity Partners IV LP		Pittsburgh	PA.	Incline GP IV LP		08/15/2017	3	1,016,017	1,016,017	1,016,017	74,748					2,520,128	0.850	
000000-00-0	2168 Summa Equity Fund I No. 1 AB		Stockholm	SWE.	Summa Equity AB		02/28/2017	3	10,561,535	10,561,535	10,561,535	2,846,993			(643,251)	256,997	5,701,745	2.632	
000000-00-0	2172 EnCap Energy Capital Fund XI LP		Houston	TX.	EnCap Energy Fund XI GP LP		07/17/2017	3	2,608,993	2,608,993	2,608,993						26,447,016	0.431	
000000-00-0	2173 AACP China Growth Investors VIII LP		San Francisco	CA.	Asia Alternatives GP Sidecar LLC		12/29/2016	13				(56,772)						28.563	
000000-00-0	2176 SRS Equity Holdings 2 LLC		San Francisco	CA.	SR Smith		03/27/2017	3	1,820,870	2,745,355	1,820,870							27.630	
000000-00-0	2177 One Rock Capital Partners II LP		New York	NY.	One Rock Capital Partners II GP LP		10/30/2017	3	1,464,509	1,464,509	1,464,509	(69,350)					3,467,438	0.526	
000000-00-0	2178 Haddington Energy Partners III LP		Houston	TX.	Haddington Ventures III LLC		03/31/2017	3	9,547,687	9,547,687	9,547,687	130,780			(948)			6.046	
000000-00-0	2179 IACX Co-Invest LP		Houston	TX.	IACX Co-Invest GP LLC		03/31/2017	3	4,463,008	4,463,008	4,463,008	588,439						3.446	
000000-00-0	2182 River Cities Capital Fund VI LP		Cincinnati	OH.	River Cities Management VI LLC		02/15/2018	3	2,158,851	2,158,851	2,158,851	(441,149)					17,400,000	10.000	
000000-00-0	2184 JFL-Razor LLC		Arlington	VA.	JF Lehman & Co		04/28/2017	3	570,837	386,584	570,837					199	4,369,265	0.017	
000000-00-0	2186 Trinity Hunt Partners V LP		Dallas	TX.	THPV LP		01/17/2018	3	(27,396)		(27,396)	(115,089)						15.000	
000000-00-0	2189 Blue Cloud Ventures III LP		New York	NY.	Blue Cloud Advisors III LLC		06/26/2017	3	5,469,443	5,469,443	5,469,443	440,028						0.159	
000000-00-0	2190 PRES New Equity LLC		Houston	TX.	Permian Resources		05/01/2017	3	1,485,616		1,485,616							2.000	
000000-00-0	2192 A&M Capital Opportunities Fund GP A&M		Greenwich	CT.	A&M Capital Opportunities Fund GP A&M		09/08/2017	3	929,777	929,777	929,777	372,457					1,710,152	6.452	
000000-00-0	2193 KKR Asian III LP		New York	NY.	KKR Associates Asia III SCS		02/12/2018	3	920,431	920,431	920,431	45,384					4,124,953	1.553	
000000-00-0	2204 Uno Co-Invest LP		New York	NY.	Uno Co-Invest GP LLC		07/13/2017	3	5,000,000	5,000,000	5,000,000	(1,811)						1.100	
000000-00-0	2205 MidOcean Partners V LP		Dover	DE.	MidOcean Associates V LP		04/25/2018	3	2,767,283	2,767,283	2,767,283	(16,187)				1,944	1,822,178	1.100	

E07.5

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20
			4	5								13	14	15	16	17			
CUSIP Identification	Name or Description	Code	City	State	Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost	Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership
000000-00-0	2206 Avenue Energy Opportunities Fund II LP		New York	NY	Avenue Energy Opportunities Ptr II LLC		09/19/2017	3	11,889,066	11,889,066	11,889,066	1,119,452				1,119,452	965,986	2.000	
000000-00-0	2208 Riverside Europe Fund V LP		New York	NY	REF V Associates LP		10/27/2017	3	14,949,498	14,949,498	14,949,498	3,113,692			(604,628)		5,295,403	4.203	
000000-00-0	2212 Asia Alternatives Capital Partners V LP		Wilmington	DE	Asia Alternatives Capital Partners V GP		08/22/2017	1	1,519,890	1,519,890	1,519,890	(91,179)					20,889,284	2.308	
000000-00-0	2221 HarbourVest Asia Pacific Fund VIII		George town	CVM	HIPEP VIII Associates LP		10/11/2017	3	818,554	818,554	818,554	147,020				123,483	3,280,000	3.330	
000000-00-0	2227 Reelcraft Holdings LLC		Chicago	IL	Madison Industries		11/13/2017	3	582,259	582,259	582,259							6.491	
000000-00-0	2231 Navis Asia Fund VII LP		Grand Cayman	CVM	Navis Asia Fund VII GP LTD		03/29/2018	3	8,167,040	8,167,040	8,167,040	1,987,607				892,714	1,563,869	0.500	
000000-00-0	2232 BrandRep Investment Holding Company LLC		Boca Raton	FL	Millpond BrandRep Investment Holding LLC		12/18/2017	3	5,000,000	5,000,000	5,000,000							57.410	
000000-00-0	2242 Gryphon Partners V LP		San Francisco	CA	Gryphon GenPar V LP		08/29/2018	3	5,490,959	5,490,959	5,490,959	(43,371)					8,453,168	1.000	
000000-00-0	2244 Hidden Harbor Capital Partners I LP		Fort Lauderdale	FL	Hidden Harbor Capital Partners GP I LP		02/08/2018	3	4,109,839	4,109,839	4,109,839	460,689			(49,906)		3,350,850	2.800	
000000-00-0	2246 ISQ Global Infrastructure Fund II LP		New York	NY	ISQ Global Fund II GP LLC		06/07/2018	3	3,756,323	3,756,323	3,756,323	(108,838)					11,127,888	1.500	
000000-00-0	2247 WestView Capital Partners IV LP		Boston	MA	WestView CapitalManagement LP		10/10/2018	3	244,286	244,286	244,286						1,755,714	0.290	
000000-00-0	2249 Capvis Equity V LP		Chanel Island	JEY	Capvis General Partner V Ltd		05/24/2018	3	3,240,013	3,240,013	3,240,013	(197,167)			(22,522)		13,742,400	1.500	
000000-00-0	2255 Providence Strategic Growth III LP		Providence	RI	Providence Strategic Growth III GP LP		07/26/2018	3	1,989,447	1,989,447	1,989,447	336,155					6,392,030	0.933	
000000-00-0	2258 Range Investor Holdings LLC		New York	NY	One Rock Capital Partners III GP LLC		02/21/2018	3	2,452,050	2,452,050	2,452,050							1.022	
000000-00-0	2259 ACP Fund I LP		Grand Cayman	CVM	Argenteum Creek GP LLC		04/01/2018	12	22,506,767	22,506,767	22,506,767	415,380					2,908,613	4.000	
000000-00-0	2261 Ampersand 2018 Limited Partnership		Wellesley	MA	AMP-18 Management Company LP		10/29/2018	3	417,374	417,374	417,374	(7,626)					4,575,000	1.110	
000000-00-0	2262 Ex Vivo Sponsor LP		San Francisco	CA	Ex Vivo Sponsor GP LLC		03/15/2018	3	5,000,000	5,000,000	5,000,000					(251,111)		1.848	
000000-00-0	2264 Riverside Europe Fund V Co-Investment IV LP		New York	NY	REF V GP LLC		04/11/2018	3	6,871,200	6,871,200	6,871,200				(553,800)	(14,278)		99.900	
000000-00-0	2267 SMC Contrax Holdings LLC		Briarcliff Manor	NY	Saw Mill Capital		03/09/2018	3	866,050	310,945	866,050							2.064	
000000-00-0	2269 SCP ESP LLC		Dover	DE	Massachusetts Mutual Life Ins Co		04/04/2018	3	931,993	931,993	931,993							3.330	
000000-00-0	2270 Levine Leichtman Capital Partners VI		Wilmington	DE	LLGP Partners VI GP LP		04/19/2018	3	3,767,239	3,767,239	3,767,239	(61,015)				3,192	16,252,177	0.909	
000000-00-0	2291 Pamlico VPP Holdings LLC		King of Prussia	PA	Veterinary Practice Partners LLC		08/14/2018	3	869,251	869,251	869,251							1.700	
000000-00-0	2292 FFP Group Holdings LP		New York	NY	FFP GP LLC		09/04/2018	3	9,000,000	9,000,000	9,000,000							1.710	
000000-00-0	2293 OnyxPoint Permian Equity III LP		New York	NY	OnyxPoint Global Management LP		09/20/2018	3	20,272,680	20,272,680	20,272,680	5,149,978						3.000	
000000-00-0	2300 LAC Acquisitions LLC		Boston	MA	LAC Intermediate LLC		10/01/2018	3	276,544	276,544	276,544							0.640	
000000-00-0	2309 Yunfeng Fund III LP		George Town	CVM	Pilot Growth Equity Partners II LLC		11/30/2018	3	4,589,099	4,589,099	4,589,099						5,410,901	40.000	
000000-00-0	2312 Pilot Growth Equity Fund II LP		San Francisco	CA	Pilot Growth Equity Partners II LLC		11/30/2018	3	7,108,019	7,108,019	7,108,019							6.670	
1599999	Joint Venture Interests - Common Stock - Unaffiliated								2,006,542,095	1,993,464,842	1,950,333,536	295,173,779		24,227,137	(6,776,733)	212,888,552	528,472,774	XXX	
000000-00-0	1316 Braemar Energy Ventures LP		New York	NY	Braemar Power & Comms Management LP		01/09/2003	3	44,358,257	44,358,257	44,358,257	(2,665,107)						80.975	
000000-00-0	1366 MassMutual Asset Finance LLC		Foxborough	MA	Wimark Manager LLC		02/23/2007	3	386,134,918	386,134,918	386,134,918	35,885,167						99.588	
000000-00-0	1428 Jefferies Finance LLC		New York	NY	Jefferies Finance LLC		03/30/2005	1	694,777,700	694,777,700	694,777,700	98,615,000				40,000,000	55,222,262	50.000	
000000-00-0	1434 Babson Capital Loan Strategies Fund LP		Charlotte	NC	Loan Strategies Management LLC		04/06/2005	10	9,256,733	9,256,733	9,256,733	(1,353,854)						75.791	
000000-00-0	1466 Wood Creek Venture Fund LLC		Norfolk	CT	Norfolk Management Group LLC		09/21/2005	10	4,182,975	4,182,975	4,182,975	228,650					328,920	40.000	
891866-10-7	1470 Tower Square Capital Partners II LP		Springfield	MA	Mezzco II LLC		09/30/2005	2	1,458,729	1,458,729	1,458,729	671,446					671,446	22.355	
891866-10-7	1471 Tower Square Capital Partners II-A LP		Springfield	MA	Mezzco II LLC		09/30/2005	2	4,005,305	4,005,305	4,005,305	903,387					903,387	85.000	
000000-00-0	1497 Baring Investment Series LLC		Boston	MA	Baring Asset Management LLC		03/28/2006	5	20,949,069	20,949,069	20,949,069	(6,068,346)						100.000	
000000-00-0	1558 Great Lakes II LLC		Springfield	MA	Barings LLC		12/14/2006	5	1,295,411	1,295,411	1,295,411	362,735					488,015	11.220	
000000-00-0	1561 MML Private Equity Fund Investor LLC		London	GBR	Massachusetts Mutual Life Ins Co		12/29/2006	3	192,952,655	192,952,655	192,952,655	1,485,848				11,189,081	106,656,884	100.000	
000000-00-0	1597 Benton Street Partners I LP		Springfield	MA	Benton Street Advisors Inc		10/31/2008	3	690,118	690,118	690,118				(11,033)			2.030	
000000-00-0	1598 Benton Street Partners II LP		Springfield	MA	Benton Street Advisors Inc		12/01/2014	3	976,163	976,163	976,163							36.384	
000000-00-0	1611 Somerset Special Opportunities Fund LP		Boston	MA	Somerset Special Opportunities Mgmt LLC		07/31/2007	7	4,806,668	4,806,668	4,806,668	406,181						58.975	
891876-10-6	1690 Tower Square Capital Partners III LP		Springfield	MA	Mezzco III LLC		07/15/2008	2									17,209,896	16.182	
000000-00-0	1691 Tower Square Capital Partners III A LP		Springfield	MA	Mezzco III LLC		07/15/2008	2	101,029,770	101,029,770	101,029,770	998,686						94.482	
55326#-10-7	1814 MML Mezzanine Investor LLC		London	GBR	Massachusetts Mutual Life Ins Co		12/22/2005	2	675,549	675,549	675,549	4,106				2,141,729		100.000	
000000-00-0	1815 MML Mezzanine Investor I LLC		London	GBR	Massachusetts Mutual Life Ins Co		11/14/2008	2	175,207	175,207	175,207	(12,744)						100.000	
55327#-10-8	1818 MML Mezzanine Investor II LLC		London	GBR	Massachusetts Mutual Life Ins Co		04/23/2008	2	8,198,971	8,198,971	8,198,971	1,150,664					1,450,454	100.000	
000000-00-0	1861 US Pharmaceutical Holdings I LLC		New Haven	CT	Barings LLC		08/22/2012	3	2,570,224	2,570,224	2,570,224	(519,925)						32.609	
000000-00-0	1888 Great Lakes III LP		Springfield	MA	Great Lakes III GP LLC		02/19/2013	3	17,031,805	17,031,805	17,031,805	1,751,934				3,339,102		62.351	
000000-00-0	1896 MassMutual Retirement Services LLC		Wilmington	DE	Massachusetts Mutual Life Ins Co		03/31/2013	3	33,493,429	33,493,429	33,493,429	21,834,491						100.000	
000000-00-0	1916 Infinity SCD Ltd		Milton Keynes	GBR	Barings LLC		07/30/2013	3	2,896,976	2,896,976	2,896,976					702,143		4.156	
000000-00-0	1980 Red Lake Ventures LLC		New Haven	CT	Red Lake Ventures LLC		05/08/2014	2	13,691,389	13,691,389	13,691,389	(1,643,985)						31.515	
000000-00-0	1999 Teaktree Acquisition LLC		New Haven	CT	Barings LLC		07/02/2014	2										14.706	

E07.6

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20									
			4 City	5 State								13	14	15	16	17												
CUSIP Identification	Name or Description	Code	City	State	Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost	Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership									
000000-00-0	2002 MM Private Equity Intercontinental LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		07/01/2014	3											100.000									
000000-00-0	2028 MML Special Situations Investor LLC		Springfield	MA	Barings LLC		12/19/2014	3	53,005,356	53,005,356	53,005,356	5,962,621					17,937,425		100.000									
000000-00-0	2034 Pioneers Gate LLC		Wilmington	DE	20 Gates Management LLC		01/26/2015	13	285,696	285,696	285,696	39,754						299,373,168	88.000									
000000-00-0	2043 Milestone Acquisition Holding LLC		New Haven	CT	Barings LLC		02/24/2015	2	40,748	40,748	40,748	7,553					1,595		19.379									
000000-00-0	2072 Tamiami Citrus LLC		New Haven	CT	Barings LLC		09/11/2015	3	8,388,805	8,388,805	8,388,805	(612,399)						2,121,216	16.170									
000000-00-0	2075 VGS Acquisition Holding LLC		New Haven	CT	Barings LLC		08/21/2015	2											33.333									
000000-00-0	2094 EIP Holdings I LLC		New Haven	CT	Barings LLC		11/05/2015	3	30,846,994	30,846,994	30,846,994	2,942,589						8,984,234	28.966									
000000-00-0	2097 US Pharmaceutical Holdings II LLC		New Haven	CT	Barings LLC		12/02/2015	1	10,015,274	10,015,274	10,015,274	(984,026)							42.380									
000000-00-0	2110 Barings CLO Investment Partners LP		Springfield	MA	Babson CLO Investment Partners GP LLC		10/07/2016	3	53,019,764	53,019,764	53,019,764	6,592,319					3,908,316		99.305									
000000-00-0	2127 Chassis Acquisition Holding LLC		New Haven	CT	Barings LLC		07/21/2016	3	32,591,949	32,591,949	32,591,949	2,726,655							30.000									
000000-00-0	2163 GRA Aircraft Holdings LLC		New Haven	CT	Barings LLC		11/14/2016	3	19,317,308	19,317,308	19,317,308	599,322					480,000	1,200,000	40.000									
000000-00-0	2164 Barings Global Energy Infrastructure Fund I LP		Springfield	MA	Barings Global Energy Infrastructure Adv		12/05/2016	3	115,182,130	115,182,130	115,182,130	15,352,363					5,706,215		96.852									
000000-00-0	2166 Barings North American Private Loan Fund LP		Springfield	MA	Barings LLC		01/03/2017	3	27,141,849	27,141,849	27,141,849	1,505,126					1,817,641	22,500,000	45.056									
000000-00-0	2197 Insurance Road LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		06/28/2017	3	138,773,938	138,773,938	138,773,938	173,176,085					300,500,000		100.000									
000000-00-0	2224 Barings Global Special Situations Credit 3		Springfield	MA	Barings LLC		01/11/2018	3	45,615,234	45,615,234	45,615,234	2,400,244					(103,813)		100.000									
000000-00-0	2252 Barings Global Real Assets Fund LP		Charlotte	NC	Barings Global Real Assets Fund GP LLC		02/28/2018	3	34,012,906	34,012,906	34,012,906	3,133,242					3,133,242	23,455,841	18.330									
367648-10-8	2275 Gateway Mezzanine Partners I LP		Springfield	MA	Mezzco Australia LLC		03/28/2011	2	728,235	728,235	728,235	(12,143,622)				(98,430)	21,407		62.296									
000000-00-0	2280 Aland Royalty Holdings LP		Houston	TX	Barings LLC		05/25/2018	3	13,776,532	13,776,532	13,776,532	74,312					74,312	66,727	25.000									
000000-00-0	2319 MassMutual International LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		12/31/2018	3	997,506,405	(4)	997,506,405	(336,212,530)							100.000									
1699999. Joint Venture Interests - Common Stock - Affiliated																												
000000-00-0	1256 Carlyle Realty Partners III LP		Washington	DC	Carlyle Realty III LP		03/13/2001	3	4,590,032	4,590,032	4,590,032	163,424					2,049,463		19.065									
000000-00-0	1368 Westbrook Real Estate Partners V LP		Palm Beach Gardens	FL	Westbrook Realty Management LLC		10/05/2004	3	2,192,011	2,192,011	2,192,011	(1,609)					(18,801)	973,151	1.791									
000000-00-0	1400 Legacy Partners Realty Fund I LLC		Foster City	CA	Legacy Partners Commercial Investment I		12/27/2004	3	155,731	155,731	155,731	366,844					2,591,077		3.016									
000000-00-0	1436 The Pradium Fund VI LP		New York	NY	TPF VI GP LLC		04/15/2005	3	14,025	14,025	14,025	(2,401)					857	1,052,536	2.200									
000000-00-0	1449 Carlyle Realty Partners IV LP		Washington	DC	Carlyle Realty IV LP		07/01/2005	3	3,966,493	3,966,493	3,966,493	(41,479)					800,000	453,630	8.441									
000000-00-0	1461 Manhattan Valley Fund LP		New York	NY	Manhattan Conversion Fund GP		08/26/2005	3	31,340	31,340	31,340	(1,944)						255,215	8.579									
000000-00-0	1472 Rockpoint Real Estate Fund II LP		Dallas	TX	Rockpoint Group LLC		09/29/2005	3	371,409	371,409	371,409	11,352					(1,064)		0.587									
000000-00-0	1498 Crossharbor Institutional Partners LP		Boston	MA	Crossharbor Institutional Partners GP LP		03/29/2006	3	6,384,719	6,384,719	6,384,719	4,485,537					2,974,933		5.622									
000000-00-0	1499 CH MM Denton LLC		Boston	MA	CrossHarbor Institutional Partners LP		03/30/2006	3	123,964	123,964	123,964	403,757							19.327									
000000-00-0	1500 Legacy Partners Realty Fund II LLC		Foster City	CA	Legacy Partners Commercial LLC		04/13/2006	3	53,612	53,612	53,612	(33,899)					15,708		0.723									
000000-00-0	1507 Westbrook Real Estate Fund VI LP		Palm Beach Gardens	FL	Westbrook Realty Management VI LLC		05/10/2006	2	2,278,341	2,278,341	2,278,341	(315)					95,816	52,933	1.130									
000000-00-0	1552 One Newark Center Associates LP		New York	NY	CNC GP LLC		11/09/2006	3	2,492,473	2,492,473	2,492,473	196,914					37,855		48.781									
000000-00-0	1553 Buchanan Fund V LLC		Newport Beach	CA	Buchanan Mortgage Company V LLC		11/13/2006	3	51,990	51,990	51,990	(1,428)						1,000,000	2.423									
000000-00-0	1554 Carlyle Realty Partners V LP		Washington	DC	Carlyle Realty V LP		11/17/2006	3	2,914,020	2,914,020	2,914,020	103,535					218,107	2,210,229	0.699									
000000-00-0	1579 The Pradium Fund VII LP		New York	NY	TPF VII GP LLC		09/28/2007	3	1,432	1,432	1,432	58,537					59,778	151,667	0.105									
000000-00-0	1604 Rockpoint Real Estate Fund III LP		Dallas	TX	Rockpoint Real Estate Fund III GP LLC		09/28/2007	3	725,688	725,688	725,688	(60,621)					(21,869)	848,233	0.397									
000000-00-0	1627 Carmel Partners Investment Fund III LP		San Francisco	CA	Carmel Partners GP III LLC		05/01/2008	1	2,453,363	2,453,363	2,453,363	627,305					958,779	190,306	0.977									
000000-00-0	1644 Metropolitan Real Estate Partners International II LP		New York	NY	MREPInt2 LLC		12/19/2007	1	574,212	574,212	574,212	17,811							413,795	8.512								
000000-00-0	1649 Westbrook Real Estate Fund VII LP		Palm Beach Gardens	FL	Westbrook Realty Management VII LLC		12/04/2007	1	3,249,631	3,249,631	3,249,631	86,190					99,064	959,549	0.621									
000000-00-0	1661 Westbrook Real Estate Ptr VIII LP		Palm Beach Gardens	FL	Westbrook VIII LP		12/04/2007	3	2,016,191	2,016,191	2,016,191	223,953					198,749	862,112	0.468									
000000-00-0	1671 Hancock Timberland IX INC		Boston	MA	Hancock Timberland IX Inc		03/25/2008	1	13,816,295	13,816,295	13,816,295	392,379					(100)		5.929									
000000-00-0	2003 Perella Weinberg Real Estate Fund II		St. Helier	JEY	Perella Weinberg Real Estate Fund II GP		07/01/2014	3	10,261,841	10,261,841	10,261,841	1,639,473						(472,408)	2,787,503	0.760								
000000-00-0	2011 Harrison Street Real Estate Partners V LP		Chicago	IL	HSRE GP V LLC		10/08/2014	3	16,936,544	16,936,544	16,936,544	2,362,914					2,362,914	3,680,384	3.333									
000000-00-0	2122 Actis Africa Real Estate 3 LP		London	GBR	Actis GP LLP		06/06/2016	3	9,185,221	9,185,221	9,185,221	(40,818)						14,344,961	17.007									
000000-00-0	2154 GTIS Brazil Real Estate Fund III-D LP		New York	NY	GTIS Brazil Real Estate Fund III GP LP		03/02/2017	3	5,926,603	5,926,603	5,926,603	(1,244,242)						11,926,562	99.925									
000000-00-0	2202 Harrison Street Real Estate Partners VI LP		Chicago	IL	HSRE GP VI LLC		08/09/2017	3	10,408,076	10,408,076	10,408,076	171,335							3,915,000	1.765								

E07.7

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1	2	3	4 Location		6	7	8	9	10	11	12	Change in Book/Adjusted Carrying Value					18	19	20
			4 City	5 State								13	14	15	16	17			
CUSIP Identification	Name or Description	Code	City	State	Name of Vendor or General Partner	NAIC Designation and Administrative Symbol/Market Indicator	Date Originally Acquired	Type and Strategy	Actual Cost	Fair Value	Book/Adjusted Carrying Value Less Encumbrances	Unrealized Valuation Increase (Decrease)	Current Year's (Depreciation) or (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Capitalized Deferred Interest and Other	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Investment Income	Commitment for Additional Investment	Percentage of Ownership
000000-00-0	2203 Landmark Real Estate Partners VIII-A LP		Simsbury	CT	Landmark Real Estate Prtnrs VIII- GP LP		07/11/2017	3	62,013,054	62,013,054	62,013,054	1,656,796					9,725,529	24,960,909	5.875
000000-00-0	2220 Prime Storage Urban Opportunity Co-Invest LP		Saratoga Springs	NY	PRIME STORAGE FUND II GP LLC		10/03/2017	2	15,442,973	15,442,973	15,442,973	(48,998)					270,703	4,508,029	41.237
000000-00-0	2229 Landmark Real Estate Partners VIII LP		Simsbury	CT	Landmark Real Estate Prtnrs VIII- GP LP		12/21/2017	3	1,650,817	1,650,817	1,650,817	401,881					401,881	7,893,619	50.000
000000-00-0	2265 HSREP VI Co-Investment 3 LP		Chicago	IL	HSREP GP VI Co-Investment 3 LLC		05/04/2018	3	10,731,977	10,731,977	10,731,977	(70,655)						4,197,368	15.000
000000-00-0	2266 Harrison Street European Property Partners II LP		St. Helier	JEY	HSRE EUROPEAN PROPERTY GP II LTD		05/01/2018	10	3,519,792	3,519,792	3,519,792	(348,132)			(148,342)	(13,480)	13,463,080	3.750	
1799999	Joint Venture Interests - Real Estate - Unaffiliated								194,533,870	194,533,870	194,533,870	11,473,396			(620,750)	22,805,899	101,100,771	XXX	
000000-00-0	1349 CREA/PPC Venture LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		11/26/2003	3	47,095,776	52,251,648	52,251,648	21,901,100					21,901,100	93.444	
000000-00-0	1468 Fan Pier Development LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		09/28/2005	3	8,043,229	9,334,546	9,334,546	8,043,229					7,373,068	60.000	
000000-00-0	1556 Cornerstone Fort Pierce Development LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		01/05/2007	3	25,446,221	10,299,240	25,446,221	(21,781)						84.420	
000000-00-0	1595 Cornerstone Global Real Estate LP		Hartford	CT	Cornerstone Global REIT Corporation		06/04/2007	3	10,688,707	10,688,707	10,688,707	(98,421)					(397)	99.900	
000000-00-0	1625 Johnston Groves LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		04/01/2006	3	25,877,683	22,954,398	10,462,283	709,203					679,276	57.200	
000000-00-0	1630 Ygnatio Valley Funding		Hartford	CT	Massachusetts Mutual Life Ins Co		10/01/2009	3	260,152	260,152	260,152						407,078	90.000	
000000-00-0	1672 Fallon Cornerstone One MPD LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		03/13/2008	3	139,833,409	161,084,372	8,461,259	17,676,427						87.659	
000000-00-0	1760 Sawgrass Village Shopping Center LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		07/13/2010	3	34,835,990	49,010,220	34,835,990	1,440,523					2,799,977	84.211	
000000-00-0	1832 UK LIW Manager LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		02/28/2012	3	1,191,402	2,496,559	1,191,402	65,859			(75,334)		3,598	100.000	
000000-00-0	1833 UK LIW Member LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		02/28/2012	3	118,079,643	247,159,343	118,079,643	6,519,991			(7,458,068)		530,722	100.000	
000000-00-0	1845 Washington Gateway Apartments Venture LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		06/14/2012	3	87,992,160	81,762,068	30,704,400	1,054,926					444,931	91.524	
000000-00-0	1914 WeHo Domain LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		07/31/2013	3	53,716,865	46,301,466	18,112,865	976,920					(1,578)	77.400	
000000-00-0	1930 Farrington London Holdings LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		10/22/2013	3	130,392,740	138,336,480	53,304,932	680,596			(3,179,009)		(758)	94.500	
000000-00-0	1939 Cornerstone High Yield Venture LP		Hartford	CT	CHY Venture GP LLC		12/16/2013	3	11,011,227	11,011,227	11,011,227	(1,241,236)					1,274,532	26,342,445	49.737
000000-00-0	1950 Twenty Two Liberty LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		12/31/2013	3	8,672,352	15,674,750	8,672,352	422,817					1,774,500	65.000	
000000-00-0	2012 Waterloo London Holdings LLC		London	GBR	Massachusetts Mutual Life Ins Co		10/20/2014	3	55,904,818	87,310,100	55,904,818	(5,543,851)			74,445	(445)		100.000	
000000-00-0	2018 Barings Core Property Fund LP		Hartford	CT	Barings Core Property Fund GP LLC		11/01/2014	3										10.220	
000000-00-0	2044 Cornerstone Real Estate Fund X LP		Hartford	CT	CREF X GP LLC		04/30/2015	3	89,486,738	41,896,282	41,896,282	6,940,258					779,091	13,839,133	26.188
000000-00-0	2083 Barings/LAZ Parking Fund LP		Hartford	CT	Cornerstone LAZ Parking Fund GP LLC		10/23/2015	3	90,565,839	48,546,339	48,546,339	1,955,500					(547,473)	100.000	
000000-00-0	2101 50 Liberty LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		12/22/2015	3	5,246,557	12,539,800	5,246,557	7,080,663					42,496,340	59.077	
000000-00-0	2103 One Harbor Shore LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		12/22/2015	3	14,214,738	19,768,524	14,214,738	(392,682)						97.000	
000000-00-0	2109 CREA Madison Member LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		02/12/2016	3	297,906,013	252,542,190	115,705,833	(16,880,415)					(535)	90.000	
000000-00-0	2121 Barings Real Estate European Value Add I SCSp		Hartford	CT	Barings Value Add GP S a r l		10/24/2016	3	131,236,348	71,227,538	71,227,539	23,558,650					5,310,650	115,183,643	99.998
000000-00-0	2136 Budapest Strasse LLC		Hartford	MA	Massachusetts Mutual Life Ins Co		08/17/2016	3	71,888,490	23,011,995	23,011,995	375,649			(1,653,560)	(1,053)	16,936,873	100.000	
000000-00-0	2169 Landmark Manchester Holdings LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		02/01/2017	3	54,653,836	39,889,846	37,186,682	(1,759,949)			(253,789)	(445)	24,712,466	100.000	
000000-00-0	2174 Three PW Office Holding LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		02/17/2017	3	94,931,166	40,867,771	34,595,318	5,640,755						95.000	
000000-00-0	2188 Danville Riverwalk Venture LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		11/28/2017	3	27,388,300	28,286,981	27,388,300	(191,426)					(4,917)	7,053,221	100.000
000000-00-0	2200 CCB Monford Park LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		06/30/2017	3	37,064,228	29,259,895	24,287,323	(129,197)						94.000	
000000-00-0	2207 Calgary Railway Holding LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		07/26/2017	3	19,285,411	17,553,053	19,285,411	(370,502)			(263,519)	(401)		90.000	
000000-00-0	2226 Unna, Dortmund Holding LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		12/15/2017	3	108,791,742	43,869,749	47,337,447	949,299			(4,693,286)	948,716	(547,473)	100.000	
000000-00-0	2237 Portland 400 Sixth Manager LLC		Hartford	CT	Massachusetts Mutual Life Ins Co		11/22/2017	3	61,925,198	28,908,492	22,623,698	(3,113,788)				(937)		95.000	
000000-00-0	2241 Via Ceresio Milan LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		12/12/2017	3	10,372,932	5,809,525	(1,437,701)				426,636	(445)	4,351,760	100.000	
000000-00-0	2284 NoHo West Venture LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		08/04/2018	3	74,180,204	74,180,204	74,180,204	(12,500)				(800)		95.000	
000000-00-0	2285 PACO France Logistics LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		06/29/2018	3	19,992,718	7,968,118	7,968,118	(324,997)				(999,990)	(2,732)	100.000	
000000-00-0	2286 PACO France Logistics 2 LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		11/15/2018	3	95,318,737	31,393,592	31,393,592	(324,997)				(999,990)		100.000	
000000-00-0	2287 PACO France Logistics 3 LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		06/29/2018	3	394	394	394	(7)			(20)	(744)		100.000	
000000-00-0	2289 Cornbrook PRS Holdings LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		07/31/2018	3	14,865,286	14,865,286	14,865,286	(235,646)			(272,193)	(849)		100.000	
000000-00-0	2290 Spain Avalon Holding LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		08/08/2018	3	89,670,155	35,209,174	42,144,355	(1,743,200)			(1,192,042)	(481)		100.000	
000000-00-0	2310 MM Island Member LLC		San Diego	CA	MG Island Investor LLC		10/23/2018	3	37,102,778	11,599,857	11,599,857	(1,620,269)				(800)	6,507,274	49.000	
1899999	Joint Venture Interests - Real Estate - Affiliated								2,204,870,027	1,830,243,860	1,115,434,118	67,965,887			(20,539,720)	86,157,788	214,926,815	XXX	
000000-00-0	1003 Sargasso Mutual Insurance Company LTD		Hamilton	BMU	Johnson & Higgins (Bermuda) Limited		06/27/1986	1	1,736,770	1,736,770	1,736,770							6.162	
000000-00-0	1992 Ashmore Emerg Mktk Corp Priv Debt Fd SICAV-SIF		Wilmington	DE	Ashmore Investment Management Limited		05/14/2014	2	13,990,513	13,990,513	13,990,513	129,090					692,599	7,682,489	8.333
000000-00-0	1994 Venari Resources LLC		Addison	TX	Venari Resources Management LLC		07/30/2014	3	9,877,359	1,566,714	9,877,359	(362,012)						11,356,423	0.641

E07.8

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1 CUSIP Identification	2 Name or Description	3 Code	4 Location		6 Name of Vendor or General Partner	7 NAIC Designation and Admini- strative Symbol/ Market Indicator	8 Date Originally Acquired	9 Type and Strategy	10 Actual Cost	11 Fair Value	12 Book/ Adjusted Carrying Value Less Encum- brances	Change in Book/Adjusted Carrying Value					18 Invest- ment Income	19 Commit- ment for Additional Invest- ment	20 Percent- age of Owner- ship
			City	State								13 Unrealized Valuation Increase (Decrease)	14 Current Year's (Depreci- ation) or (Amorti- zation)/ Accretion	15 Current Year's Other- Than- Tempo- rary Impair- ment Recogn- ized	16 Capital- ized Deferred Interest and Other	17 Total Foreign Exchange in Book/ Adjusted Carrying Value			
000000-00-0	2009 SunE NC Lessee Holdings LLC		Beltsville	MD	SunEdison NC Utility, LLC		12/12/2014	3	14,479,682	417,277	417,277								90.000
000000-00-0	2013 Sheridan Production Partners III A LP		Houston	TX	Sheridan Production Partners III LLC		11/06/2014	3	12,494,000	12,494,000	12,494,000	130,000					1,193,096	22,321,000	9.240
000000-00-0	2017 Napier Park Aircraft Leasing Vehicle I LLC		New York	NY	Napier Park Global Capital (US) GP LLC		11/13/2014	3	20,345,434	20,345,434	20,345,434	2,777,573					1,616,487	8,812,414	10.853
000000-00-0	2069 Kerogen Energy Fund II LP		George Town	CYM	Kerogen General Partner II Limited		10/16/2015	3	27,332,955	27,332,955	27,332,955	8,391,403					1,263,438	14,466,208	7.230
000000-00-0	2138 Kerogen Zennor Co-Investment Fund I LP		George Town	CYM	Kerogen General Partner II Limited		10/06/2016	3	9,481,063	9,481,063	9,481,063	1,036,919					(25,000)		6.394
000000-00-0	2139 Kerogen Zennor Co-Investment Fund II LP		George Town	CYM	Kerogen General Partner II Limited		07/02/2018	3	866,852	866,852	866,852	(10,687)						4,142,461	3.226
000000-00-0	2153 Cerberus Institutional Real Estate Partners IV LP		Dover	DE	Cerberus Real Estate GP IV LLC		10/13/2016	11	22,543,821		22,543,821	1,014,268					168,262	21,624,441	2.470
000000-00-0	2155 TPHP Antioch LP		Houston	TX	TPH Partners II GP LP		04/10/2017	3	14,249,373	14,249,373	14,249,373	2,908,778						741,178	40.000
000000-00-0	2175 AllDale Minerals III LP		Dallas	TX	AllDale Minerals Management III LLC		05/07/2017	3	15,752,434	15,752,434	15,752,434	1,543,416					677,083		6.944
000000-00-0	2181 ENR Partners II LP		Dallas	TX	ENR II GP LLC		05/12/2017	3	5,389,988	5,389,988	5,389,988	(276,901)						11,250,684	2.615
000000-00-0	2183 Prime Storage Fund II LP		Saratoga Springs	NY	Prime Group Holdings LLC		05/23/2017	2	9,182,312	9,182,312	9,182,312	136,338					285,909	15,517,945	4.998
000000-00-0	2185 Whitebridge Pet Brands Holdings LLC		Louis	MO	Frontenac		04/18/2017	3	264,014	264,014	264,014	270,436						0.746	
000000-00-0	2201 English Color Holdings LLC		Boston	MA	WV AIV III (EC) LLC		06/30/2017	3	1,307,427	1,040,681	1,307,427								2.324
000000-00-0	2233 GASL Holdings LLC		New Haven	CT	Barings LLC		11/20/2017	3	12,931,256	12,931,256	12,931,256	3,202,012					676,648	1,354,809	4.620
000000-00-0	2263 North Haven Tactical Value Fund I LP		New York	NY	MS Tactical Value Fund GP LP		03/12/2018	13	3,171,768	3,171,768	3,171,768	(186,955)					(897)	19,517,310	5.000
2199999. Joint Venture Interests - Other - Unaffiliated										195,403,443	150,213,404	181,341,038	20,433,244				6,547,625	138,787,362	XXX
000000-00-0	1927 MML Strategic Distributors LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		10/02/2013	3	1,214,364	1,214,364	1,214,364	7,785							100.000
000000-00-0	1965 MML Investment Advisers LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		03/28/2014	3	10,613,452	10,613,452	10,613,452	72,612,463					71,684,846		100.000
000000-00-0	1979 Intermodal Holdings II LLC		New Haven	CT	Barings LLC		05/20/2014	2	2,643,574	2,643,574	2,643,574	451,858							18.000
000000-00-0	2095 Timber Land Forest Holding LLC		New Haven	CT	Barings LLC		11/06/2015	3	31,249,848	31,249,848	31,249,848	(1,228,965)					(228,845)		100.000
000000-00-0	2162 Remington L&W Holdings LLC		Phoenix	AZ	Barings LLC		10/31/2016	3	17,962,361	17,962,361	17,962,361	(639,679)					5,158,683	5,333,333	66.304
000000-00-0	2187 Barings Asset-Based Income Fund US LP		Charlotte	NC	Barings Asset-Based Income Fund US GP LP		06/26/2018	3	36,510,372	36,510,372	36,510,372	(804,397)						52,725,295	6.070
000000-00-0	2222 MM Copper Hill Road LLC		Springfield	MA	Massachusetts Mutual Life Ins Co		10/26/2017	3	10,246,600	10,246,600	10,246,600	(6,857,496)							100.000
000000-00-0	CT-15 MML Distr LLC (WAS C M F S)		Springfield	MA	Massachusetts Mutual Life Ins Co		01/01/1995	1	12,837,453	1,713,453	1,713,453	95,965							99.000
2299999. Joint Venture Interests - Other - Affiliated										123,278,024	112,154,024	101,907,424	63,637,534				76,971,076	58,058,628	XXX
23108#-AA-7	8001 CUNA Mutual Insurance Society		Madison	WI	CUNA Mutual Insurance Society	2	07/08/2010		9,350,000	10,118,607	9,350,000						794,750		100.000
649526-AF-5	8003 New York Life Insurance Co		New York	NY	New York Life Insurance Co	1	03/25/2010		54,901,959	62,215,916	54,901,959	(119,112)					2,765,551		100.000
668131-AA-3	8004 Northwestern Mutual Life		Milwaukee	WI	Northwestern Mutual Life	1	03/24/2010		78,426,227	88,753,597	78,426,227	(129,449)					3,999,322		100.000
878091-BC-0	8005 Teachers Insurance & Annuity		New York	NY	Teachers Insurance & Annuity	1	03/31/2010		63,992,898	72,577,680	63,992,898	(228,234)					3,618,056		100.000
401378-AA-2	8006 Guardian Life Ins Co Amer		New York	NY	Guardian Life Ins Co Amer	1	03/01/2015		7,392,017	7,392,017	7,392,017	(52,415)						365,400	100.000
677412-AF-5	8007 Ohio National Life Ins		Cincinnati	OH	Ohio National Life Ins	1	04/27/2015		450,649	435,645	450,649	(2,477)						21,784	100.000
878091-BD-8	8008 Teachers Insurance & Annuity		New York	NY	Teachers Insurance & Annuity	1	04/27/2015		3,855,502	3,553,886	3,855,502	(9,920)						158,730	100.000
309580-AA-9	8009 Farmers Exchange Capital III		Los Angeles	CA	Farmers exchange CAP III	2	08/03/2016		803,222	784,233	803,222	14						12,565	100.000
468502-AA-7	8010 Jackson Natl Life INS Co		Lansing	MI	Jackson Natl Life INS Co	1	08/03/2016		257,695	252,361	257,695	(6,318)						10,461	100.000
638671-AC-1	8011 Nationwide Mutual Ins Co		Columbus	OH	Nationwide Mutual Ins Co	1	08/03/2016		176,525	179,264	176,525	(2,816)						8,128	100.000
638671-AK-3	8012 Nationwide Mutual Ins Co		Columbus	OH	Nationwide Mutual Ins Co	1	08/03/2016		442,811	434,442	442,811	(4,552)						22,708	100.000
638671-AL-1	8013 Nationwide Mutual Ins Co		Columbus	OH	Nationwide Mutual Ins Co	1	08/03/2016		407,972	393,086	407,972	(394)						18,937	100.000
649526-AE-8	8014 New York Life Insurance Co		New York	NY	New York Life Insurance Co	1	08/03/2016		121,834	119,669	121,834	(1,210)						4,758	100.000
743917-AH-9	8015 Prudential Ins Co America		Newark	NJ	Prudential Ins Co America	1	08/03/2016		418,028	406,309	418,028	(12,795)						15,593	100.000
878091-BF-3	8016 Teachers Insurance & Annuity Assoc of America		New York	NY	Teachers Insurance & Annuity	1	05/31/2017		22,029,582	21,114,224	22,029,582	523						942,438	100.000
401378-AC-8	8017 Guardian Life Insurance Co of America		New York	NY	Guardian Life Ins Co Amer	1	05/31/2017		21,246,115	20,910,105	21,246,115	56						709,739	100.000
69448F-AA-9	8018 Pacific Life Insurance Company		Newport Beach	CA	Pacific Life Insurance Company	1	10/31/2017		32,803,824	29,343,735	32,803,824	1,537						1,228,544	100.000
401378-AB-0	8019 Guardian Life Insurance Co of America		New York	NY	Guardian Life Ins Co Amer	1	04/30/2018		1,855,082	1,806,815	1,855,082	(160)						60,046	100.000
023138-AA-8	8020 Ambac Assurance Corp		New York	NY	Guardian Life Ins Co Amer	5	12/31/2018		165,302	219,852	165,302								100.000
2399999. Surplus Debentures, etc - Unaffiliated										299,097,244	321,227,387	299,097,244	(567,722)				14,757,510		XXX
000000-00-0	2298 Blue Ocean Income Fund LP		New York	NY	Entrust Partners LLC		09/25/2018	3	1,223,485	1,223,485	1,223,485	(8,377)						1,268,138	1.000
2599999. Collateral Loans - Unaffiliated										1,223,485	1,223,485	1,223,485	(8,377)					1,268,138	XXX
000000-00-0	2196 KKR MM Project Vector LP		New York	NY	Kohlberg Kravis Roberts & Co LP		07/28/2017	2	(4,822,305)		(4,822,305)	(1,103,469)					1,058,729	594,000,000	90.910
000000-00-0	2295 JFIN Revolver Fund LP		New York	NY	JFIN Revolver Fund LP		12/28/2018	2									483,825	180,200,000	90.000
2699999. Collateral Loans - Affiliated										(4,822,305)		(4,822,305)	(1,103,469)				1,542,554	774,200,000	XXX
000000-00-0	1441 MMA Financial Guaranteed AHF 2005-2DLLC		Boston	MA	Boston Financial Invest Management LP		05/20/2005	2	5,911,712	245,944		12,370					12,370		23.532

E07.9

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 1

Showing Other Long-Term Invested Assets OWNED December 31 of Current Year

1 CUSIP Identification	2 Name or Description	3 Code	4 Location		6 Name of Vendor or General Partner	7 NAIC Designation and Administrative Symbol/Market Indicator	8 Date Originally Acquired	9 Type and Strategy	10 Actual Cost	11 Fair Value	12 Book/Adjusted Carrying Value Less Encumbrances	Change in Book/Adjusted Carrying Value					18 Investment Income	19 Commitment for Additional Investment	20 Percentage of Ownership
			City	State								13 Unrealized Valuation Increase (Decrease)	14 Current Year's (Depreciation) or (Amortization)/Accretion	15 Current Year's Other-Than-Temporary Impairment Recognized	16 Capitalized Deferred Interest and Other	17 Total Foreign Exchange Change in Book/Adjusted Carrying Value			
000000-00-0	1639 Citi Guaranteed Tax Credit Fund		New York	NY	Citicorp North America		12/03/2007	2	2,613,939	1,671,986	1,498,570	(985,037)		44,383		(985,037)		99.990	
3199999	Guaranteed Federal Low Income Housing Tax Credit - Unaffiliated								8,525,650	1,917,930	1,498,570	(972,667)		44,383		(972,667)		XXX	
000000-00-0	1091 Boston Financial Equity Tax Credits I LP		Boston	MA	West Cedar I LP		06/30/1996	2	8,309,008	4,460,311						563,133		95.000	
000000-00-0	1107 Boston Cap Corp Tax Credit Fund VIII		Boston	MA	BCCTC Associates VIII LP		03/26/1997	5	4,115,349	373,122								42.450	
000000-00-0	1133 Countryside Corporate Tax III		Boston	MA	Countryside Corp Tax 3		11/26/1997	2	1,203,991	1								99.000	
000000-00-0	1170 Countryside Corporate Tax Credit V		Boston	MA	Michael Associates Ltd		07/20/1998	3	880,643									99.000	
000000-00-0	1178 Boston Financial Equity Tax Credits III LP		Boston	MA	West Cedar I LP		12/28/1998	2	12,487,606	1,502,508	113,854	(1,713,075)				830,467		95.000	
000000-00-0	1213 Boston Financial Equity Tax Credits IV LP		Boston	MA	West Cedar IV LP		01/10/2000	2	5,098,213	4,024,408	947,530	(1,642,765)				(1,371,313)		95.000	
000000-00-0	1218 BFMM Tax Credits Fund II LP		Boston	MA	West Cedar I LP		06/15/1999	2	4,379,264	1,383,789	1,057,240	(14,641)				(14,641)		95.000	
000000-00-0	1312 Countryside Corporate Tax Credits X LP		Boston	MA	Michael Associates Ltd		12/18/2002	2	1,159,369	87,756	44,627	(45,474)		68,235		(45,474)		80.946	
000000-00-0	1313 NHT VIII Tax Credit Fund LP		Columbus	OH	NHT VIII Inc		01/06/2003	2	2,297,242	933,499	490,617	(7,747)				(7,747)		84.685	
000000-00-0	1330 MMA Financial Inst. Tax Credits XXV LP		Boston	MA	Boston Financial Invest Management LP		07/14/2003	2	801,414	161,488	27,641	(31,368)				(31,368)		6.720	
000000-00-0	1331 Alliant Tax Credit Fund XXIV LTD		Palm Beach Gardens	FL	Alliant Capital LTD		04/14/2003	2	1,441,621	513,272		(860,169)				(860,169)		90.079	
000000-00-0	1348 NHT XVI Tax Credit Fund LP		Columbus	OH	NHT XVI Inc		11/24/2003	2	10,396,212	10,094,607	10,094,607	(2,394,100)		663,197		(2,394,956)	16,147	84.020	
000000-00-0	1363 Alliant Tax Credit Fund XXIV A LP		Palm Beach Gardens	FL	Alliant Capital LTD		03/01/2004	2	1,238,405	382,627	361,365	(123,128)		22,084		(123,128)		99.900	
000000-00-0	1409 NHT XX Tax Credit Fund LP		Columbus	OH	NHT XX LLC		11/19/2004	2	3,640,410	3,022,220	3,115,648	122,017		55,463		122,017		94.020	
000000-00-0	1546 MassMutual-Guilford Fund A LP		Tampa	FL	MGC Guilford Capital LLC		03/05/2007	3	3,505,396	610,871	584,023	(151,413)		7,245		(151,413)		99.900	
000000-00-0	1636 Raymond James XXVII LP		St Petersburg	FL	Raymond James Financial Inc		10/23/2007	2	2,692,116	1,512,138	1,416,739	(758,345)		399,798		(758,345)		92.000	
000000-00-0	1637 NHT XXV Tax Credit Fund LP		Columbus	OH	NHT XXV LLC		11/15/2007	2	3,195,703	286,805	251,760	(227,369)		47,328		(227,369)		99.990	
000000-00-0	1701 30 Federal Co-Investment Fund I LLC		Boston	MA	John Hancock Realty Advisors Inc		10/02/2008	2	1,319,677	2,170,510	1,319,677	(1,070,002)				(1,070,002)	616,747	100.000	
000000-00-0	1766 Cornerstone-NAHT Enhanced Preservation Fund 2010-1		Columbus	OH	Cornerstone/NAHT Management LLC		09/27/2010	2	5,099,712	13,300,404	5,099,712	(2,205,290)				(2,525,290)		20.000	
000000-00-0	1784 The Estates at Northampton Ltd		Fyffe	AL	Vantage Partners 2009 AL LLC		12/30/2010	2	3,184,330	4,631,957	3,184,330	(808,362)				(801,407)		99.990	
000000-00-0	1801 Boston Capital Commonwealth Tax Credit Fund I		Boston	MA	BCLTMF Associates LLC		09/01/2011	2	20,108,692	21,424,640	20,108,692	(4,547,376)				(4,547,376)	764,999	99.990	
000000-00-0	1806 Raymond James Housing Opportunities Fund 22 LLC		St Petersburg	FL	Raymond James		09/30/2011	2	34,265,473	35,004,629	34,265,473	(4,812,617)				(4,590,196)	929,203	100.000	
000000-00-0	1811 Boston Financial MassMutual Fund III LP		Boston	MA	Boston Financial Invest Management LP		10/31/2011	2	15,719,816	15,508,316	15,232,384	(3,111,660)		487,431		(3,111,660)	1,129,777	99.990	
000000-00-0	1826 Cornerstone NAHT Enhanced Preservation Fund 2011-I LLC		Columbus	OH	Cornerstone/NAHT 2011 Management LLC		12/15/2011	2	14,653,875	21,049,663	14,653,875	(48,622)				(968,201)	1,125,480	20.000	
000000-00-0	1844 Boston Capital Commonwealth Tax Credit Fund II		New York	NY	BCCTC Commonwealth Associates II LLC		05/29/2012	2	23,679,837	24,071,855	23,610,961	(4,396,628)		68,875		(4,396,628)	1,301,290	99.990	
000000-00-0	1919 Cornerstone-NAHT Enhanced Preservation Fund III LLC		Hartford	CT	Cornerstone NAHT 2013 Management LLC		09/14/2013	2	5,436,530	22,985,725	5,436,530	(486,037)				(9,514,252)	1,097,442	20.000	
000000-00-0	1981 Boston Financial MassMutual Fund IV LP		Boston	MA	Boston Financial Invest Management LP		06/30/2014	2	72,816,263	70,258,927	70,318,479	(9,459,295)		2,497,783		(9,459,295)	1,203,927	99.990	
000000-00-0	1982 Boston Capital Commonwealth Tax Credit Fund III A LP		Boston	MA	Boston Capital Corporation		11/21/2014	2	53,332,257	53,457,266	52,998,661	(7,175,194)		333,596		(7,175,194)	959,278	99.990	
000000-00-0	2038 Cornerstone NAHT Enhanced Preservation Fund 2014-1 LP		Hartford	CT	Cornerstone NAHT 2014 Management LLC		03/31/2015	2	20,482,754	20,689,221	20,482,754	(553,908)				1,545,132	237,142	20.000	
3399999	Non-Guaranteed Federal Low Income Housing Tax Credit - Unaffiliated								337,302,768	334,204,141	285,217,182	(46,522,571)		4,651,036		(51,033,676)	9,381,432	XXX	
4499999	Total - Unaffiliated								3,042,967,383	2,997,123,886	2,913,583,753	282,596,935	(567,722)	28,922,557		(7,397,482)	208,263,601	879,010,477	XXX
4599999	Total - Affiliated								6,814,238,350	5,432,057,075	5,685,872,120	162,450,183			(58,141,310)	597,895,277	2,037,388,626	XXX	
4699999	Totals								9,857,205,732	8,429,180,961	8,599,455,873	445,047,118	(567,722)	28,922,557	(65,538,793)	806,158,878	2,916,399,103	XXX	

E07.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 2

Showing Other Long-Term Invested Assets ACQUIRED AND ADDITIONS MADE December 31 of Current Year

1 CUSIP Identification	2 Name or Description	3 Location		5 Name of Vendor or General Partner	6 Date Originally Acquired	7 Type and Strategy	8 Actual Cost at Time of Acquisition	9 Additional Investment Made After Acquisition	10 Amount of Encumbrances	11 Percentage of Ownership
		City	State							
26861#-10-9	2288 EM Opportunities LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	06/26/2018	1	100,000,000	75,677,879		100.000
0899999. Fixed or Variable Rate - Bonds - Affiliated										
000000-00-0	1995 Cornerstone Permanent Mortgage Fund II	Boston	MA	CPMF Associates III LLC	12/17/2015	2	100,000,000	50,352,088		100.000
000000-00-0	1997 Cornerstone Permanent Mortgage Fund	Boston	MA	CPMF Associates III LLC	10/21/2011	2		375,811		100.000
000000-00-0	2118 Cornerstone California Mortgage Fund I LLC	Glendale	CA	California Community Reinvestment Corpor	09/10/2015	2		33,669,556		100.000
000000-00-0	2119 Cornerstone Permanent Mortgage Fund III	Boston	MA	CPMF Associates III LLC	11/20/2015	2		71,990,457		100.000
000000-00-0	2120 Cornerstone Permanent Mortgage Fund IV	Boston	MA	CPMF Associates III LLC	02/10/2017	2		6,451,050		100.000
000000-00-0	2129 Cornerstone California Mortgage Fund II LLC	Glendale	CA	California Community Reinvestment Corpor	09/28/2016	2		15,324,075		100.000
000000-00-0	2130 MM Debt Participations LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	07/19/2016	3		243,863,620		100.000
000000-00-0	2170 Barings Real Estate Credit Strategies VII LP	Hartford	CT	BRECS VII GP LLC	03/30/2017	3		16,529,562		49.546
000000-00-0	2228 Cornerstone California Mortgage Fund III LLC	Glendale	CA	California Community Reinvestment Corpor	11/10/2017	2		19,746,124		100.000
000000-00-0	2256 Barings Affordable Housing Mortgage Fund I LLC	Plano	TX	BAHMF Manager I LLC	01/22/2018	2	51,000	20,000		100.000
000000-00-0	2272 MM Mortgage Lending LLC	Wilmington	DE	Massachusetts Mutual Life Ins Co	06/20/2018	2	18,723,021	12,760,075		100.000
1099999. Fixed or Variable Rate - Mortgage Loans - Affiliated										
08471#-10-3	1859 Berkshire Way LLC	Springfield	MA	Berkshire Way LLC	03/06/2013	10		500,000		100.000
36764#-10-6	2045 Gateway Mezzanine Partners II LP	Springfield	MA	Mezzco Australia II LLC	03/26/2015	2		1,726,423		36.777
L0523#-10-1	2068 Babson Global Private Loan Fund	Springfield	MA	Babson GPC GP S a r I	10/16/2015	3		2,000,000		13.194
1499999. Joint Venture Interests - Fixed Income - Affiliated										
000000-00-0	1440 Linsalata Capital Partners Fund V LP	Mayfield Heights	OH	Lincap V GP LLC	05/31/2005	3		254,633		5.150
000000-00-0	1453 Roundtable Healthcare Partners II LP	Lake Forest	IL	Roundtable Healthcare Management II LP	08/02/2005	3		4,674		2.936
000000-00-0	1455 AEA Investors Small Business Fund LP	New York	NY	AEA Investors SBF Partners LP	08/03/2005	3		174,695		5.479
000000-00-0	1481 Rosemount Global Trade Finance Fund LP	White Plains	NY	Rosemount Finance Partners LLC	12/01/2005	7		21,667		58.731
000000-00-0	1486 Excelsior Capital Asia Partners III LP	Hong Kong	HKG	Excelsior Capital Asia GP III LP	01/04/2006	3		25,243		4.004
000000-00-0	1528 PNC Equity Partners II LP	Pittsburgh	PA	Allegheny Capital Partners II LLC	07/21/2006	3		1,029		0.735
000000-00-0	1568 AP Cayman Partners II LP	Minato-Ku	JPN	AP Cayman Partners II General Partner LP	01/30/2007	3		5,801		0.555
000000-00-0	1571 HKW Capital Partners III LP	New York	NY	HKW Management III LP	01/29/2007	3		44,978		7.150
000000-00-0	1583 Special Value Opportunities Fund LLC	Santa Monica	CA	Tennenbaum Capital Partners LLC	03/21/2007	13		5,365		4.974
000000-00-0	1588 Clearwater Capital Partners Fund III LP	Singapore	SGP	Clearwater Capital Partners Fund III GP	04/04/2007	11		401,068		0.332
000000-00-0	1601 Kohlberg Investors VI LP	Mount Kisco	NY	Kohlberg Management VI LLC	06/20/2007	3		71,741		1.464
000000-00-0	1603 KKR Asian Fund LP	New York	NY	KKR Associates Asia LP	07/03/2007	3		4,999		0.731
000000-00-0	1635 Trilantic Capital Partners IV LP	New York	NY	Trilantic Capital Partners IV LP	10/22/2007	3		32,375		0.368
000000-00-0	1642 High Road Capital Partners Fund I LP	New York	NY	High Road Associates I LLC	11/16/2007	3		65,122		1.388
000000-00-0	1656 Corsair III FSC Partners LP	New York	NY	Corsair III Management LP	12/24/2007	3		41,337		4.412
000000-00-0	1657 Corsair III FSC Partners LP	New York	NY	Corsair III Offshore Management LP	12/24/2007	3		5,756		1.207
000000-00-0	1670 Asia Alternative Capital Partners II LP	San Francisco	CA	Asia Alternatives PE Partners II LLC	03/06/2008	12		163,473		1.486
000000-00-0	1682 SPC Partners IV LP	San Francisco	CA	Swander Pace Capital IV LP	04/28/2008	3		284,322		4.472
000000-00-0	1684 Asia Strategic Capital Fund LP	Admiralty	HKG	Asia Strategic Capital Fund GP	05/08/2008	2		174,288		10.472
000000-00-0	1686 CDH Venture Partners II LP	Grand Cayman	CYM	CDH Venture GP II Company Limited	05/27/2008	1		48,257		0.990
000000-00-0	1703 Brazos Equity Fund III LP	Dallas	TX	Brazos Equity Fund GP III LLC	10/17/2008	3		7,281		2.239
000000-00-0	1717 Unison Capital Partners III (F) LP	Grand Cayman	CYM	UCGP III (F) LP	02/05/2009	3		20,703		1.721
000000-00-0	1718 UCP III Co-Invest (f) LP	Grand Cayman	CYM	UCGP III (F) LP	02/05/2009	3		7,920		2.073
000000-00-0	1722 Riverside Capital Appreciation Fund V LP	New York	NY	RCAF V Associates LP	04/17/2009	3		106,697		0.255
000000-00-0	1775 Techquity LP	Austin	TX	TOCAP GP LLC	12/10/2010	3		1,375,548		15.628
000000-00-0	1786 JFL Equity Investors III LP	Arlington	VA	JFL GP Investors III LLC	02/14/2011	3		35,990		1.585
000000-00-0	1795 Braemar Energy Ventures III LP	New York	NY	Braemar Power & Comm Mgmt III LP	06/17/2011	3		752,765		0.710
000000-00-0	1796 Asia Alternatives Capital Partners III LP	San Francisco	CA	Asia Alt Private Equity Prtnr III LLC	07/11/2011	12		187,193		2.352
000000-00-0	1797 Gridiron Capital Fund II LP	New Canaan	CT	Gridiron GP II LLC	07/25/2011	3		52,935		6.639
000000-00-0	1799 Linsalata Capital Partners VI LP	Mayfield Heights	OH	LinCap VI GP LLC	08/11/2011	3		40,000		4.722
000000-00-0	1804 Thompson Street Capital Partners III LP	Saint Louis	MO	Thompson Street Capital III GP LP	10/03/2011	3		4,150,109		1.322
000000-00-0	1807 Industrial Growth Partners IV LP	San Francisco	CA	IGP Capital Partners IV LLC	10/21/2011	3		384,645		1.667
000000-00-0	1822 River VI Parallel LP	Chattanooga	TN	River Associates VI LLC	12/09/2011	3		100,621		4.982
000000-00-0	1823 Trinity Hunt Partners IV LP	Dallas	TX	Trinity Hunt IV LP	12/12/2011	3		1,712,438		4.810
000000-00-0	1827 Gryphon Partners 3.5 LP	San Francisco	CA	Gryphon GenPar 3.5 LP	12/22/2011	3		362,484		3.703
000000-00-0	1828 Hony Capital Fund V LP	Central	HKG	Hony Capital Fund V GP LP	12/29/2011	3		981,043		0.594
000000-00-0	1829 Incline Equity Partners III LP	Pittsburgh	PA	Incline GP III LLC	01/20/2012	3		663,447		6.390
000000-00-0	1834 Falfurrias Capital Ptrs II LP	Charlotte	NC	Falfurrias Equity Partners II LLC	03/26/2012	3		135,000		11.877
000000-00-0	1835 FPC Small Cap Fund I LP	Boston	MA	FPC Small Cap Partners I LP	03/19/2012	3		585,606		5.046
000000-00-0	1836 Trailhead Fund LP	Minneapolis	MN	Odysseus MN LLC	03/28/2012	3		162,500		4.504
000000-00-0	1838 Archer Capital Offshore 5 LP	Sydney	AUS	Archer Capital OPS LP	04/03/2012	3		27,024		1.511
000000-00-0	1843 CIP Capital Fund LP	New York	NY	CIP Capital GP, L.P.	06/01/2012	3		101,959		2.176
000000-00-0	1848 Kohlberg Investors VII LP	Mount Kisco	NY	Kohlberg Management VII LP	06/27/2012	3		405,052		2.987
000000-00-0	1849 SPC Partners V LP	San Francisco	CA	Swander Pace Capital V LP	07/03/2012	3		371,163		4.305
000000-00-0	1851 Dyal US Investors LP	New York	NY	NB Dyal Associates LP	08/17/2012	10		238,076		6.474

E08

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 2

Showing Other Long-Term Invested Assets ACQUIRED AND ADDITIONS MADE December 31 of Current Year

1 CUSIP Identification	2 Name or Description	3 Location		5 Name of Vendor or General Partner	6 Date Originally Acquired	7 Type and Strategy	8 Actual Cost at Time of Acquisition	9 Additional Investment Made After Acquisition	10 Amount of Encumbrances	11 Percentage of Ownership
		City	State							
000000-00-0	1853 Global Infrastructure Partners II-A LP	New York	NY	Global Infrastructure GP II LP	08/09/2012	3		2,003,055		1.731
000000-00-0	1854 The Energy & Minerals Group Fund II LP	Dallas	TX	EMG Fund II GP LP	08/30/2012	3		941,992		2.665
000000-00-0	1858 Haddington Energy Ptnrs IV LP	Houston	TX	Haddington Ventures IV GP LLC	09/17/2012	3		213,526		2.159
000000-00-0	1863 Warburg Pincus Private Equity XI LP	New York	NY	Warburg Pincus XI LP	09/20/2012	3		1,450,000		5.017
000000-00-0	1864 Kayne Anderson Energy Fund VI LP	Houston	TX	KAFTX VI LLC	09/25/2012	3		1,251,715		3.119
000000-00-0	1867 Aviation Holding II LP	New York	NY	Aviation Holdings GenPar II LLC	10/15/2012	3		18,646		17.131
000000-00-0	1872 One Rock Capital Partners LP	New York	NY	One Rock Capital Partner GP LLC	11/14/2012	3		21,853		0.609
000000-00-0	1874 Camcor Energy Fund VII B LP	Calgary	CAN	Camcor Partners Fund VII GP Inc	11/28/2012	3		735,750		14.767
000000-00-0	1875 Blackrock NTR Renewable Power Fund A LP	New York	NY	BlackRock NTR Renewable Power Fund LP	12/05/2012	3		184,747		22.644
000000-00-0	1880 Equis Asia Fund LP	Grand Cayman	CYM	Equis Asia Fund General Partner	01/07/2013	3		33,822		3.475
000000-00-0	1886 NB Strategic Co-Investment Partners II LP	New York	NY	NB Strategic Co-Investment Assoc II LP	01/11/2013	3		129,825		1.588
000000-00-0	1887 Stonepeak Infrastructure Fund LP	New York	NY	Stonepeak Associates LLC	02/19/2013	3		988,267		1.119
000000-00-0	1889 West Street Energy Partners LP	Jersey City	NJ	Broad Street Energy Advisors LLC	03/06/2013	3		831,069		1.349
000000-00-0	1893 Actis Energy 3 LP	London	GBR	Actis GP LLP	04/04/2013	3		1,805,696		4.872
000000-00-0	1894 Fifth Civen Fund No 4 Limited Partnership	St Peter Port	GBR	Cinven UK GP LLP	04/05/2013	3		697,848		2.128
000000-00-0	1898 MBK Partners Fund III LP	Hong Kong	HKG	MBK Partners GP III LP	04/16/2013	3		198,455		0.358
000000-00-0	1900 Advent VI Fund	Southbank	AUS	Advent Private Capital Pty Ltd	05/06/2013	3		923,263		5.390
000000-00-0	1901 High Road Capital Partners Fund II P	New York	NY	High Road Associates II LLC	05/03/2013	3		779,870		1.302
000000-00-0	1902 ICON Infrastructure Partners II LP	St Peter Port	GBR	ICON Infrastructure Management II	04/29/2013	3		553,234		4.294
000000-00-0	1903 CD Capital Natural Resources Fund II Master LP	London	GBR	CD Capital Natural Resources Fund II GP	05/10/2013	3		335,073		3.923
000000-00-0	1905 TPH Partners II LP	Houston	TX	TPH Partners II GP LP	05/10/2013	3		300,451		5.125
000000-00-0	1906 Hamilton Lane Secondary Fund III LP	Denver	CO	Hamilton Lane Secondary Fund III GP LLC	05/28/2013	3		30,807		1.201
000000-00-0	1911 New Heritage Capital Fund LP	Boston	MA	New Heritage Capital GP LLC	07/16/2013	3		368,138		3.022
000000-00-0	1922 EIG Energy Fund XVI LP	Washington	DC	EIG Energy Fund XVI GP LLC	09/23/2013	3		7,938,416		1.034
000000-00-0	1925 Black River Agriculture Fund 2 LP	Hopkins	MN	Black River Agriculture Fund 2 GP LP	10/16/2013	3		1,107,002		3.478
000000-00-0	1926 Mill City Fund II LP	Minneapolis	MN	Washburn II LP	10/30/2013	3		279,518		12.397
000000-00-0	1932 Brookfield Infrastructure Fund II B LP	New York	NY	Brookfield Infrastructure Fund GP II LLC	11/19/2013	3		1,590,742		2.941
000000-00-0	1933 CID Capital Opportunity Fund II	Indianapolis	IN	CID Capital Opportunity Partners II LLC	11/22/2013	3		682,194		1.491
000000-00-0	1934 Long River Ventures III LP	Amherst	MA	Long River Capital Partners III LLC	11/22/2013	3		1,800,000		29.762
000000-00-0	1935 Riverside Capital Appreciation Fund VI-A LP	New York	NY	RCAF VI Associates LP	12/06/2013	3		541,272		1.829
000000-00-0	1937 Nexxus Capital Private Equity Fund VI LP	Toronto	CAN	Nexxus Capital VI General Partner LLC	11/21/2013	3		440,819		8.315
000000-00-0	1938 Guardian Capital Partners Fund II LP	Wayne	PA	Guardian Capital Partners II GP LP	12/12/2013	3		585,396		4.612
000000-00-0	1941 Brookfield Timberlands Fund V LP	New York	NY	Brookfield Timberlands Fund V GP LLC	12/23/2013	3		12,260		9.980
000000-00-0	1942 Palladium Equity Partners IV LP	New York	NY	Palladium Equity Partners IV LLC	12/20/2013	3		828,823		3.480
000000-00-0	1945 DFW Capital Partners IV LP	Teaneck	NJ	DFW IV-GP LLC	12/19/2013	3		870,660		7.231
000000-00-0	1947 Kayne Saybrook Municipal Opportunity Fund LP	Los Angeles	CA	Kayne Municipal Opportunity Advisors LLC	12/20/2013	3		952,269		14.083
000000-00-0	1948 Sterling Investment Partners III LP	Westport	CT	Sterling Investment Partner Mgmt III LLC	01/03/2014	3		499,211		13.281
000000-00-0	1949 Landmark Equity Partners XV LP	Simsbury	CT	Landmark Partners XV LLC	01/06/2014	3		2,507,134		0.642
000000-00-0	1951 Greenstone Resources LP	St Peter Port	GBR	Greenstone Management Limited	01/13/2014	3		298,526		1.887
000000-00-0	1952 The Energy & Minerals Group Fund III LP	Dallas	TX	EMG Fund III GP LP	01/16/2014	3		835,667		1.425
000000-00-0	1954 Clayton Dubilier & Rice Fund IX LP	New York	NY	CD&R Associates IX LP	01/23/2014	3		379,204		0.327
000000-00-0	1956 Blue Point Capital Partners III LP	Cleveland	OH	BPCP Management III LP	01/16/2014	3		651,492		3.365
000000-00-0	1957 Tower Arch Partners I LP	Draper	UT	Tower Arch Partners I GP LLC	01/22/2014	3		360,159		1.698
000000-00-0	1958 Actis Africa 4 LP	London	GBR	Actis GP LLP	01/24/2014	3		345,968		2.604
000000-00-0	1959 Blue Sea Capital Fund I LP	West Palm Beach	FL	Blue Sea Capital Management I LP	01/29/2014	3		232,617		3.095
000000-00-0	1963 Harbert Power Fund V LLC	Birmingham	AL	Harbert Power MV LLC	02/10/2014	3		118,834		1.564
000000-00-0	1964 HCI Equity Partners IV LP	Washington	DC	HCI Management IV LP	03/13/2014	3		284,356		1.240
000000-00-0	1968 Riverview Strategic Opportunities Fund I LP	Chicago	IL	SOF I GP Ltd	04/04/2014	3		97,211		10.544
000000-00-0	1969 Japan Solar LP	Singapore	JPN	Japan Solar General Partner	04/03/2014	3		26,207		8.889
000000-00-0	1975 TDR Capital III B LP	London	GBR	TDR Capital General Partner III LP	05/02/2014	3		1,697,250		1.754
000000-00-0	1976 River Cities Capital Fund V LP	Cincinnati	OH	River Cities Management V LLC	05/07/2014	3		2,860,000		13.419
000000-00-0	1977 GenNx360 Capital Partners II LP	New York	NY	GenNx360 GP II LLC	05/12/2014	3		2,067,520		1.738
000000-00-0	1978 TPG Asia VII LP	Fort Worth	TX	TPG Asia GenPar VII LP	05/13/2014	3		337,776		2.801
000000-00-0	1985 Callius Equity Partners III LP	Los Angeles	CA	Callius GPE III LP	07/01/2014	3		666,032		2.047
000000-00-0	1986 WestView Capital Partners III LP	Boston	MA	WestView Capital Management III LP	09/23/2014	3		1,558,142		3.419
000000-00-0	1987 Starwood Energy Infrastructure Fund II Global LP	Greenwich	CT	SEI Management II LP	06/25/2014	3		1,000,000		13.955
000000-00-0	1988 Pacific Equity Partners Fund V LP	St Helier	JEY	Pacific Equity Partners Fund V GP Ltd	02/13/2015	3		551,793		0.892
000000-00-0	1990 Warburg Pincus Energy LP	New York	NY	Warburg Pincus Energy GP LP	07/25/2014	3		2,835,000		6.776
000000-00-0	1993 Carlyle Power Partners II LP	Washington	DC	CPP II General Partner LP	09/29/2014	3		5,740,170		6.438
000000-00-0	1998 Exponent Private Equity Partners III LP	London	GBR	Exponent Private Equity Ptnrs GP III LP	02/18/2015	3		4,468,668		1.513
000000-00-0	2000 Polytex Holdings LLC	Los Angeles	CA	Callius Equity Partners	07/31/2014	3		19,223		1.303
000000-00-0	2005 Turnbridge Capital Partners I LP	Washington	DC	Turnbridge Capital GP I LLC	10/16/2014	3		1,473,572		6.613
000000-00-0	2006 Citree Holdings 1 LLC	Suwanee	GA	Barings LLC	08/25/2014	2		197,959		9.700
000000-00-0	2014 GoldenTree Distressed Fund 2014 LP	New York	NY	GoldenTree Distressed Fund 2014 GP LLC	11/10/2014	11		1,920,000		15.240

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 2

Showing Other Long-Term Invested Assets ACQUIRED AND ADDITIONS MADE December 31 of Current Year

1 CUSIP Identification	2 Name or Description	3 Location		5 Name of Vendor or General Partner	6 Date Originally Acquired	7 Type and Strategy	8 Actual Cost at Time of Acquisition	9 Additional Investment Made After Acquisition	10 Amount of Encumbrances	11 Percentage of Ownership
		City	State							
000000-00-0	2020 Kayne Private Energy Income Fund LP	Houston	CA	KPEIF GP LLC	04/01/2016	3		6,050,000		4.206
000000-00-0	2021 Asia Alt Private Equity Ptr IV LP	San Francisco	CA	Asia Alt Private Equity Partners IV LLC	11/28/2014	1		7,276,288		3.120
000000-00-0	2024 Tennebaum Special Situations Fund IX LLC	Santa Monica	CA	Tennebaum Special Situations MM IX LLC	07/10/2015	13		7,519,511		5.964
000000-00-0	2025 Insight Venture Partners IX LP	New York	NY	Insight Venture Associates IX LP	03/24/2015	3		5,300,000		1.781
000000-00-0	2031 Madison Industries Holdings LLC	Chicago	IL	Madison Industries Holdings LLC	11/06/2015	3		13,000,000		6.205
000000-00-0	2032 Equis Asia Fund II LP	Grand Cayman	CYM	Equis Asia Fund II General Partner	01/15/2015	3		2,086,273		2.778
000000-00-0	2033 Stone Arch Capital III LP	Minneapolis	MN	Stone Arch Capital Management III LP	09/08/2015	3		1,480,000		4.999
000000-00-0	2036 1901 Partners LP	New York	NY	1901 Partners GP LLC	06/22/2015	3		348,248		2.626
000000-00-0	2041 Dyal II US Investors LP	New York	NY	NB Dyal Associates II LP	01/09/2015	10		2,414,198		1.266
000000-00-0	2047 EnCap Energy Capital Fund X LP	Houston	TX	EnCap Energy Fund X GP LP	04/22/2015	3		4,521,325		0.486
000000-00-0	2054 Blackstone Capital Partners VII LP	New York	NY	Blackstone Management Associates VII LP	10/17/2016	3		3,854,255		0.178
000000-00-0	2059 iCON Infrastructure Partners III LP	St Peter Port	GBR	iCON GP III LLP	07/17/2015	3		3,237,686		3.138
000000-00-0	2060 Gryphon Partners IV LP	San Francisco	CA	Gryphon GenPar IV LP	11/25/2015	3		759,107		2.808
000000-00-0	2064 AEA Investors Small Business Fund III LP	New York	NY	AEA Investors SBF III Partners LP	03/24/2016	3		828,490		1.178
000000-00-0	2065 Aquiline Financials Services Fund III LP	New York	NY	Aquiline Cap Prtrs III GP (Offshore) Ltd	08/11/2015	3		1,916,890		1.569
000000-00-0	2066 Oaktree Opportunities Fund XB LP	George Town	CYM	Oaktree GP	06/18/2018	11	1,250,000	5,000,000		43.000
000000-00-0	2067 Pacific Private Equity Fund I LP	Newport Beach	CA	Pacific Private Equity I GP	07/10/2015	3		2,943,856		9.739
000000-00-0	2073 Warburg Pincus Private Equity XII LP	New York	NY	Warburg Pincus XII LP	12/21/2015	3		8,900,000		0.880
000000-00-0	2077 Gryphon Co-Invest Fund IV LP	San Francisco	CA	Gryphon GenPar IV LP	11/25/2015	3		56,419		5.120
000000-00-0	2080 Stonepeak Communications Partners LP	New York	NY	Stonepeak Associates LLC	11/09/2015	3		2,948,026		10.370
000000-00-0	2084 JFL Equity Investors IV LP	Springfield	MA	JFL GP Investors IV LLC	03/15/2016	3		515,127		2.418
000000-00-0	2085 Next Capital Fund III LP	Sydney	AUS	Next Capital III Management Partners LP	11/02/2015	3		931,889		3.509
000000-00-0	2090 Marathon CLO Equity Fund LP	New York	NY	Marathon Risk Retention GP	11/10/2015	3		4,000,000		7.547
000000-00-0	2091 NB Strategic Co-Investment Partners III LP	New York	NY	NB Strat Co-Invest Assoc GP Ltd	01/28/2016	3		9,260,933		2.566
000000-00-0	2096 Agspring LP	Leewood	KS	Agspring GP	12/15/2015	3		1,197,519		11.588
000000-00-0	2099 Thompson Street Capital Partners IV LP	St Louis	MO	Thompson Street Capital IV GP LP	01/25/2016	3		425,162		0.780
000000-00-0	2100 AG Asia Realty Fund III LP	Camana Bay	CYM	AG Asia III LLC	03/16/2016	3		11,175,000		3.858
000000-00-0	2104 Amersand 2014 LP	Wellesley	MA	AIMP 14 Management Company Limited Partne	02/03/2016	3		5,037,500		6.084
000000-00-0	2105 Stonepeak Infrastructure Fund II LP	New York	NY	Stonepeak Associates II LLC	02/12/2016	3		6,338,901		0.845
000000-00-0	2106 FIMI Opportunity 6 LP	Tel Aviv	ISR	FIMI 6 2016 Ltd	07/21/2016	3		90,909		0.972
000000-00-0	2111 Blue Cloud Ventures II LP	New York	NY	Blue Cloud Advisors II LLC	03/14/2016	3		630,000		29.647
000000-00-0	2112 Greenstone Resources II LP	St Peter Port	CIV	Greenstone Capital LLP	04/19/2016	3		5,279,855		7.774
000000-00-0	2117 Industrial Growth Partners V LP	San Francisco	CA	IGP Capital Partners V LLC	07/01/2016	3		2,225,808		1.063
000000-00-0	2123 Brookfield Infrastructure Fund III-B LP	New York	NY	Brookfield Infrastructure III GP LLC	07/07/2016	3		4,796,812		6.652
000000-00-0	2124 Torquest Partners Fund (US) IV LP	Toronto	CAN	Torquest Fund IV GP Inc	09/01/2016	3		1,992,236		5.044
000000-00-0	2126 SPC Partners VI LP	San Francisco	CA	SPC Management VI LLC	11/16/2017	3		812,332		0.980
000000-00-0	2131 Kohlberg Investors VIII LP	Mount Kisco	NY	Kohlberg Management VIII LCC	08/30/2017	3		1,456,416		4.756
000000-00-0	2137 Providence Strategic Growth II LP	Providence	RI	Providence Strat Growth Capital Ptrs LLC	12/07/2016	3		3,843,982		3.021
000000-00-0	2141 PIMCO Corporate Opportunities Fund II LP	Newport Beach	CA	PIMCO GP XV, LLC	08/31/2016	11		10,575,000		3.379
000000-00-0	2145 Delta-V Capital 2011 LP	Boulder	CO	Delta-V Capital 2011 Holdings LP	10/01/2016	3		6,098		2.480
000000-00-0	2157 Del Real Holdco LLC	New York	NY	Palladium Equity Partners IV LLC	10/07/2016	3		129,583		0.619
000000-00-0	2160 PSG PS Co-Investors LP	Providence	RI	PSG PS GP LLC	10/14/2016	3		4,363,187		7.212
000000-00-0	2161 Noronha Co-Invest LLC	New York	NY	Brookfield Asset Management Inc	03/31/2017	3		95,484		3.571
000000-00-0	2167 Incline Equity Partners IV LP	Pittsburgh	PA	Incline GP IV LP	08/15/2017	3		1,025,742		0.850
000000-00-0	2168 Summa Equity Fund I No.1 AB	Stockholm	SWE	Summa Equity AB	02/28/2017	3		4,253,113		2.632
000000-00-0	2172 EnCap Energy Capital Fund XI LP	Houston	TX	EnCap Energy Fund XI GP LP	07/17/2017	3		2,149,201		0.431
000000-00-0	2173 AACP China Growth Investors VIII LP	San Francisco	CA	Asia Alternatives GP Sidecar LLC	12/29/2016	13		2,397,402		28.563
000000-00-0	2176 SRS Equity Holdings 2 LLC	San Francisco	CA	SR Smith	03/27/2017	3		423,645		27.630
000000-00-0	2177 One Rook Capital Partners II LP	New York	NY	One Rook Capital Partners II GP LP	10/30/2017	3		790,148		0.526
000000-00-0	2178 Haddington Energy Partners III LP	Houston	TX	Haddington Ventures III LLC	03/31/2017	3		19,585		6.046
000000-00-0	2179 IACX Co-Invest LP	Houston	TX	IACX Co-Invest GP LLC	03/31/2017	3		2,076		3.446
000000-00-0	2182 River Cities Capital Fund VI LP	Cincinnati	OH	River Cities Management VI LLC	02/15/2018	3		1,600,000		10.000
000000-00-0	2186 Trinity Hunt Partners V LP	Dallas	TX	THPV LP	01/17/2018	3	35,243	57,885		0.017
000000-00-0	2189 Blue Cloud Ventures III	New York	NY	Blue Cloud Advisors III LLC	06/26/2017	3		2,250,000		15.000
000000-00-0	2192 A&M Capital Opportunities Fund LP	Greenwich	CT	A&M Capital Opportunities Fund GP A&M	09/08/2017	3		1,237,473		2.000
000000-00-0	2193 KKR Asian III LP	New York	NY	KKR Associates Asia III SCSp	02/12/2018	3	351,068	523,979		6.452
000000-00-0	2205 MidOcean Partners V LP	Dover	DE	MidOcean Associates V LP	04/25/2018	3	939,482	1,904,478		1.100
000000-00-0	2206 Avenue Energy Opportunities Fund II LP	New York	NY	Avenue Energy Opportunities Ptr II LLC	09/19/2017	3		13,600,000		2.000
000000-00-0	2208 Riverside Europe Fund V LP	New York	NY	REF V Associates LP	10/27/2017	3		6,474,632		4.203
000000-00-0	2212 Asia Alternatives Capital Partners V LP	Wilmington	DE	Asia Alternatives Capital Partners V GP	08/22/2017	1		1,824,189		2.308
000000-00-0	2221 HarbourVest Asia Pacific Fund VIII	George town	CYM	HIVEP VIII Associates LP	10/11/2017	3		1,000,000		3.330
000000-00-0	2231 Navis Asia Fund VII LP	Grand Cayman	CYM	Navis Asia Fund VII GP LTD	03/29/2018	3	6,800,053	321,195		0.500
000000-00-0	2238 OnyxPoint Permian Equity II LP	New York	NY	OnyxPoint Global Management LP	12/19/2017	3		345,542		36.059
000000-00-0	2242 Gryphon Partners V LP	San Francisco	CA	Gryphon GenPar V LP	08/29/2018	3	4,698,204	1,564,477		1.000

E08.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 2

Showing Other Long-Term Invested Assets ACQUIRED AND ADDITIONS MADE December 31 of Current Year

1 CUSIP Identification	2 Name or Description	3 Location		5 Name of Vendor or General Partner	6 Date Originally Acquired	7 Type and Strategy	8 Actual Cost at Time of Acquisition	9 Additional Investment Made After Acquisition	10 Amount of Encumbrances	11 Percentage of Ownership	
		City	State								
000000-00-0	2244 Hidden Harbor Capital Partners I LP	Fort Lauderdale	FL	Hidden Harbor Capital Partners GP I LP	02/08/2018	3	1,599,056	2,100,000		2.800	
000000-00-0	2245 Stonepeak Spear (Co-Invest) Holdings LP	New York	NY	Stonepeak Infrastructure Fund II Cayman	02/20/2018	3	7,389,555			2.169	
000000-00-0	2246 ISO Global Infrastructure Fund II LP	New York	NY	ISO Global Fund II GP LLC	06/07/2018	3	993,328	3,166,270		1.500	
000000-00-0	2247 WestView Capital Partners IV LP	Boston	MA	WestView CapitalManagement LP	10/10/2018	3	15,714	228,572		0.290	
000000-00-0	2249 Capvis Equity V LP	Channel Island	JEY	Capvis General Partner V Ltd	05/24/2018	3	1,759,800	1,699,902		1.500	
000000-00-0	2255 Providence Strategic Growth III LP	Providence	RI	Providence Strategic Growth III GP LP	07/26/2018	3	1,599,047	55,187		0.933	
000000-00-0	2258 Range Investor Holdings LLC	New York	NY	One Rock Capital Partners II GP LLC	02/21/2018	3	2,452,050			1.022	
000000-00-0	2259 ACP Fund I LP	Grand Cayman	CYM	Argentem Creek GP LLC	04/01/2018	12	8,750,000	13,341,387		4.000	
000000-00-0	2261 Ampersand 2018 Limited Partnership	Wellesley	MA	AMP-18 Management Company LP	10/29/2018	3	300,000	125,000		1.110	
000000-00-0	2262 Ex Vivo Sponsor LP	San Francisco	CA	Ex Vivo Sponsor GP LLC	03/15/2018	3	5,000,000			1.848	
000000-00-0	2264 Riverside Europe Fund V Co-Investment IV LP	New York	NY	REF V GP LLC	04/11/2018	3	7,425,000			99.900	
000000-00-0	2267 SMC Contrax Holdings LLC	Briarcliff Manor	NY	Saw Mill Capital	03/09/2018	3	666,050			2.064	
000000-00-0	2269 SCP ESP LLC	Dover	DE	Massachusetts Mutual Life Ins Co	04/04/2018	3	832,562			3.330	
000000-00-0	2270 Levine Leichtman Capital Partners VI	Wilmington	DE	LLCP Partners VI GP LP	04/19/2018	3	4,687,501	1,175,029		0.909	
000000-00-0	2291 Pamlico VPP Holdings LLC	King of Prussia	PA	Veterinary Practice Partners LLC	08/14/2018	3	869,251			1.700	
000000-00-0	2292 FFP Group Holdings LP	New York	NY	FFP GP LLC	09/04/2018	3	9,000,000			1.710	
000000-00-0	2293 OnyxPoint Permian Equity III LP	New York	NY	OnyxPoint Global Management LP	09/20/2018	3	15,006,164	116,538		3.000	
000000-00-0	2300 LAC Acquisitions LLC	Boston	MA	LAC Intermediate LLC	10/01/2018	3	276,544			0.640	
000000-00-0	2309 Yunfeng Fund III LP	George Town	CYM	Pilot Growth Equity Partners II LLC	11/30/2018	3	4,589,099			40.000	
000000-00-0	2312 Pilot Growth Equity Fund II LP	San Francisco	CA	Pilot Growth Equity Partners II LLC	11/30/2018	3	7,108,019			6.670	
1599999. Joint Venture Interests - Common Stock - Unaffiliated								95,392,790	302,648,138		XXX
000000-00-0	1316 Braemar Energy Ventures LP	New York	NY	Braemar Power & Comms Management LP	01/09/2003	3		280,508		80.975	
891868-10-7	1470 Tower Square Capital Partners II LP	Springfield	MA	Mezzco II LLC	09/30/2005	2		132,501		22.355	
891868-10-7	1471 Tower Square Capital Partners II-A LP	Springfield	MA	Mezzco II LLC	09/30/2005	2		433,306		85.000	
000000-00-0	1558 Great Lakes II LLC	Springfield	MA	Barings LLC	12/14/2006	5		95,803		11.220	
000000-00-0	1561 MML Private Equity Fund Investor LLC	London	GBR	Massachusetts Mutual Life Ins Co	12/29/2006	3		41,727,984		100.000	
000000-00-0	1691 Tower Square Capital Partners III A LP	Springfield	MA	Mezzco III LLC	07/15/2008	2		11,765,229		94.482	
000000-00-0	1888 Great Lakes III LP	Springfield	MA	Great Lakes III GP LLC	02/19/2013	3		254,181		62.351	
000000-00-0	2072 Tamiami Citrus LLC	New Haven	CT	Barings LLC	09/11/2015	3		470,820		16.170	
000000-00-0	2094 EIP Holdings I LLC	New Haven	CT	Barings LLC	11/05/2015	3		14,482,759		28.966	
000000-00-0	2110 Barings CLO Investment Partners LP	Springfield	MA	Babson CLO Investment Partners GP LLC	10/07/2016	3		21,920,290		99.305	
000000-00-0	2127 Chassis Acquisition Holding LLC	New Haven	CT	Barings LLC	07/21/2016	3		16,000,000		30.000	
000000-00-0	2166 Barings North American Private Loan Fund LP	Springfield	MA	Barings LLC	01/03/2017	3		12,500,000		45.056	
000000-00-0	2197 Insurance Road LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	06/28/2017	3		571,500,281		100.000	
000000-00-0	2224 Barings Global Special Situations Credit 3	Springfield	MA	Barings LLC	01/11/2018	3	3,000,000			100.000	
000000-00-0	2252 Barings Global Real Assets Fund LP	Charlotte	NC	Barings Global Real Assets Fund GP LLC	02/28/2018	3	33,383,921	22,300,199		18.330	
367648-10-8	2275 Gateway Mezzanine Partners I LP	Springfield	MA	Mezzco Australia LLC	03/28/2011	2		116,623		62.296	
000000-00-0	2280 Aland Royalty Holdings LP	Houston	TX	Barings LLC	05/25/2018	3	13,745,773	66,727		25.000	
000000-00-0	2319 MassMutual International LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	12/31/2018	3	1,333,718,935			100.000	
1699999. Joint Venture Interests - Common Stock - Affiliated								1,383,848,629	756,364,972		XXX
000000-00-0	1256 Carlyle Realty Partners III LP	Washington	DC	Carlyle Realty III LP	03/13/2001	3		15,118		19.065	
000000-00-0	1449 Carlyle Realty Partners IV LP	Washington	DC	Carlyle Realty IV LP	07/01/2005	3		7,923		8.441	
000000-00-0	1554 Carlyle Realty Partners V LP	Washington	DC	Carlyle Realty V LP	11/17/2006	3		41,463		0.699	
000000-00-0	1644 Metropolitan Real Estate Partners International II LP	New York	NY	MREPIntII LLC	12/19/2007	1		21,291		8.512	
000000-00-0	2003 Perella Weinberg Real Estate Fund II	St. Helier	JEY	Perella Weinberg Real Estate Fund II GP	07/01/2014	3		709,482		0.760	
000000-00-0	2011 Harrison Street Real Estate Partners V LP	Chicago	IL	HSRE GP V LLC	10/08/2014	3		1,037,647		3.333	
000000-00-0	2122 Actis Africa Real Estate 3 LP	London	GBR	Actis GP LLP	06/06/2016	3		4,989,646		17.007	
000000-00-0	2154 GTIS Brazil Real Estate Fund III-D LP	New York	NY	GTIS Brazil Real Estate Fund III GP LP	03/02/2017	3		4,741,172		99.925	
000000-00-0	2202 Harrison Street Real Estate Partners VI LP	Chicago	IL	HSRE GP VI LLC	08/09/2017	3		6,380,000		1.765	
000000-00-0	2203 Landmark Real Estate Partners VIII-A LP	Simsbury	CT	Landmark Real Estate Prtnrs VIII- GP LP	07/11/2017	3		32,426,150		5.875	
000000-00-0	2220 Prime Storage Urban Opportunity Co-Invest LP	Saratoga Springs	NY	PRIME STORAGE FUND II GP LLC	10/03/2017	2		1,755,943		41.237	
000000-00-0	2229 Landmark Real Estate Partners VIII LP	Simsbury	CT	Landmark Real Estate Prtnrs VIII- GP LP	12/21/2017	3		984,911		50.000	
000000-00-0	2265 HSREP VI Co-Investment 3 LP	Chicago	IL	HSREP GP VI Co-Investment 3 LLC	05/04/2018	3	3,000,000	7,802,632		15.000	
000000-00-0	2266 Harrison Street European Property Partners II LP	St. Helier	JEY	HSRE EUROPEAN PROPERTY GP II LTD	05/01/2018	10	4,864,245	1,745,353		3.750	
1799999. Joint Venture Interests - Real Estate - Unaffiliated								7,864,245	62,658,730		XXX
000000-00-0	1349 CREA/PPC Venture LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	11/26/2003	3			47,095,776	93.444	
000000-00-0	1468 Fan Pier Development LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	09/28/2005	3		14,506		60.000	
000000-00-0	1556 Cornerstone Fort Pierce Development LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	01/05/2007	3		235,364		84.420	
000000-00-0	1625 Johnston Groves LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	04/01/2006	3			15,415,400	57.200	
000000-00-0	1672 Fallon Cornerstone One MPD LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	03/13/2008	3			131,372,150	87.659	
000000-00-0	1721 WP-SC LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	03/31/2009	3		1,581,856		81.390	
000000-00-0	1794 Cornerstone Real Estate Fund VIII LP	Hartford	CT	CREF VIII GP LLC	04/29/2011	3		745,295		12.658	
000000-00-0	1832 UK LIW Manager LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	02/28/2012	3		3,943		100.000	

E08.3

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 2

Showing Other Long-Term Invested Assets ACQUIRED AND ADDITIONS MADE December 31 of Current Year

1 CUSIP Identification	2 Name or Description	3 Location		5 Name of Vendor or General Partner	6 Date Originally Acquired	7 Type and Strategy	8 Actual Cost at Time of Acquisition	9 Additional Investment Made After Acquisition	10 Amount of Encumbrances	11 Percentage of Ownership	
		City	State								
000000-00-0	1833 UK LIW Member LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	02/28/2012	3		390,372		100.000	
000000-00-0	1845 Washington Gateway Apartments Venture LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	06/14/2012	3			57,287,760	91.524	
000000-00-0	1914 WeHo Domain LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	07/31/2013	3		483,750	35,604,000	77.400	
000000-00-0	1930 Farrington London Holdings LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	10/22/2013	3			77,087,808	94.500	
000000-00-0	2012 Waterloo London Holdings LLC	London	GBR	Massachusetts Mutual Life Ins Co	10/20/2014	3		3,202,256		100.000	
000000-00-0	2044 Cornerstone Real Estate Fund X LP	Hartford	CT	CREF X GP LLC	04/30/2015	3		3,744,969	47,590,456	26.188	
000000-00-0	2083 Barings/LAZ Parking Fund LP	Hartford	CT	Cornerstone LAZ Parking Fund GP LLC	10/23/2015	3			42,019,500	100.000	
000000-00-0	2101 50 Liberty LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	12/22/2015	3		8,358,992		59.077	
000000-00-0	2102 Ten Fan Pier Boulevard LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	12/22/2015	3		55,356,960		8.215	
000000-00-0	2109 CREA Madison Member LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	02/12/2016	3		744,300	182,200,181	90.000	
000000-00-0	2121 Barings Real Estate European Value Add I SCSp	Hartford	CT	Barings Value Add GP S a r l	10/24/2016	3		46,707,945	60,008,809	99.998	
000000-00-0	2136 Budapest Strasse LLC	Hartford	MA	Massachusetts Mutual Life Ins Co	08/17/2016	3		5,195,189	48,876,495	100.000	
000000-00-0	2169 Landmark Manchester Holdings LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	02/01/2017	3		11,169,441	17,467,154	100.000	
000000-00-0	2174 Three PM Office Holding LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	02/17/2017	3		1,268,424	60,335,848	95.000	
000000-00-0	2188 Danville Riverwalk Venture LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	11/28/2017	3		26,833,534		100.000	
000000-00-0	2200 CCB Monford Park LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	06/30/2017	3		8,985,013	12,776,905	94.000	
000000-00-0	2207 Calgary Railway Holding LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	07/26/2017	3		838,020		90.000	
000000-00-0	2216 Cambridge Hotel LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	09/30/2017	3		229,575		100.000	
000000-00-0	2218 Seattle 1415 Hotel Owner LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	09/30/2017	3		276,250		100.000	
000000-00-0	2226 Unna, Dortmund Holding LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	12/15/2017	3		2,568,090	61,454,295	100.000	
000000-00-0	2237 Portland 400 Sixth Manager LLC	Hartford	CT	Massachusetts Mutual Life Ins Co	11/22/2017	3		403,900	39,301,500	95.000	
000000-00-0	2241 Via Ceresio Milan LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	12/12/2017	3		1,412,300	4,563,407	100.000	
000000-00-0	2284 Noho West Venture LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	08/04/2018	3	72,670,000	1,560,051		95.000	
000000-00-0	2285 PACO France Logistics LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	06/29/2018	3	8,914,629	378,476	12,024,600	100.000	
000000-00-0	2286 PACO France Logistics 2 LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	11/15/2018	3	24,377,166	8,341,413	63,925,145	100.000	
000000-00-0	2287 PACO France Logistics 3 LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	06/29/2018	3	89	331		100.000	
000000-00-0	2289 Cornbrook PRS Holdings LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	07/31/2018	3	10,692,162	4,680,963		100.000	
000000-00-0	2290 Spain Avalon Holding LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	08/08/2018	3	81,442,013		47,525,800	100.000	
000000-00-0	2310 MM Island Member LLC	San Diego	CA	MG Island Investor LLC	10/23/2018	3	13,073,127	147,000	25,502,921	49.000	
1899999. Joint Venture Interests - Real Estate - Affiliated								211,169,185	195,858,478	1,089,435,909	XXX
000000-00-0	1994 Venari Resources LLC	Addison	TX	Venari Resources Management LLC	07/30/2014	3		758,529		0.641	
000000-00-0	2017 Napier Park Aircraft Leasing Vehicle I LLC	New York	NY	Napier Park Global Capital (US) GP LLC	11/13/2014	3		232,438		10.853	
000000-00-0	2069 Kerogen Energy Fund II LP	George Town	CYM	Kerogen General Partner II Limited	10/16/2015	3		3,933,058		7.230	
000000-00-0	2138 Kerogen Zennor Co-Investment Fund I LP	George Town	CYM	Kerogen General Partner II Limited	10/06/2016	3		730,124		6.394	
000000-00-0	2139 Kerogen Zennor Co-Investment Fund II LP	George Town	CYM	Kerogen General Partner II Limited	07/02/2018	3	877,539			3.226	
000000-00-0	2153 Cerberus Institutional Real Estate Partners IV LP	Dover	DE	Cerberus Real Estate GP IV LLC	10/13/2016	11		11,151,502		2.470	
000000-00-0	2155 THP Antioch LP	Houston	TX	TPH Partners II GP LP	04/10/2017	3		2,425,904		40.000	
000000-00-0	2175 AllDale Minerals III LP	Dallas	TX	AllDale Minerals Management III LLC	04/07/2017	3		7,800,000		6.944	
000000-00-0	2181 ENR Partners II LP	Dallas	TX	ENR II GP LLC	05/12/2017	3		2,631,311		2.615	
000000-00-0	2183 Prime Storage Fund II LP	Saratoga Springs	NY	Prime Group Holdings LLC	05/23/2017	2		3,332,015		4.998	
000000-00-0	2233 GASL Holdings LLC	New Haven	CT	Barings LLC	11/20/2017	3		9,214,225		4.620	
000000-00-0	2263 North Haven Tactical Value Fund I LP	New Haven	NY	MS Tactical Value Fund GP LP	03/12/2018	13	1,742,883		3,007,542	5.000	
2199999. Joint Venture Interests - Other - Unaffiliated								2,620,422	45,216,648		XXX
000000-00-0	1996 Sweet Tree Holdings I LLC	New Haven	CT	Barings LLC	06/20/2014	2		114,983		16.902	
000000-00-0	2187 Barings Asset-Based Income Fund US LP	Charlotte	NC	Barings Asset-Based Income Fund US GP LP	06/26/2018	3	18,989,488		18,410,261	6.070	
000000-00-0	2222 MM Copper Hill Road LLC	Springfield	MA	Massachusetts Mutual Life Ins Co	10/26/2017	3		8,644,331		100.000	
2299999. Joint Venture Interests - Other - Affiliated								18,989,488	27,169,635		XXX
649520-AF-5	8003 New York Life Insurance Co	New York	NY	New York Life Insurance Co	03/25/2010				13,619,025		
668131-AA-3	8004 Northwestern Mutual Life	Milwaukee	WI	Northwestern Mutual Life	03/24/2010				12,506,800		
309580-AA-9	8009 Farmers Exchange Capital III	Los Angeles	CA	Farmers exchange CAP III	08/03/2016				569,525		
401378-AC-8	8017 Guardian Life Insurance Co of America	New York	NY	Guardian Life Ins Co Amer	05/31/2017				20,870,468		
69448F-AA-9	8018 Pacific Life Insurance Company	Newport Beach	CA	Pacific Life Insurance Company	10/31/2017				4,427,800		
401378-AB-0	8019 Guardian Life Insurance Co of America	New York	NY	Guardian Life Ins Co Amer	04/30/2018		1,855,242				
023138-AA-8	8020 Ambac Assurance Corp	New York	NY	Guardian Life Ins Co Amer	12/31/2018		165,302				
2399999. Surplus Debentures, etc - Unaffiliated								2,020,544	51,993,618		XXX
000000-00-0	2298 Blue Ocean Income Fund LP	New York	NY	Entrust Partners LLC	09/25/2018	3	453,941		777,921	1.000	
2599999. Collateral Loans - Unaffiliated								453,941	777,921		XXX
000000-00-0	1701 30 Federal Co-Investment Fund I LLC	Boston	MA	John Hancock Realty Advisors Inc	10/02/2008	2			730,000	100.000	
000000-00-0	1766 Cornerstone-NAHT Enhanced Preservation Fund 2010-1	Columbus	OH	Cornerstone/NAHT Management LLC	09/27/2010	2			320,000	20.000	
000000-00-0	1801 Boston Capital Commonwealth Tax Credit Fund I	Boston	MA	BCLTMF Associates LLC	09/01/2011	2			105,000	99.990	
000000-00-0	1806 Raymond James Housing Opportunities Fund 22 LLC	St Petersburg	FL	Raymond James	09/30/2011	2			1,869,870	100.000	
000000-00-0	1826 Cornerstone NAHT Enhanced Preservation Fund 2011-I LLC	Columbus	OH	Cornerstone/NAHT 2011 Management LLC	12/15/2011	2			837,663	20.000	

E08.4

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 2

Showing Other Long-Term Invested Assets ACQUIRED AND ADDITIONS MADE December 31 of Current Year

1 CUSIP Identification	2 Name or Description	Location		5 Name of Vendor or General Partner	6 Date Originally Acquired	7 Type and Strategy	8 Actual Cost at Time of Acquisition	9 Additional Investment Made After Acquisition	10 Amount of Encumbrances	11 Percentage of Ownership	
		3 City	4 State								
000000-00-0	1844 Boston Capital Commonwealth Tax Credit Fund II	New York	.NY	BCCTC Commonwealth Associates II LLC	.05/29/2012	2		105,000		99.990	
000000-00-0	1919 Cornerstone-NAHT Enhanced Preservation Fund III LLC	Hartford	.CT	Cornerstone NAHT 2013 Management LLC	.09/14/2013	2		1,526,701		20.000	
000000-00-0	1981 Boston Financial MassMutual Fund IV LP	Boston	.MA	Boston Financial Invest Management LP	.06/30/2014	2		15,472,285		99.990	
000000-00-0	1982 Boston Capital Commonwealth Tax Credit Fund III A LP	Boston	.MA	Boston Capital Corporation	.11/21/2014	2		752,075		99.990	
000000-00-0	2038 Cornerstone NAHT Enhanced Preservation Fund 2014-1 LP	Hartford	.CT	Cornerstone NAHT 2014 Management LLC	.03/31/2015	2		5,032,935		20.000	
3399999. Non-Guaranteed Federal Low Income Housing Tax Credit - Unaffiliated								26,751,529		XXX	
4499999. Total - Unaffiliated								108,351,942	490,046,584		XXX
4599999. Total - Affiliated								1,732,781,324	1,530,379,806	1,089,435,909	XXX
4699999 - Totals								1,841,133,266	2,020,426,390	1,089,435,909	XXX

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 3

Showing Other Long-Term Invested Assets **DISPOSED**, Transferred or Repaid During the Current Year

1 CUSIP Identification	2 Name or Description	Location		5 Name of Purchaser or Nature of Disposal	6 Date Originally Acquired	7 Disposal Date	8 Book/ Adjusted Carrying Value Less Encum- brances, Prior Year	Change in Book/Adjusted Carrying Value						15 Book/ Adjusted Carrying Value Less Encum- brances on Disposal	16 Consid- eration	17 Foreign Exchange Gain (Loss) on Disposal	18 Realized Gain (Loss) on Disposal	19 Total Gain (Loss) on Disposal	20 Invest- ment Income	
		3 City	4 State					9 Unrealized Valuation Increase (De- crease)	10 Current Year's (Depre- ciation) or (Amorti- zation)/ Accretion	11 Current Year's Other- Than- Tempo- rary Impair- ment Recog- nized	12 Capital- ized Deferred Interest and Other	13 Total Change in Book/ Adjusted Carrying Value (9+10- 11+12)	14 Total Foreign Exchange Change in Book/ Adjusted Carrying Value							
000000-00-0	1374 Wrightwood Capital LLC	Chicago	IL	Distribution	06/03/2004	06/22/2018														
000000-00-0	1567 Square Mile Partners II LP	New York	NY	Liquidation of Investment	01/12/2007	12/31/2018	30,507	(30,507)					(30,507)							
0999999. Fixed or Variable Rate - Mortgage Loans - Unaffiliated								30,507	(30,507)				(30,507)							
000000-00-0	1674 Babson Mezzanine Realty Investors II LP	Hartford	CT	Prior year sale income/(expense)	03/25/2008	01/11/2018														491,883
000000-00-0	1747 CHC/RFP VI Core LLC	Wellesley	MA	Liquidation of Investment	02/01/2009	09/12/2018		(233,800)					(233,800)	786	786		234,586	234,586		756
000000-00-0	1995 Cornerstone Permanent Mortgage Fund II	Boston	MA	Distribution	12/17/2015	12/31/2018														
000000-00-0	1997 Cornerstone Permanent Mortgage Fund	Boston	MA	Distribution	10/21/2011	12/31/2018														
000000-00-0	2118 Cornerstone California Mortgage Fund I LLC	Glendale	CA	Distribution	09/10/2015	12/14/2018														
000000-00-0	2119 Cornerstone Permanent Mortgage Fund III	Boston	MA	Distribution	11/20/2015	12/31/2018														
000000-00-0	2120 Cornerstone Permanent Mortgage Fund IV	Boston	MA	Distribution	02/10/2017	12/31/2018														
000000-00-0	2129 Cornerstone California Mortgage Fund II LLC	Glendale	CA	Distribution	09/28/2016	12/14/2018														
000000-00-0	2130 MM Debt Participations LLC	Hartford	CT	Distribution	07/19/2016	12/31/2018														
000000-00-0	2170 Barings Real Estate Credit Strategies VII LP	Hartford	CT	Distribution	03/30/2017	12/31/2018														
000000-00-0	2256 Barings Affordable Housing Mortgage Fund I LLC	Plano	TX	Distribution	01/22/2018	03/23/2018														
1099999. Fixed or Variable Rate - Mortgage Loans - Affiliated								(233,800)					(233,800)	786	266,513,940		234,586	234,586		492,639
05617#-10-0	1761 Barings US Loan Fund Series	Charlotte	NC	Distribution	09/10/2010	10/12/2018														
55330#-10-1	1819 MML Mezzanine Investor III LLC	London	GBR	Distribution	06/02/2010	11/30/2018														
36764#-10-6	2045 Gateway Mezzanine Partners II LP	Springfield	MA	Distribution	03/26/2015	11/20/2018														
L0523#-10-1	2068 Babson Global Private Loan Fund	Springfield	MA	Distribution	10/16/2015	12/31/2018														
1499999. Joint Venture Interests - Fixed Income - Affiliated																				
000000-00-0	2 Massachusetts Capital Resource Company	Boston	MA	Distribution	12/30/1977	10/31/2018														
000000-00-0	1068 Darby Emerging Markets Fund LP	Grand Cayman	CYM	Prior year sale income/(expense)	11/07/1994	01/09/2018														
000000-00-0	1156 Linsalata Capital Partners Fund III LP	Mayfield Heights	OH	Prior year sale income/(expense)	04/20/1998	12/13/2018														
000000-00-0	1176 Weston Presidio Capital III LP	Boston	MA	Prior year sale income/(expense)	11/30/1998	02/28/2018														
000000-00-0	1183 Glencoe Capital Partners II LP	Chicago	IL	Liquidation of Investment	12/24/1998	12/19/2018		1,146,167					1,146,167	1,146,167	1,146,167					1,146,167
000000-00-0	1204 Life Insurance Community Investment Initiative LLC	Boston	MA	Distribution	09/15/1999	05/11/2018														
000000-00-0	1220 Perseus-Soros Biopharmaceutical Investors LP	New York	NY	Prior year sale income/(expense)	03/17/2000	05/18/2018														
000000-00-0	1263 HKW Capital Partners II LP	New York	NY	Prior year sale income/(expense)	05/14/2001	12/19/2018														
000000-00-0	1270 Roundtable Healthcare Partners LP	Lake Forest	IL	Liquidation of Investment	07/31/2001	06/01/2018	1,423,425	(2,385)					(2,385)	1,421,040	1,421,040					764,974
000000-00-0	1416 Stone Arch Capital LP	Minneapolis	MN	Prior year sale income/(expense)	02/04/2005	12/27/2018														
000000-00-0	1440 Linsalata Capital Partners Fund V LP	Mayfield Heights	OH	Distribution	05/31/2005	11/06/2018														
000000-00-0	1448 Jefferies Capital Partners IV LP	New York	NY	Distribution	07/11/2005	09/25/2018														
000000-00-0	1453 Roundtable Healthcare Partners II LP	Lake Forest	IL	Liquidation of Investment	08/02/2005	05/14/2018	2,096,617	(48,674)					(48,674)	28,105	2,052,617					675,205
000000-00-0	1459 Candover 2005 Fund US No 4 LP	London	GBR	Prior year sale income/(expense)	08/19/2005	04/05/2018														
000000-00-0	1481 Rosemount Global Trade Finance Fund LP	White Plains	NY	Distribution	12/01/2005	11/17/2018														
000000-00-0	1512 Asia Pacific Growth Fund V LP	Palo Alto	CA	Prior year sale income/(expense)	05/25/2006	01/23/2018														
000000-00-0	1526 Orpheus Holding LLC	New York	NY	Distribution	06/30/2006	10/31/2018														
000000-00-0	1527 Linden Capital Partners LP	Chicago	IL	Prior year sale income/(expense)	07/17/2006	08/28/2018														
000000-00-0	1528 PNC Equity Partners II LP	Pittsburgh	PA	Liquidation of Investment	07/21/2006	07/10/2018	117,778	59,452					59,452		230,559		52,300	52,300		59,452
000000-00-0	1530 Seidler Equity Partners III LP	Marina Del Rey	CA	Distribution	07/28/2006	09/28/2018														
000000-00-0	1565 Fourth Civen Fund	London	GBR	Liquidation of Investment	01/22/2007	09/27/2018	(198,243)	(1,750,368)					(1,750,368)	4,905,265	4,498,266		(2,481,781)	(2,481,781)		226,275
000000-00-0	1568 AP Cayman Partners II LP	Minato-Ku	JPN	Distribution	01/30/2007	12/01/2018														
000000-00-0	1570 Saw Mill Capital Partners LP	Briarcliff Manor	NY	Distribution	02/01/2007	12/31/2018														
000000-00-0	1571 HKW Capital Partners III LP	New York	NY	Distribution	01/29/2007	12/21/2018														
000000-00-0	1582 AACOP China Growth Inv LP	San Francisco	CA	Distribution	03/22/2007	06/30/2018														
000000-00-0	1583 Special Value Opportunities Fund LLC	Santa Monica	CA	Distribution	03/21/2007	11/30/2018														
000000-00-0	1585 Temenbaum Opp Fund V LLC	Santa Monica	CA	Distribution	03/21/2007	12/31/2018														

E09

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 3

Showing Other Long-Term Invested Assets DISPOSED, Transferred or Repaid During the Current Year

1 CUSIP Identification	2 Name or Description	Location		5 Name of Purchaser or Nature of Disposal	6 Date Originally Acquired	7 Disposal Date	8 Book/ Adjusted Carrying Value Less Encum- brances, Prior Year	Change in Book/Adjusted Carrying Value						15 Book/ Adjusted Carrying Value Less Encum- brances on Disposal	16 Consid- eration	17 Foreign Exchange Gain (Loss) on Disposal	18 Realized Gain (Loss) on Disposal	19 Total Gain (Loss) on Disposal	20 Invest- ment Income
		3 City	4 State					9 Unrealized Valuation Increase (De- crease)	10 Current Year's (Depre- ciation) or (Amorti- zation)/ Accretion	11 Current Year's Other- Than- Tempo- rary Impair- ment Recog- nized	12 Capital- ized Deferred Interest and Other	13 Total Change in Book/ Adjusted Carrying Value (9+10- 11+12)	14 Total Foreign Exchange Change in Book/ Adjusted Carrying Value						
000000-00-0	1871 Arbor Investments III LP	Chicago	IL	Distribution	11/02/2012	04/01/2018								20,906,173					
000000-00-0	1872 One Rock Capital Partners LP	New York	NY	Distribution	11/14/2012	12/31/2018								1,285,066					
000000-00-0	1875 Blackrock NTR Renewable Power Fund A LP																		
000000-00-0	1880 Equis Asia Fund LP	New York	NY	Distribution	12/05/2012	12/18/2018								703,459					
000000-00-0	1882 Oaktree Value Opportunities Feeder Fund LP	Grand Cayman	CYM	Distribution	01/07/2013	11/30/2018								11,538,101					
000000-00-0	1883 Marathon European Credit Opportunity Fund LP	Los Angeles	CA	Distribution	01/02/2013	10/01/2018								43,622,566					
000000-00-0	1884 IFM Global Infrastructure US LP	New York	NY	Distribution	01/02/2013	12/31/2018								11,964,606					
000000-00-0	1886 NB Strategic Co-Investment Partners II LP	New York	NY	Liquidation of Investment	02/20/2013	04/13/2018	8,698,428	923,850				923,850	8,777,686	9,622,278				923,850	
000000-00-0	1887 Stonepeak Infrastructure Fund LP	New York	NY	Distribution	01/11/2013	10/01/2018								23,240,390					
000000-00-0	1889 West Street Energy Partners LP	New York	NY	Distribution	02/19/2013	12/28/2018								9,503,573					
000000-00-0	1890 Basalt Infrastructure Partners LP	Jersey City	NJ	Distribution	03/06/2013	12/20/2018								1,085,143					
000000-00-0	1891 EMG Utica II Co Investment LP	St Peter Port	GBR	Distribution	03/13/2013	12/31/2018								1,489,008					
000000-00-0	1891 EMG Utica II Co Investment LP	Dallas	TX	Distribution	03/18/2013	09/30/2018								327,204					
000000-00-0	1893 Actis Energy 3 LP	Dallas	TX	Distribution	03/18/2013	09/30/2018								327,204					
000000-00-0	1894 Fifth Cinven Fund No 4 Limited Partnership	London	GBR	Distribution	04/04/2013	11/30/2018								10,267,525					
000000-00-0	1898 MBK Partners Fund III LP	St Peter Port	GBR	Distribution	04/05/2013	11/30/2018								12,998,931	(357,645)		(357,645)		
000000-00-0	1900 Advent VI Fund	Hong Kong	HKG	Distribution	04/16/2013	07/10/2018								23,193,981					
000000-00-0	1902 ICON Infrastructure Partners II LP	Southbank	AUS	Distribution	05/06/2013	10/31/2018								3,505,691	(436,967)		(436,967)		
000000-00-0	1905 TPH Partners II LP	St Peter Port	GBR	Distribution	04/29/2013	11/30/2018								11,664,391	(953,945)		(953,945)		
000000-00-0	1906 Hamilton Lane Secondary Fund III LP	Houston	TX	Distribution	05/10/2013	06/07/2018								130,164					
000000-00-0	1911 New Heritage Capital Fund LP	Denver	CO	Distribution	05/28/2013	12/31/2018								884,530					
000000-00-0	1912 Lone Star Fund VIII US LP	Boston	MA	Distribution	07/16/2013	12/19/2018								43,525					
000000-00-0	1913 PIMCO Bravo Fund II LP	Dallas	TX	Distribution	07/01/2013	06/04/2018								975,369					
000000-00-0	1922 EIG Energy Fund XVI LP	Newport Beach	CA	Distribution	07/19/2013	12/31/2018								40,559,507					
000000-00-0	1924 KKR Asian Fund II LP	Washington	DC	Distribution	09/23/2013	12/07/2018								4,629,640					
000000-00-0	1925 Black River Agriculture Fund 2 LP	New York	NY	Distribution	10/04/2013	04/01/2018								22,437,628					
000000-00-0	1926 Mill City Fund II LP	Hopkins	MN	Distribution	10/16/2013	11/30/2018								16,856					
000000-00-0	1929 Oaktree Emerging Market Opportunities Fund LP	Minneapolis	MN	Distribution	10/30/2013	01/05/2018								17,107					
000000-00-0	1932 Brookfield Infrastructure Fund II B LP	Los Angeles	CA	Distribution	10/09/2013	11/30/2018								23,454,830					
000000-00-0	1933 CID Capital Opportunity Fund II	New York	NY	Distribution	11/19/2013	12/14/2018								2,567,183					
000000-00-0	1934 Long River Ventures III LP	Indianapolis	IN	Distribution	11/22/2013	11/08/2018								109,997					
000000-00-0	1935 Riverside Capital Appreciation Fund VI-A LP	Amherst	MA	Distribution	11/22/2013	06/29/2018								1,055,026					
000000-00-0	1937 Nexus Capital Private Equity Fund VI LP	New York	NY	Distribution	12/06/2013	12/20/2018								1,093,375					
000000-00-0	1938 Guardian Capital Partners Fund II LP	Toronto	CAN	Distribution	11/21/2013	11/30/2018								1,977,069					
000000-00-0	1941 Brookfield Timberlands Fund V LP	Wayne	PA	Distribution	12/12/2013	09/01/2018								7,896					
000000-00-0	1942 Palladium Equity Partners IV LP	New York	NY	Distribution	12/23/2013	12/06/2018								135,812					
000000-00-0	1945 DFW Capital Partners IV LP	New York	NY	Distribution	12/20/2013	12/31/2018								11,368,717					
000000-00-0	1947 Kayne Saybrook Municipal Opportunity Fund LP	Teaneck	NJ	Distribution	12/19/2013	04/01/2018								15,931,626					
000000-00-0	1948 Sterling Investment Partners III LP	Los Angeles	CA	Distribution	12/20/2013	12/31/2018								10,823,094					
000000-00-0	1949 Landmark Equity Partners XV LP	Westport	CT	Distribution	01/03/2014	12/20/2018								13,843,043					
000000-00-0	1951 Greenstone Resources LP	Simsbury	CT	Distribution	01/06/2014	11/29/2018								3,168,288					
000000-00-0	1952 The Energy & Minerals Group Fund III LP	St Peter Port	GBR	Distribution	01/13/2014	12/21/2018								1,032,378					
000000-00-0	1954 Clayton Dubilier & Rice Fund IX LP	Dallas	TX	Distribution	01/16/2014	12/21/2018								702,842					
000000-00-0	1956 Blue Point Capital Partners III LP	New York	NY	Distribution	01/23/2014	12/19/2018								23,198,112					
000000-00-0	1957 Tower Arch Partners I LP	Cleveland	OH	Distribution	01/16/2014	11/30/2018								8,030,053					
000000-00-0	1958 Actis Africa 4 LP	Draper	UT	Distribution	01/22/2014	11/08/2018								557,392					
000000-00-0	1959 Blue Sea Capital Fund I LP	London	GBR	Distribution	01/24/2014	09/20/2018								68,732					
000000-00-0	1959 Blue Sea Capital Fund I LP	West Palm Beach	FL	Distribution	01/29/2014	11/15/2018								11,584,032					

E09.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 3

Showing Other Long-Term Invested Assets **DISPOSED**, Transferred or Repaid During the Current Year

1 CUSIP Identification	2 Name or Description	Location		5 Name of Purchaser or Nature of Disposal	6 Date Originally Acquired	7 Disposal Date	8 Book/ Adjusted Carrying Value Less Encum- brances, Prior Year	Change in Book/Adjusted Carrying Value						15 Book/ Adjusted Carrying Value Less Encum- brances on Disposal	16 Consid- eration	17 Foreign Exchange Gain (Loss) on Disposal	18 Realized Gain (Loss) on Disposal	19 Total Gain (Loss) on Disposal	20 Invest- ment Income	
		3 City	4 State					9 Unrealized Valuation Increase (De- crease)	10 Current Year's (Depre- ciation) or (Amorti- zation)/ Accretion	11 Current Year's Other- Than- Tempo- rary Impair- ment Recog- nized	12 Capital- ized Deferred Interest and Other	13 Total Change in Book/ Adjusted Carrying Value (9+10- 11+12)	14 Total Foreign Exchange Change in Book/ Adjusted Carrying Value							
000000-00-0	1963 Harbert Power Fund V LLC	Birmingham	AL	Distribution	02/10/2014	12/26/2018														
000000-00-0	1964 HCl Equity Partners IV LP	Washington	DC	Distribution	03/13/2014	04/01/2018														
000000-00-0	1967 ERG Holding Company LLC	Watchung	NJ	Liquidation of Investment	04/04/2014	12/26/2018	162,636	173,006				173,006		335,642	335,642					526,128
000000-00-0	1968 Riverview Strategic Opportunities Fund I LP	Chicago	IL	Distribution	04/04/2014	10/31/2018														
000000-00-0	1969 Japan Solar LP	Singapore	JPN	Sale of Equity Interest	04/03/2014	08/30/2018	14,097,499							10,994,139						
000000-00-0	1973 GFL Holdings LLC	New Haven	CT	Distribution	04/14/2014	09/25/2018														
000000-00-0	1975 TDR Capital III B LP	London	GBR	Distribution	05/02/2014	10/31/2018														
000000-00-0	1976 River Cities Capital Fund V LP	Cincinnati	OH	Distribution	05/07/2014	02/02/2018														
000000-00-0	1977 GenX360 Capital Partners II LP	New York	NY	Distribution	05/12/2014	11/30/2018														
000000-00-0	1978 TPG Asia VI LP	Fort Worth	TX	Distribution	05/13/2014	11/30/2018														
000000-00-0	1985 Callius Equity Partners III LP	Los Angeles	CA	Distribution	07/01/2014	12/19/2018														
000000-00-0	1986 WestView Capital Partners III LP	Boston	MA	Distribution	09/23/2014	10/31/2018														
000000-00-0	1987 Starwood Energy Infrastructure Fund II Global LP	Greenwich	CT	Distribution	06/25/2014	12/31/2018														
000000-00-0	1988 Pacific Equity Partners Fund V LP	St Helier	JEY	Distribution	02/13/2015	10/31/2018														
000000-00-0	1989 Lake AIV LP	St Peter Port	GBR	Distribution	08/12/2014	06/13/2018														
000000-00-0	1990 Warburg Pincus Energy LP	New York	NY	Distribution	07/25/2014	11/02/2018														
000000-00-0	1991 SunE Dessie Equity Holdings LLC	Beltsville	MD	Distribution	11/05/2014	03/30/2018														
000000-00-0	1993 Carlyle Power Partners II LP	Washington	DC	Distribution	09/29/2014	12/19/2018														
000000-00-0	1998 Exponent Private Equity Partners III LP	London	GBR	Distribution	02/18/2015	10/31/2018														
000000-00-0	2007 ECG Topco Holdings LLC	San Francisco	CA	Distribution	11/19/2014	08/01/2018														
000000-00-0	2014 GoldenTree Distressed Fund 2014 LP	New York	NY	Distribution	11/10/2014	10/01/2018														
000000-00-0	2015 AXL Investor Holdings LLC	New York	NY	Liquidation of Investment	11/18/2014	12/18/2018	126,623	3,161,735												
000000-00-0	2020 Kayne Private Energy Income Fund LP	Houston	CA	Distribution	04/01/2016	12/21/2018														
000000-00-0	2021 Asia AIT Private Equity Ptr IV LP	San Francisco	CA	Distribution	11/28/2014	10/01/2018														
000000-00-0	2024 Tennebaum Special Situations Fund IX LLC	Santa Monica	CA	Distribution	07/10/2015	12/31/2018														
000000-00-0	2025 Insight Venture Partners IX LP	New York	NY	Distribution	03/24/2015	09/28/2018														
000000-00-0	2027 Fortistar Energy Recycling LLC	White Plains	NY	Distribution	12/18/2014	12/31/2018														
000000-00-0	2032 Equis Asia Fund II LP	Grand Cayman	CYM	Distribution	01/15/2015	11/30/2018														
000000-00-0	2033 Stone Arch Capital III LP	Minneapolis	MN	Distribution	09/08/2015	04/01/2018														
000000-00-0	2040 Newport HFP LLC	Irvine	CA	Distribution	01/30/2015	12/05/2018														
000000-00-0	2041 Dyal II US Investors LP	New York	NY	Distribution	01/09/2015	10/26/2018														
000000-00-0	2042 CCI Investor Holdings LLC	New York	NY	Distribution	03/05/2015	11/01/2018														
000000-00-0	2047 EnCap Energy Capital Fund X LP	Houston	TX	Distribution	04/22/2015	12/19/2018														
000000-00-0	2053 Avenue Energy Opportunities Fund LP	Dover	DE	Distribution	05/28/2015	10/01/2018														
000000-00-0	2054 Blackstone Capital Partners VII LP	New York	NY	Distribution	10/17/2016	12/21/2018														
000000-00-0	2056 Power Stop Holdings LLC	Bedford Park	IL	Liquidation of Investment	05/29/2015	10/19/2018	160,651	1,224,750												
000000-00-0	2059 iCON Infrastructure Partners III LP	St Peter Port	GBR	Distribution	07/17/2015	11/03/2018														
000000-00-0	2060 Gryphon Partners IV LP	San Francisco	CA	Distribution	11/25/2015	12/19/2018														
000000-00-0	2065 Aquiline Financials Services Fund III LP	New York	NY	Distribution	08/11/2015	12/19/2018														
000000-00-0	2067 Pacific Private Equity Fund I LP	Newport Beach	CA	Distribution	07/10/2015	11/30/2018														
000000-00-0	2073 Warburg Pincus Private Equity XII LP	New York	NY	Distribution	12/21/2015	12/11/2018														
000000-00-0	2077 Gryphon Co-Invest Fund IV LP	San Francisco	CA	Distribution	11/25/2015	10/26/2018														
000000-00-0	2079 Saw Mill Capital Partners II LP	Briarcliff Manor	NY	Distribution	04/18/2016	04/01/2018														
000000-00-0	2082 Team Drive-Away Holdings LLC	Indianapolis	IN	Distribution	10/15/2015	10/31/2018														
000000-00-0	2084 JFL Equity Investors IV LP	Springfield	MA	Distribution	03/15/2016	04/01/2018														
000000-00-0	2085 Next Capital Fund III LP	Sydney	AUS	Distribution	11/02/2015	12/24/2018														
000000-00-0	2090 Marathon CLO Equity Fund LP	New York	NY	Distribution	11/10/2015	12/31/2018														
000000-00-0	2091 NB Strategic Co-Investment Partners III LP	New York	NY	Distribution	01/28/2016	10/01/2018														
000000-00-0	2092 Stonepeak Finland Co-Invest Holdings LP	New York	NY	Distribution	06/28/2016	11/30/2018														
000000-00-0	2099 Thompson Street Capital Partners IV LP	St Louis	MO	Distribution	01/25/2016	04/01/2018														

E09.3

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 3

Showing Other Long-Term Invested Assets **DISPOSED**, Transferred or Repaid During the Current Year

1 CUSIP Identification	2 Name or Description	Location		5 Name of Purchaser or Nature of Disposal	6 Date Originally Acquired	7 Disposal Date	8 Book/ Adjusted Carrying Value Less Encum- brances, Prior Year	Change in Book/Adjusted Carrying Value						15 Book/ Adjusted Carrying Value Less Encum- brances on Disposal	16 Consid- eration	17 Foreign Exchange Gain (Loss) on Disposal	18 Realized Gain (Loss) on Disposal	19 Total Gain (Loss) on Disposal	20 Invest- ment Income		
		3 City	4 State					9 Unrealized Valuation Increase (De- crease)	10 Current Year's (Depre- ciation) or (Amorti- zation)/ Accretion	11 Current Year's Other- Than- Tempo- rary Impair- ment Recog- nized	12 Capital- ized Deferred Interest and Other	13 Total Change in Book/ Adjusted Carrying Value (9+10- 11+12)	14 Total Foreign Exchange Change in Book/ Adjusted Carrying Value								
000000-00-0	2100 AG Asia Realty Fund III LP	Camana Bay	..CYM	Distribution	03/16/2016	12/19/2018															
000000-00-0	2104 Ampersand 2014 LP	Wellesley	..MA	Distribution	02/03/2016	12/27/2018															
000000-00-0	2105 Stonepeak Infrastructure Fund II LP	New York	..NY	Distribution	02/12/2016	11/30/2018															
000000-00-0	2106 FIMI Opportunity 6 LP	Tel Aviv	..ISR	Distribution	07/21/2016	04/01/2018															
000000-00-0	2107 Terra Co-Investment LLC	Houston	..TX	Distribution	04/01/2016	12/21/2018															
000000-00-0	2112 Greenstone Resources II LP	St Peter Port	..CIV	Distribution	04/19/2016	12/21/2018															
000000-00-0	2116 JFL-API Co-Invest Partners LP	Arlington	..VA	Distribution	04/20/2016	11/30/2018															
000000-00-0	2117 Industrial Growth Partners V LP	San Francisco	..CA	Distribution	07/01/2016	12/21/2018															
000000-00-0	2123 Brookfield Infrastructure Fund III-B LP	New York	..NY	Distribution	07/07/2016	12/18/2018															
000000-00-0	2124 Torquest Partners Fund (US) IV LP	Toronto	..CAN	Distribution	09/01/2016	07/31/2018															
000000-00-0	2131 Kohlberg Investors VIII LP	Mount Kisco	..NY	Distribution	08/30/2017	12/07/2018															
000000-00-0	2132 OneSmile HoldCo LLC	Irvine	..CA	Distribution	08/17/2016	10/12/2018															
000000-00-0	2137 Providence Strategic Growth II LP	Providence	..RI	Distribution	12/07/2016	10/12/2018															
000000-00-0	2141 PIMCO Corporate Opportunities Fund II LP	Newport Beach	..CA	Distribution	08/31/2016	10/01/2018															
000000-00-0	2142 ASM SIP LP	New Haven	..CT	Distribution	10/01/2016	10/31/2018															
000000-00-0	2145 Delta-V Capital 2011 LP	Boulder	..CO	Distribution	10/01/2016	12/31/2018															
000000-00-0	2150 Stark Investment Structured Finance Fund	Milwaukee	..WI	Prior year sale income/(expense)	10/01/2016	10/16/2018														1,446	
000000-00-0	2152 WC Aircraft Holdings US LLC	New Haven	..CT	Distribution	10/01/2016	09/20/2018															
000000-00-0	2161 Noronha Co-Invest LLC	New York	..NY	Distribution	03/31/2017	12/20/2018															
000000-00-0	2167 Incline Equity Partners IV LP	Pittsburgh	..PA	Distribution	08/15/2017	04/01/2018															
000000-00-0	2173 AACF China Growth Investors VIII LP	San Francisco	..CA	Distribution	12/29/2016	10/01/2018															
000000-00-0	2176 SRS Equity Holdings 2 LLC	San Francisco	..CA	Distribution	03/27/2017	12/28/2018															
000000-00-0	2178 Haddington Energy Partners III LP	Houston	..TX	Distribution	03/31/2017	01/31/2018															
000000-00-0	2186 Trinity Hunt Partners V LP	Dallas	..TX	Distribution	01/17/2018	10/17/2018															
000000-00-0	2191 Project Arthur	New York	..NY	Sale of Equity Interest	12/15/2017	02/28/2018	443,609							443,609							
000000-00-0	2192 A&M Capital Opportunities Fund LP	Greenwich	..CT	Distribution	09/08/2017	10/01/2018															
000000-00-0	2204 Uno Co-Invest LP	New York	..NY	Distribution	07/13/2017	04/01/2018															
000000-00-0	2205 MidOcean Partners V LP	Dover	..DE	Distribution	04/25/2018	11/27/2018															
000000-00-0	2206 Avenue Energy Opportunities Fund II LP	New York	..NY	Distribution	09/19/2017	12/19/2018															
000000-00-0	2212 Asia Alternatives Capital Partners V LP	Wilmington	..DE	Distribution	08/22/2017	10/01/2018															
000000-00-0	2221 HarbourVest Asia Pacific Fund VIII	George town	..CYM	Distribution	10/11/2017	11/30/2018															
000000-00-0	2227 Reelcraft Holdings LLC	Chicago	..IL	Distribution	11/13/2017	09/20/2018															
000000-00-0	2231 Navis Asia Fund VII LP	Grand Cayman	..CYM	Distribution	03/29/2018	07/25/2018															
000000-00-0	2234 I Squared Nautilus Partners LP	New York	..NY	Sale of Equity Interest	12/22/2017	02/28/2018	8,841,379							8,841,379							
000000-00-0	2238 OnyxPoint Permian Equity II LP	New York	..NY	Sale of Equity Interest	12/19/2017	02/28/2018	20,036,986							20,382,528							
000000-00-0	2242 Gryphon Partners V LP	San Francisco	..CA	Distribution	08/29/2018	12/20/2018															
000000-00-0	2244 Hidden Harbor Capital Partners I LP	Fort Lauderdale	..FL	Distribution	02/08/2018	05/30/2018															
000000-00-0	2245 Stonepeak Spear (Co-Invest) Holdings LP	New York	..NY	Sale of Equity Interest	02/20/2018	02/28/2018								7,389,555							
000000-00-0	2246 ISQ Global Infrastructure Fund II LP	New York	..NY	Distribution	06/07/2018	12/27/2018															
000000-00-0	2255 Providence Strategic Growth III LP	Providence	..RI	Distribution	07/26/2018	12/17/2018															
000000-00-0	2270 Levine Leichtman Capital Partners VI	Wilmington	..DE	Distribution	04/19/2018	12/28/2018															
000000-00-0	1387A VPG Holdings LLC	Beachwood	..OH	Prior year sale income/(expense)	07/19/2004	05/31/2018														101,071	
000000-00-0	1387B VPG Holdings LLC	Beachwood	..OH	Prior year sale income/(expense)	07/19/2004	05/31/2018														45,409	
000000-00-0	MISOCIA Misc & Sold BA Assets	New York	..NY	Prior year sale income/(expense)	01/01/2010	12/31/2018														1,589	
1599999. Joint Venture Interests - Common Stock - Unaffiliated																					
000000-00-0	1428 Jefferies Finance LLC	New York	..NY	Distribution	03/30/2005	11/30/2018	59,703,373	5,691,856					5,691,856	4,905,265	71,661,895	1,307,306,730	40,000,000	(1,920,240)	2,838,028	917,787	18,362,576
000000-00-0	1466 Wood Creek Venture Fund LLC	Norfolk	..CT	Distribution	09/21/2005	02/15/2018															
891866-10-7	1470 Tower Square Capital Partners II LP	Springfield	..MA	Distribution	09/30/2005	11/13/2018															
891866-10-7	1471 Tower Square Capital Partners II-A LP	Springfield	..MA	Distribution	09/30/2005	12/31/2018															
000000-00-0	1497 Baring Investment Series LLC	Boston	..MA	Distribution	03/28/2006	12/05/2018	18,541,742	(1,441,990)					(1,441,990)	16,988,453	42,518,719					10,072,437	
000000-00-0	1529 Wood Creek Multi-Asset Fund LP	New Haven	..CT	Prior year sale income/(expense)	07/28/2006	09/01/2018															1,529

E09.4

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 3

Showing Other Long-Term Invested Assets DISPOSED, Transferred or Repaid During the Current Year

1 CUSIP Identification	2 Name or Description	Location		5 Name of Purchaser or Nature of Disposal	6 Date Originally Acquired	7 Disposal Date	8 Book/ Adjusted Carrying Value Less Encum- brances, Prior Year	Change in Book/Adjusted Carrying Value						15 Book/ Adjusted Carrying Value Less Encum- brances on Disposal	16 Consid- eration	17 Foreign Exchange Gain (Loss) on Disposal	18 Realized Gain (Loss) on Disposal	19 Total Gain (Loss) on Disposal	20 Invest- ment Income
		3 City	4 State					9 Unrealized Valuation Increase (De- crease)	10 Current Year's (Depre- ciation) or (Amorti- zation)/ Accretion	11 Current Year's Other- Than- Tempo- rary Impair- ment Recog- nized	12 Capital- ized Deferred Interest and Other	13 Total Change in Book/ Adjusted Carrying Value (9+10- 11+12)	14 Total Foreign Exchange Change in Book/ Adjusted Carrying Value						
000000-00-0	1558 Great Lakes II LLC	Springfield	MA	Distribution	12/14/2006	12/28/2018								876,987					
000000-00-0	1561 MML Private Equity Fund Investor LLC	London	GBR	Distribution	12/29/2006	12/31/2018								32,222,842					
000000-00-0	1691 Tower Square Capital Partners III A LP	Springfield	MA	Distribution	07/15/2008	12/31/2018								51,177,917					
367648-10-8	1791 Gateway Mezzanine Partners I LP	Springfield	MA	Liquidation of Investment	03/28/2011	04/01/2018	1,659,743	11,845,594				11,845,594		13,505,336		(13,505,336)	(13,505,336)	176,519	
55326#-10-7	1814 MML Mezzanine Investor LLC	London	GBR	Distribution	12/22/2005	06/30/2018								4,927,037					
000000-00-0	1815 MML Mezzanine Investor L LLC	London	GBR	Distribution	11/14/2008	06/21/2018								1,484,635					
55327#-10-8	1818 MML Mezzanine Investor II LLC	London	GBR	Distribution	04/23/2008	10/31/2018								8,788,710					
000000-00-0	1888 Great Lakes III LP	Springfield	MA	Distribution	02/19/2013	10/29/2018								13,312,442					
000000-00-0	2010 U.S. Buyer Broadcasting LLC	New Haven	CT	Liquidation of Investment	06/12/2015	09/06/2018	309,606	626,566	108,900			735,466		827,273					
000000-00-0	2028 MML Special Situations Investor LLC	Springfield	MA	Distribution	12/19/2014	09/21/2018								40,857,186					
000000-00-0	2043 Milestone Acquisition Holding LLC	New Haven	CT	Distribution	02/24/2015	12/31/2018								1,602					
000000-00-0	2058 Alchemy Copyrights LLC	Beverly Hills	CA	Sale of Equity Interest	06/01/2015	12/31/2018	221,022	(10,388)				(10,388)		202,951		508,846	508,846		
000000-00-0	2097 US Pharmaceutical Holdings II LLC	New Haven	CT	Distribution	12/02/2015	01/25/2018								719,480					
000000-00-0	2110 Barings CLO Investment Partners LP	Springfield	MA	Distribution	10/07/2016	10/30/2018								5,808,225					
000000-00-0	2163 CRA Aircraft Holdings LLC	New Haven	CT	Distribution	11/14/2016	12/20/2018								480,000					
000000-00-0	2164 Barings Global Energy Infrastructure Fund I LP	Springfield	MA	Distribution	12/05/2016	12/31/2018								5,706,215					
000000-00-0	2166 Barings North American Private Loan Fund LP	Springfield	MA	Distribution	01/03/2017	11/21/2018								2,583,026					
000000-00-0	2197 Insurance Road LLC	Springfield	MA	Distribution	06/28/2017	12/28/2018								273,141,156					
000000-00-0	2224 Barings Global Special Situations Credit 3	Springfield	MA	Distribution	01/11/2018	10/03/2018								102,772					
000000-00-0	2252 Barings Global Real Assets Fund LP	Charlotte	NC	Distribution	02/28/2018	10/31/2018								24,804,456					
367648-10-8	2275 Gateway Mezzanine Partners I LP	Springfield	MA	Distribution	03/28/2011	12/31/2018								(13,505,336)		13,505,336	13,505,336		
000000-00-0	2280 Aland Royalty Holdings LP	Houston	TX	Distribution	05/25/2018	12/31/2018								110,280					
1699999. Joint Venture Interests - Common Stock - Affiliated							20,732,113	11,019,782		108,900		11,128,682		18,018,677	563,458,198	508,846	508,846	10,250,484	
000000-00-0	1256 Carlyle Realty Partners III LP	Washington	DC	Distribution	03/13/2001	12/20/2018								2,049,463					
000000-00-0	1352 CP Investment Fund LP	San Francisco	CA	Liquidation of Investment	12/22/2003	04/01/2018	977	(977)				(977)						(977)	
000000-00-0	1400 Legacy Partners Realty Fund I LLC	Foster City	CA	Distribution	12/27/2004	10/29/2018								211,113					
000000-00-0	1419 JER Real Estate Partners III LP	Chicago	IL	Prior year sale income/(expense)	01/05/2005	10/26/2018												3,277	
000000-00-0	1449 Carlyle Realty Partners IV LP	Washington	DC	Distribution	07/01/2005	12/19/2018								3,562,058					
000000-00-0	1492 Akridge Office Fund LLC	Washington	DC	Prior year sale income/(expense)	01/20/2006	12/31/2018												15,521	
000000-00-0	1498 Crossharbor Institutional Partners LP	Boston	MA	Distribution	03/29/2006	08/31/2018								3,091,972					
000000-00-0	1499 CH MM Denton LLC	Boston	MA	Distribution	03/30/2006	09/27/2018								1,213,491					
000000-00-0	1500 Legacy Partners Realty Fund II LLC	Foster City	CA	Distribution	04/13/2006	12/31/2018								15,708					
000000-00-0	1507 Westbrook Real Estate Fund VI LP	Palm Beach Gardens	FL	Distribution	05/10/2006	11/30/2018								339,041					
000000-00-0	1510 Perseus Capital City Fund LP	Washington	DC	Liquidation of Investment	05/12/2006	04/10/2018	638,519	(252,343)				(252,343)		386,175					
000000-00-0	1552 One Newark Center Associates LP	New York	NY	Distribution	11/09/2006	12/13/2018								1,166,635					
000000-00-0	1553 Buchanan Fund V LLC	Newport Beach	CA	Distribution	11/13/2006	11/22/2018								1,151,174					
000000-00-0	1554 Carlyle Realty Partners V LP	Washington	DC	Distribution	11/17/2006	12/19/2018								596,670					
000000-00-0	1580 Charles River Institutional Fund I LP	Newton	MA	Liquidation of Investment	12/19/2007	12/31/2018	558,947	299,226				299,226		29,084				298,561	
000000-00-0	1604 Rockpoint Real Estate Fund III LP	Dallas	TX	Distribution	09/28/2007	08/31/2018								237,333					
000000-00-0	1605 Blue Vista Sponsor Equity Fund II LLC	Chicago	IL	Liquidation of Investment	08/15/2007	12/14/2018	195,453	(1,708)				(1,708)		193,745				(11,356)	
000000-00-0	1627 Carmel Partners Investment Fund III LP	San Francisco	CA	Distribution	05/01/2008	12/18/2018								1,777,201					
000000-00-0	1644 Metropolitan Real Estate Partners International II LP	New York	NY	Distribution	12/19/2007	12/31/2018								681,317					
000000-00-0	1649 Westbrook Real Estate Fund VII LP	Palm Beach Gardens	FL	Distribution	12/04/2007	11/30/2018								454,545					
000000-00-0	1658 Asian Realty Partners III LLC	Chicago	IL	Liquidation of Investment	12/17/2007	12/28/2018	47,812	(47,812)				(47,812)						62,779	
000000-00-0	1661 Westbrook Real Estate Ptr VIII LP	Palm Beach Gardens	FL	Distribution	12/04/2007	11/30/2018								(234,938)					
000000-00-0	1671 Hancock Timberland IX INC	Boston	MA	Distribution	03/25/2008	12/27/2018								1,144,212					
000000-00-0	2011 Harrison Street Real Estate Partners V LP	Chicago	IL	Distribution	10/08/2014	12/31/2018								2,498,190					
000000-00-0	2203 Landmark Real Estate Partners VIII-A LP	Simsbury	CT	Distribution	07/11/2017	12/19/2018								17,077,365					

E09.5

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 3

Showing Other Long-Term Invested Assets DISPOSED, Transferred or Repaid During the Current Year

1 CUSIP Identification	2 Name or Description	Location		5 Name of Purchaser or Nature of Disposal	6 Date Originally Acquired	7 Disposal Date	8 Book/ Adjusted Carrying Value Less Encum- brances, Prior Year	Change in Book/Adjusted Carrying Value						15 Book/ Adjusted Carrying Value Less Encum- brances on Disposal	16 Consid- eration	17 Foreign Exchange Gain (Loss) on Disposal	18 Realized Gain (Loss) on Disposal	19 Total Gain (Loss) on Disposal	20 Invest- ment Income																	
		3 City	4 State					9 Unrealized Valuation Increase (De- crease)	10 Current Year's (Depre- ciation) or (Amorti- zation)/ Accretion	11 Current Year's Other- Than- Tempo- rary Impair- ment Recog- nized	12 Capital- ized Deferred Interest and Other	13 Total Change in Book/ Adjusted Carrying Value (9+10- 11+12)	14 Total Foreign Exchange Change in Book/ Adjusted Carrying Value																							
000000-00-0	2220 Prime Storage Urban Opportunity Co- Invest LP	Saratoga Springs	NY	Distribution	10/03/2017	07/06/2018													5,666,040																	
000000-00-0	2229 Landmark Real Estate Partners VIII LP	Simsbury	CT	Distribution	12/21/2017	12/14/2018													857,445																	
000000-00-0	2266 Harrison Street European Property Partners II LP	St. Helier	JEY	Distribution	05/01/2018	10/18/2018													2,511,377																	
1799999. Joint Venture Interests - Real Estate - Unaffiliated																																				
000000-00-0	1314 Gallery Place Equity Fund LLC	Hartford	CT	Prior year sale income/(expense)	07/29/2002	06/15/2018														1,441,708																
000000-00-0	1349 CREA/PPC Venture LLC	Hartford	CT	Distribution	11/26/2003	11/30/2018														(3,615)																
000000-00-0	1429 12-18W 55TH ST Predevelopment LLC	Hartford	CT	Prior year sale income/(expense)	03/29/2005	09/12/2018														(3,615)																
000000-00-0	1445 Waterford Development Associates	Hartford	CT	Liquidation of Investment	05/12/2005	10/22/2018	12,822,451	(1,990,398)												(1,990,398)																
000000-00-0	1468 Fan Pier Development LLC	Hartford	CT	Distribution	09/28/2005	12/31/2018														(1,990,398)																
000000-00-0	1496 CREA/Windstar Dublin-Pleasanton LLC	Hartford	CT	Prior year sale income/(expense)	03/15/2006	10/29/2018														9,403,155																
000000-00-0	1625 Johnston Groves LLC	Hartford	CT	Distribution	04/01/2006	12/31/2018														10,832,053																
000000-00-0	1672 Fallon Cornerstone One MPD LLC	Hartford	CT	Distribution	03/13/2008	12/20/2018														26,726,495																
000000-00-0	1721 WP-SC LLC	Hartford	CT	Liquidation of Investment	03/31/2009	12/27/2018	34,236,813	30,001,603												954,687																
000000-00-0	1729 CREA/LYON West Gateway LLC	Hartford	CT	Liquidation of Investment	06/27/2008	08/20/2018	8,334,821	48,193,915												9,215,168																
000000-00-0	1735 MW Apts LLC	Hartford	CT	Prior year sale income/(expense)	08/26/2009	04/18/2018														58,583,353																
000000-00-0	1739 MSP-SC LLC	Hartford	CT	Prior year sale income/(expense)	08/26/2009	09/07/2018														65,820,272																
000000-00-0	1740 Country Club Office Plaza LLC	Hartford	CT	Prior year sale income/(expense)	08/26/2009	09/19/2018														56,528,736																
000000-00-0	1760 Sawgrass Village Shopping Center LLC	Hartford	CT	Distribution	07/13/2010	06/15/2018														56,528,736																
000000-00-0	1794 Cornerstone Real Estate Fund VIII LP	Hartford	CT	Liquidation of Investment	04/29/2011	12/20/2018	3,854,281	131,921												48,193,915																
000000-00-0	1798 AT Mid-Atlantic Office Portfolio LLC	Hartford	CT	Prior year sale income/(expense)	07/31/2011	11/15/2018														30,001,603																
000000-00-0	1812 50 Northern Avenue Member LLC	Hartford	CT	Prior year sale income/(expense)	11/01/2011	06/29/2018														58,583,353																
000000-00-0	1813 11 Fan Pier Boulevard Member LLC	Hartford	CT	Prior year sale income/(expense)	11/01/2011	11/30/2018														65,820,272																
000000-00-0	1832 UK LIW Manager LLC	Hartford	CT	Distribution	02/28/2012	12/31/2018														56,528,736																
000000-00-0	1833 UK LIW Member LLC	Hartford	CT	Distribution	02/28/2012	12/31/2018														56,528,736																
000000-00-0	1839 Cornerstone Enhanced Mortgage Fund I LP	Hartford	CT	Liquidation of Investment	09/16/2011	11/05/2018	2,366,792	66,892												56,528,736																
000000-00-0	1845 Washington Gateway Apartments Venture LLC	Hartford	CT	Distribution	06/14/2012	12/13/2018														66,892																
000000-00-0	1847 21 West 86 LLC	Hartford	CT	Prior year sale income/(expense)	06/14/2012	12/27/2018														66,892																
000000-00-0	1914 WeHo Domain LLC	Hartford	CT	Distribution	07/31/2013	12/14/2018														2,446,842																
000000-00-0	1915 Gracechurch London Holdings LLC	Hartford	CT	Prior year sale income/(expense)	07/18/2013	06/20/2018														2,446,842																
000000-00-0	1920 MM Greenhill Office LLC	Hartford	CT	Prior year sale income/(expense)	08/06/2013	04/30/2018														2,446,842																
000000-00-0	1930 Farrington London Holdings LLC	Hartford	CT	Distribution	10/22/2013	12/31/2018														2,446,842																
000000-00-0	1939 Cornerstone High Yield Venture LP	Hartford	CT	Distribution	12/16/2013	12/31/2018														2,446,842																
000000-00-0	1940 MM Woodfield Martingale LLC	Hartford	CT	Prior year sale income/(expense)	11/26/2013	11/15/2018														2,446,842																
000000-00-0	1950 Twenty Two Liberty LLC	Hartford	CT	Distribution	12/31/2013	12/21/2018														2,446,842																
000000-00-0	1961 CREA FMF Nashville LLC	Springfield	MA	Prior year sale income/(expense)	12/31/2014	11/28/2018														2,446,842																
000000-00-0	1972 MM/Hines Harrison LLC	Hartford	CT	Prior year sale income/(expense)	05/02/2014	12/12/2018														2,446,842																
000000-00-0	2039 CREA 330 Third LLC	Springfield	MA	Liquidation of Investment	12/31/2014	11/08/2018	28,665,810	23,556,508												2,446,842																
000000-00-0	2044 Cornerstone Real Estate Fund X LP	Hartford	CT	Distribution	04/30/2015	12/18/2018														2,446,842																
000000-00-0	2083 Barings/LAZ Parking Fund LP	Hartford	CT	Distribution	10/23/2015	12/31/2018														2,446,842																
000000-00-0	2101 50 Liberty LLC	Hartford	CT	Distribution	12/22/2015	10/10/2018														2,446,842																
000000-00-0	2102 Ten Fan Pier Boulevard LLC	Hartford	CT	Transfer to Schedule A	12/22/2015	08/31/2018	1,293,286	(35,149)												2,446,842																
000000-00-0	2109 CREA Madison Member LLC	Hartford	CT	Distribution	02/12/2016	12/24/2018														2,446,842																
000000-00-0	2113 Willowood Lakeside Master LLC	Hartford	CT	Liquidation of Investment	03/15/2016	12/13/2018	26,961,449	(5,904,290)												2,446,842																
000000-00-0	2121 Barings Real Estate European Value Add I SCSp	Hartford	CT	Distribution	10/24/2016	12/31/2018														2,446,842																
000000-00-0	2125 MM Chatham Office LLC	Hartford	CT	Prior year sale income/(expense)	07/07/2016	12/05/2018														2,446,842																
000000-00-0	2136 Budapest Strasse LLC	Hartford	MA	Distribution	08/17/2016	12/12/2018														2,446,842																
000000-00-0	2188 Danville Riverwalk Venture LLC	Hartford	CT	Distribution	11/28/2017	05/18/2018														2,446,842																
000000-00-0	2207 Calgary Railway Holding LLC	Hartford	CT	Distribution	07/26/2017	10/05/2018														2,446,842																
000000-00-0	2216 Cambridge Hotel LLC	Springfield	MA	Liquidation of Investment	09/30/2017	12/24/2018	(4,068,775)	68,947,250												2,446,842																
000000-00-0	2217 Alexandria Towers Investors LLC	Springfield	MA	Liquidation of Investment	09/30/2017	08/28/2018	70,395,018	29,314,716												2,446,842																
000000-00-0	2218 Seattle 1415 Hotel Owner LLC	Springfield	MA	Liquidation of Investment	09/30/2017	12/03/2018	67,405,235	(857,006)												2,446,842																

E09.6

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - PART 3

Showing Other Long-Term Invested Assets **DISPOSED**, Transferred or Repaid During the Current Year

1 CUSIP Identification	2 Name or Description	Location		5 Name of Purchaser or Nature of Disposal	6 Date Originally Acquired	7 Disposal Date	8 Book/ Adjusted Carrying Value Less Encum- brances, Prior Year	Change in Book/Adjusted Carrying Value						15 Book/ Adjusted Carrying Value Less Encum- brances on Disposal	16 Consid- eration	17 Foreign Exchange Gain (Loss) on Disposal	18 Realized Gain (Loss) on Disposal	19 Total Gain (Loss) on Disposal	20 Invest- ment Income	
		3 City	4 State					9 Unrealized Valuation Increase (De- crease)	10 Current Year's (Depre- ciation) or (Amorti- zation)/ Accretion	11 Current Year's Other- Than- Tempo- rary Impair- ment Recog- nized	12 Capital- ized Deferred Interest and Other	13 Total Change in Book/ Adjusted Carrying Value (9+10- 11+12)	14 Total Foreign Exchange Change in Book/ Adjusted Carrying Value							
000000-00-0	2226 Unna, Dortmund Holding LLC	Springfield	MA	Distribution	12/15/2017	12/31/2018								66,119,400						
000000-00-0	2237 Portland 400 Sixth Manager LLC	Hartford	CT	Distribution	11/22/2017	06/30/2018								41,963,048						
000000-00-0	2284 NoHo West Venture LLC	Springfield	MA	Distribution	08/04/2018	09/19/2018								37,347						
000000-00-0	2290 Spain Avalon Holding LLC	Springfield	MA	Distribution	08/08/2018	11/19/2018								36,362,416						
1899999. Joint Venture Interests - Real Estate - Affiliated								252,267,181	191,425,962				191,425,962	485,293,724	944,348,655		5,356,196	5,356,196	194,775,279	
000000-00-0	1992 Ashmore Emerg Mrkt Corp Priv Debt Fd SICAV-SIF	Wilmington	DE	Distribution	05/14/2014	12/19/2018								8,490,618						
000000-00-0	2009 SunE NC Lessee Holdings LLC	Beltsville	MD	Distribution	12/12/2014	12/31/2018								305,953						
000000-00-0	2013 Sheridan Production Partners III A LP	Houston	TX	Distribution	11/06/2014	10/29/2018								773,500						
000000-00-0	2017 Napier Park Aircraft Leasing Vehicle I LLC	New York	NY	Distribution	11/13/2014	12/31/2018								1,260,404						
000000-00-0	2069 Kerogen Energy Fund II LP	George Town	CYM	Distribution	10/16/2015	05/25/2018								1,263,438						
000000-00-0	2153 Cerberus Institutional Real Estate Partners IV LP	Dover	DE	Distribution	10/13/2016	11/30/2018								3,137,869						
000000-00-0	2175 AlDale Minerals III LP	Dallas	TX	Distribution	04/07/2017	12/31/2018								677,083						
000000-00-0	2183 Prime Storage Fund II LP	Saratoga Springs	NY	Distribution	05/23/2017	11/16/2018								476,651						
000000-00-0	2201 English Color Holdings LLC	Boston	MA	Distribution	06/30/2017	12/12/2018								42,603						
000000-00-0	2233 GASL Holdings LLC	New Haven	CT	Distribution	11/20/2017	09/30/2018								676,648						
000000-00-0	2263 North Haven Tactical Value Fund I LP	New York	NY	Distribution	03/12/2018	11/30/2018								1,391,702						
2199999. Joint Venture Interests - Other - Unaffiliated														18,496,470						
000000-00-0	1965 MML Investment Advisers LLC	Springfield	MA	Distribution	03/28/2014	12/31/2018								71,684,844						
000000-00-0	1979 Intermodal Holdings II LLC	New Haven	CT	Distribution	05/20/2014	10/31/2018								1,415,700						
000000-00-0	1996 Sweet Tree Holdings I LLC	New Haven	CT	Sale of Equity Interest	06/20/2014	01/24/2018							5,600,832	4,919,044		(681,787)	(681,787)			
000000-00-0	2095 Timber Land Forest Holding LLC	New Haven	CT	Distribution	11/06/2015	12/31/2018								109,412,935						
000000-00-0	2162 Remington L&W Holdings LLC	Phoenix	AZ	Distribution	10/31/2016	12/31/2018								91,037,205						
000000-00-0	2187 Barings Asset-Based Income Fund US LP	Charlotte	NC	Distribution	06/26/2018	11/14/2018								84,980						
2299999. Joint Venture Interests - Other - Affiliated														5,600,832	278,554,709		(681,787)	(681,787)		
000000-00-0	2196 KKR MM Project Vector LP	New York	NY	Distribution	07/28/2017	10/31/2018								5,881,034						
2699999. Collateral Loans - Affiliated															5,881,034					
000000-00-0	1089 Boston Capital Corp Tax Credit Fund V	Boston	MA	Liquidation of Investment	02/28/1996	07/05/2018								628,373		628,373	628,373			
000000-00-0	1132 Lehman Housing Tax Credit Fund VI LP	New York	NY	Liquidation of Investment	11/17/1997	12/27/2018								360,577		360,577	360,577			
000000-00-0	1329 Raymond James XXIII LP	St Petersburg	FL	Liquidation of Investment	07/14/2003	01/01/2018	1,700,265						1,700,265		(1,700,265)	(1,700,265)				
000000-00-0	1766 Cornerstone-NAHT Enhanced Preservation Fund 2010-1	Columbus	OH	Distribution	09/27/2010	04/30/2018								320,000						
000000-00-0	1826 Cornerstone NAHT Enhanced Preservation Fund 2011-I LLC	Columbus	OH	Distribution	12/15/2011	06/20/2018								919,579						
000000-00-0	1919 Cornerstone-NAHT Enhanced Preservation Fund III LLC	Hartford	CT	Distribution	09/14/2013	06/20/2018								12,392,544						
000000-00-0	2038 Cornerstone NAHT Enhanced Preservation Fund 2014-1 LP	Hartford	CT	Distribution	03/31/2015	08/13/2018								2,002,749						
3399999. Non-Guaranteed Federal Low Income Housing Tax Credit - Unaffiliated								1,700,265						1,700,265	16,623,822		(711,315)	(711,315)		
4499999. Total - Unaffiliated								62,875,853	5,657,734				5,657,734	4,905,265	73,777,420	1,392,901,666	(2,002,194)	2,126,713	124,519	18,730,371
4599999. Total - Affiliated								272,999,295	202,211,944		108,900		202,320,844		508,914,018	2,116,279,429		5,417,840	5,417,840	205,518,402
4699999 - Totals								335,875,147	207,869,678		108,900		207,978,578	4,905,265	582,691,438	3,509,181,095	(2,002,194)	7,544,553	5,542,359	224,248,773

E09.7

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
26818L-AA-8	DY9 Leasing - Ex 1m Bk Gtd Secd NT	.	.	1	1	371,875	98.2541	365,382	371,875	371,875					2.415	2.415	MJD	2,336	8,780	05/04/2015	06/30/2027
313490-CE-2	FEDERAL JUDICIARY OFF-PART CTF	.	.	1		400,080	95.6959	4,593,405	4,800,000	4,800,000					0.000	9.281	N/A			08/24/1989	08/15/2020
313490-CF-9	67707c	.	.	1		444,389	94.5317	5,246,509	5,550,000	4,609,042					0.000	9.471	N/A			08/24/1989	02/15/2021
313490-CG-7	FEDERAL JUDICIARY OFF-PART CTF	.	.	1		657,666	93.2232	7,970,584	8,550,000	6,799,489					0.000	9.685	N/A			08/24/1989	08/15/2021
313490-CH-5	FEDERAL JUDICIARY OFF-PART CTF	.	.	1		557,870	91.9464	6,941,950	7,550,000	5,748,542					0.000	9.887	N/A			08/24/1989	02/15/2022
313490-CJ-1	FEDERAL JUDICIARY OFF-PART CTF	.	.	1		535,975	90.5315	6,835,129	7,550,000	5,505,794					0.000	10.111	N/A			08/24/1989	08/15/2022
3134A4-KX-1	FREDDIE MAC-NOTE	.	.	1		1,838,820	133.5250	1,878,697	1,407,000	1,833,464					6.250	3.432	JJ	40,549	19,297	10/04/2018	07/15/2032
576863-BC-7	Matson Nav US GOVT GTD SHIP FING BD	1	1	1		445,730	108.8089	432,798	397,760	440,277					5.273	2.810	JJ	8,856	19,767	08/18/2017	07/29/2029
690353-2V-8	Overseas Private Investm-SENIOR UNSECURE	.	.	1		545,000	100.7478	549,076	545,000	545,000					3.370	3.370	JAJJ	4,388	8,264	06/07/2018	10/05/2034
690353-5B-9	Overseas Private Investm-SENIOR UNSECURE	2	1	1		575,328	101.0560	581,072	575,000	575,324					3.420	3.414	JAJJ	765		12/10/2018	07/15/2038
89156H-AB-3	Tote Shipholdings Inc-SENIOR UNSECURED	.	.	1		548,752	98.0984	540,522	551,000	548,892					3.450	3.495	JJ	8,396	9,505	03/28/2018	01/22/2041
912803-AY-9	US TREASURY-STRIP PRINCIPAL RECEIPT	.RA	.	1		27,145,137	93.1746	55,774,312	59,860,000	51,025,192					0.000	5.942	N/A			09/27/2007	11/15/2021
912803-BH-5	US TREASURY-STRIP PRINCIPAL RECEIPT	.RA	.	1		123,543,000	82.1051	246,315,207	300,000,000	208,087,712					0.000	4.857	N/A			02/15/2008	08/15/2026
912803-BJ-1	US TREASURY-STRIP PRINCIPAL RECEIPT	.RA	.	1		262,142,000	81.4503	529,426,697	650,000,000	443,830,959					0.000	4.907	N/A			02/26/2008	11/15/2026
912803-BM-4	US TREASURY-STRIP PRINCIPAL RECEIPT	.RA	.	1		140,287,000	78.8675	276,036,156	350,000,000	227,438,843					0.000	5.988	N/A			02/29/2008	11/15/2027
912803-DJ-9	US TREASURY-UNSECURED	.	.	1		396,033	54.0885	378,620	700,000	418,017					0.000	2.486	N/A			10/20/2016	11/15/2039
912803-DM-2	US TREAS BD STRIPPED PRIN PMT 00082	.	.	1		338,657	53.0964	432,736	815,000	385,840					0.000	5.130	N/A			06/25/2014	05/15/2040
912803-EC-3	STRIP PRINC	.	.	1		538,597	47.5665	544,637	1,145,000	547,301					0.000	3.052	N/A			06/20/2018	05/15/2043
912803-EN-9	SP 0 05/15/45	.	.	1		608,573	44.8121	609,445	1,360,000	618,328					0.000	3.012	N/A			06/19/2018	05/15/2045
912803-EP-4	US TREASURY-UNSECURED	.	.	1		3,385,446	44.4066	3,175,075	7,150,000	3,582,953					0.000	2.612	N/A			10/20/2016	08/15/2045
912810-ED-6	US TREASURY N/B-BOND	.	.	1		1,249,297	103.2773	1,032,773	1,000,000	1,016,879					8.125	5.315	FA	30,690	81,250	06/14/2007	08/15/2019
912810-EH-7	US TREAS N/B-BOND	.SD	.	1		2,411,719	111.0078	2,497,676	2,250,000	2,277,485					7.875	7.237	FA	118,734	182,906	03/31/1997	02/15/2021
912810-EH-7	US TREAS N/B-BOND	.	.	1		267,969	111.0078	277,520	250,000	253,054					7.875	7.237	FA	13,192	13,969	03/31/1997	02/15/2021
912810-EL-8	US TREAS N/B-BOND	.SD	.	1		2,686,719	115.1211	2,878,027	2,500,000	2,539,616					8.000	7.372	MN	125,967	200,000	09/16/1992	11/15/2021
912810-EQ-7	US TREAS N/B-BOND	.SD	.	1		257,058	116.1563	336,853	290,000	279,097					6.250	7.218	FA	8,543	22,153	03/31/1997	08/15/2023
912810-EQ-7	US TREAS N/B-BOND	.SD	.	1		629,348	116.1563	824,709	710,000	683,306					6.250	7.218	FA	20,915	40,347	03/31/1997	08/15/2023
912810-FA-1	US TREASURY N/B-UNSECURED	.	.	1		2,171,812	128.4922	2,055,875	1,600,000	2,096,430					6.375	2.374	FA	38,527	102,000	07/07/2017	08/15/2027
912810-FJ-2	US TREAS N/B-BOND	.	.	1		1,255,848	131.1680	1,442,848	1,100,000	1,194,943					6.125	5.064	FA	25,449	67,375	01/31/2007	08/15/2029
912810-FP-8	US TREAS N/B-BOND	.	.	1		28,755,891	127.0469	29,347,828	23,100,000	27,412,546					5.375	3.474	FA	468,983	1,241,625	11/20/2013	02/15/2031
912810-FR-4	TSY INFL IX N/B	.	.	1		4,944,283	108.1223	6,121,357	5,661,510	5,723,654					2.375	2.145	JJ	62,115	133,839	06/11/2008	01/15/2025
912810-FT-0	US TREASURY N/B-BOND	.	.	1		38,414,063	123.2578	36,977,344	30,000,000	37,897,104					4.500	2.587	FA	509,918	1,350,000	07/25/2017	02/15/2036
912810-PS-1	TSY INFL IX N/B-INFLATION INDEX NTS CPI	.	.	1		1,874,118	110.3931	2,630,205	2,382,581	2,370,614					2.375	2.462	JJ	1,330	56,324	01/31/2007	01/15/2027
912810-QA-9	US TREASURY N/B-NOTE	.	.	1		530,310	109.3789	601,584	550,000	532,872					3.500	3.721	FA	7,271	21,229	12/02/2013	02/15/2039
912810-QK-7	US TREASURY N/B-BOND	.RA	.	1		339,451,563	114.8320	430,620,116	375,000,000	344,878,713					3.875	4.457	FA	5,488,706	14,531,250	04/27/2011	08/15/2040
912810-QQ-4	US TREASURY N/B-BOND	.RA	.	1		260,535,654	123.0781	290,156,680	235,750,000	256,662,968					4.375	3.783	MN	6,496,150	10,314,063	08/18/2011	05/15/2041
912810-QT-8	US TREAS N/B-BOND	.	.	1		243,238	102.3867	281,563	275,000	246,833					3.125	3.799	MN	1,116	8,594	12/02/2013	11/15/2041
912810-OX-9	US TREAS N/B-BOND	.	.	1		3,604,836	95.7266	4,250,259	4,440,000	3,694,302					2.750	3.837	FA	46,119	122,100	12/02/2013	08/15/2042
912810-RE-0	US TREAS N/B-BOND	.	.	1		10,200,406	110.7734	11,149,347	10,065,000	10,184,049					3.625	3.553	FA	137,813	364,856	12/09/2015	02/15/2044
912810-RJ-9	US TREASURY N/B-BOND	.	.	1		3,979,123	99.8477	3,594,516	3,600,000	3,958,018					3.000	2.477	MN	10,200	108,000	10/20/2016	11/15/2044
912810-RK-6	US TREAS N/B-BOND	.	.	1		27,197	90.6250	27,188	30,000	27,387					2.500	2.982	FA	283	750	12/09/2015	02/15/2045
912810-RN-0	US TREAS N/B-BOND	.	.	1		1,806,148	97.3984	1,792,131	1,840,000	1,808,426					2.875	2.969	FA	19,981	52,900	12/09/2015	08/15/2045
912810-PP-5	US TREAS N/B-NOTE	.	.	1		29,417,344	99.7930	26,944,102	27,000,000	29,254,824					3.000	2.568	MN	510,166	810,000	02/10/2016	11/15/2045
912810-RS-9	US TREASURY N/B-BOND	.	.	1		419,692	90.1836	441,900	490,000	419,887					2.500	3.190	MN	1,609	18,283	12/31/2018	05/15/2046
912810-RU-4	US TREASURY N/B-UNSECURED	.RA	.	1		446,062,148	97.2305	437,537,111	450,000,000	446,231,045					2.875	2.919	MN	8,148,481	7,758,138	01/12/2017	11/15/2046
912810-RV-2	US TREASURY N/B-UNSECURED	.RA	.	1		368,670,204	99.7188	367,862,469	368,900,000	368,682,265					3.000	3.003	FA	4,398,538	11,067,000	06/07/2017	02/15/2047
912810-SA-7	United States Treasury N-UNSECURED	.	.	1		1,375,242	99.4648	1,392,508	1,400,000	1,375,584					3.000	3.091	FA	15,864	21,000	06/19/2018	02/15/2048
912828-2S-8	UNITED STATES TREASURY N-UNSECURED	.	.	1		16,682,809	97.0000	16,393,000	16,900,000	16,736,518					1.625	1.900	FA	93,312	274,625	09/27/2017	08/31/2022
912828-3M-8	United States Treasury N-UNSECURED	.	.	1		8,726,751	100.5156	9,071,535	9,025,000	8,732,845					2.750	3.161	FA	93,745		10/04/2018	02/15/2028
912828-4V-9	United States Treasury N-UNSECURED	.	.	1		360,886	101.5469	365,569	360,000	360,893					2.875	2.885	FA	3,933	7,382	12/31/2018	08/15/2028
912828-4Y-3	United States Treasury N-UNSECURED	.SD	.	1		329,291	100.1328	330,438	330,000	329,394					2.625	2.738	FA	2,			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
912828-MS-6	US TREASURY N/B-NOTE				1	12,509,720	97.7930	11,984,528	12,255,000	12,438,484		(24,715)			2.250	2.015	MM	173,669	275,738	01/20/2016	11/15/2025
912828-HP-2	US TREAS N/B-NOTE	RA			1	151,325,625	101.0859	153,448,454	151,800,000	151,733,176		53,332			3.625	3.663	FA	2,078,484	5,502,750	03/23/2010	02/15/2020
912828-N3-0	US TREASURY N/B-UNSECURED				1	694,230	98.5898	690,129	700,000	695,951		957			2.125	2.277	JD	7,479	(48,159)	03/10/2017	12/31/2022
912828-P4-6	US TREASURY N/B-NOTE				1	2,378,765	93.6094	2,246,625	2,400,000	2,383,449		2,164			1.625	1.728	FA	14,731	39,000	10/20/2016	02/15/2026
912828-PX-2	US TREAS N/B-NOTE	RA			1	1,030,242,703	102.3125	1,040,876,219	1,017,350,000	1,020,483,034		(1,413,540)			3.625	3.472	FA	15,504,389	36,878,938	05/10/2011	02/15/2021
912828-Q3-7	US TREASURY N/B-NOTE				1	4,249,890	97.3438	4,132,242	4,245,000	4,247,495		(1,098)			1.250	1.223	MS	40,088	53,063	10/20/2016	03/31/2021
912828-Q7-8	US TREASURY N/B-NOTE				1	50,408	97.5313	48,766	50,000	50,194		(82)			1.375	1.205	AO	17,609	17,609	05/09/2016	04/30/2021
912828-Q7-8	US TREASURY N/B-NOTE	SD			1	2,543,567	97.5313	2,462,664	2,525,000	2,533,678		(3,660)			1.375	1.225	AO	23,327	18,442	04/27/2017	04/30/2021
912828-TJ-9	US TREAS N/B-NOTE				1	191,680,568	97.0195	199,443,050	205,570,000	199,673,274		1,537,336			1.625	2.457	FA	1,281,194	3,348,104	12/02/2013	08/15/2022
912828-TJ-9	US TREAS N/B-NOTE	SD			1	743,040	97.0195	776,156	800,000	774,762		6,568			1.625	2.542	FA	4,986	5,409	12/02/2013	08/15/2022
912828-V7-2	US TREASURY N/B-UNSECURED				1	1,195,734	98.2188	1,178,625	1,200,000	1,197,315		835			1.875	1.950	JJ	9,416	(10,456)	01/27/2017	01/31/2022
912828-V9-8	UNITED STATES TREASURY N-UNSECURED				1	3,233,737	97.1016	3,360,685	3,461,000	3,239,011		5,274			2.250	3.151	FA	29,414	95,750	10/04/2018	02/15/2027
912828-VS-6	US TREAS N/B-NOTE				1	3,758,379	99.9688	3,828,803	3,890,000	3,793,324		7,337			2.500	2.722	FA	36,166		12/02/2013	08/15/2023
912833-4X-5	US TREAS SEC STRIPPED INT PMT 00838				1	4,385,946	64.3975	4,746,097	7,370,000	4,725,805		109,437			0.000	3.646	N/A			12/09/2015	02/15/2034
912833-5A-4	US TREAS SEC STRIPPED INT PMT 00841				1	1,597,524	61.5566	1,735,895	2,820,000	1,720,774		39,410			0.000	3.789	N/A			12/09/2015	08/15/2035
912833-5B-2	S 0 02/15/36				1	6,112,579	60.6998	6,596,252	10,867,000	6,157,381		44,802			0.000	3.345	N/A			12/04/2018	02/15/2036
912833-7T-1	US TREAS SEC STRIPPED INT PMT 00886				1	2,523,212	65.9817	2,718,445	4,120,000	2,717,827		62,844			0.000	3.539	N/A			12/09/2015	05/15/2033
912833-KU-3	US TREAS SEC STRIPPED INT PMT GENERIC TI				1	4,930,956	99.7246	5,115,870	5,130,000	5,122,018		63,838			0.000	1.247	N/A			12/09/2015	02/15/2019
912833-KV-1	US TREASURY-STRIP COUPON RECEIPT	RA			1	46,564,163	99.1087	90,327,649	91,140,000	89,353,659		4,518,851			0.000	5.371	N/A			12/09/2015	05/15/2019
912833-KY-5	US TREASURY-STRIP COUPON RECEIPT				1	1,047,585	97.1640	7,481,628	7,700,000	7,031,874		504,235			0.000	8.343	N/A			04/30/1993	02/15/2020
912833-KZ-2	US TREASURY-STRIP COUPON RECEIPT				1	7,649,936	96.5600	7,951,714	8,235,000	8,045,296		333,056			0.000	1.698	N/A			12/09/2015	05/15/2020
912833-LE-8	US TREAS SEC STRIPPED INT PMT GENERIC TI				1	44,753,634	93.6719	87,236,627	93,130,000	80,511,198		3,956,241			0.000	5.896	N/A			08/28/2007	08/15/2021
912833-LL-2	US TREASURY-STRIP COUPON RECEIPT	RA			1	15,698,900	90.0786	31,527,502	35,000,000	28,302,653		1,254,416			0.000	5.657	N/A			09/21/2006	02/15/2023
912833-LN-8	US TREASURY-STRIP COUPON RECEIPT	RA			1	46,611,600	89.4767	93,950,562	105,000,000	83,879,305		3,691,147			0.000	5.683	N/A			09/21/2006	05/15/2023
912833-LW-8	UNITED STATES TREAS SEC STRIPPED INT PMT				1	1,769,265	84.0257	1,865,371	2,220,000	1,900,339		44,096			0.000	2.362	N/A			12/09/2015	08/15/2025
912833-PA-2	UNITED STATES TREAS SEC STRIPPED INT PMT				1	1,703,011	81.5596	1,802,468	2,210,000	1,825,688		40,710			0.000	2.723	N/A			12/09/2015	08/15/2026
912833-QB-9	S 0 11/15/27				1	5,762,861	78.3716	6,044,799	7,713,000	5,804,061		41,200			0.000	3.232	N/A			10/04/2018	11/15/2027
912833-KZ-8	US TREAS SEC STRIPPED INT PMT 00528				1	1,872,508	70.8428	1,997,767	2,820,000	2,014,668		46,335			0.000	3.250	N/A			12/09/2015	02/15/2031
022650-AA-6	Amal Ltd Ex Im Bk Gtd Sr Nt	D			1	8,909,125	100.9610	8,994,742	8,909,125	8,909,125		438,519			3.465	3.465	FIAN	169,633	296,977	10/06/2009	08/21/2021
465139-RJ-4	AID-ISRAEL US GOVT GTD NT CL 10-Z				1	416,435	83.6230	418,115	500,000	498,125		9,298			0.000	2.155	N/A			08/02/2016	02/15/2025
465139-TK-9	AID-ISRAEL US GOVT GTD NT CL 11-Z				1	392,879	77.4841	387,421	500,000	415,775		9,632			0.000	2.358	N/A			08/02/2016	11/15/2026
46513E-F6-2	AID-ISRAEL US GOVT GTD NT CL 1-B				1	1,274,802	126.9358	1,142,422	900,000	1,231,146		(18,420)			5.500	2.496	MS	14,163	49,500	08/02/2016	09/18/2033
46513E-GV-8	AID-ISRAEL STATE GTD NT CL 2				1	615,027	112.4998	523,124	465,000	537,013		(13,713)			5.500	2.167	JD	1,918	25,575	01/01/2013	12/04/2023
55002R-AA-0	Lulwa Ltd Ex Im Bk Gtd Secd Nt	D			1	379,467	97.3034	377,089	387,539	383,098		2,302			1.888	2.466	FIAN	935	7,178	12/08/2015	02/15/2025
716540-BP-6	Petroleos Mexicanos Ex Im Bk Gtd Ser 201	D			1	311,141	98.8406	301,711	305,250	307,894		(1,826)			2.290	1.732	FA	2,641	6,510	01/15/2015	02/15/2024
759470-AT-4	Reliance Industries Inc Ex Im Bk Gtd Ser	D			1	558,998	98.8746	556,170	562,500	559,052		54			2.512	2.697	JJ	6,516	11,166	12/07/2018	01/15/2026
78657A-AC-3	Safina Ltd Ex Im Bk Gtd Secd Nt	D			1	227,063	98.2036	226,614	230,759	230,162		1,805			1.550	2.267	JAJU	755	3,343	10/03/2014	01/15/2022
0199999	Subtotal - Bonds - U.S. Governments - Issuer Obligations					5,187,470,730	XXX	6,067,715,043	6,227,047,899	5,727,361,304	197,917	58,896,429			XXX	XXX	XXX	65,964,414	137,117,273	XXX	XXX
31342-AA-0	FHA Project Loan Pool #1984-A				1	76,326	105.6203	80,616	76,326	76,326					7.430	7.430	MON	945	5,468	01/02/1986	01/01/2024
31342-QC-9	FHA Project Loan Usgi #91				2	38,893	104.7139	42,754	40,829	40,554		229			7.430	8.071	MON	510	2,341	06/30/2003	01/25/2023
31342-QE-5	FHA Project Loan MI/usgi #129				4	157,521	105.2568	177,880	168,996	167,032		1,217			7.430	8.279	MON	1,071	11,016	10/26/1994	09/01/2023
31342-SS-2	FHA Project Loan Reilly #128				4	104,275	102.0676	111,119	108,869	108,869		1,789			7.430	8.143	MON	1,409	3,844	11/01/1996	07/01/2020
31342-ST-0	FHA Project Loan Reilly #130				4	65,758	103.3420	68,805	66,580	66,510		187			7.430	7.731	MON	412	4,543	04/26/1995	08/01/2021
36176W-XE-6	GOVERNMENT NATIONAL MORT-POOL # 778577				4	582,090	98.9805	546,767	552,399	572,130		(3,655)			3.400	2.635	MON	1,565	18,723	03/26/2015	01/01/2037
36180S-PP-1	GOVERNMENT NATIONAL MORT-GNIA II POOL #A				4,5	746,688	103.6405	699,802	675,221	732,359		(5,687)			4.425	3.271	MON	24,603	29,477	07/23/2014	07/01/2064
36182M-DB-8	GOVERNMENT NATIONAL MORT-GNIA II POOL #A				4,5	816,282	104.3925	764,765	732,586	798,194		(6,756)			4.662	3.398	MON	25,325	33,667	07/14/2014	04/01/2064
36200A-BR-9	GOVERNMENT NATIONAL MORT-POOL #595048				4	1,891	108.8412	1,989	1,879	1,879					6.000	5.286	MON	9	109	02/03/2003	10/01/2032
36200A-BU-2	GOVERNMENT NATIONAL MORT-POOL #595051				4	43,533	106.1800	46,136	43,451	43,546		(3)			5.500	5.447	MON	199	2,380	11/22/2002	10/01/2032
36200A-CF-4	GOVERNMENT NATIONAL MORT-POOL # 595070				4	7,358	108.2089	7,695	7,111	7,333		11			6.000	5.212	MON	36			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36200B-3S-4	GOVERNMENT NATIONAL MORT-POOL #596709			4	1	40,318	108.6777	42,335	38,955	40,045			16		6.000	5.292	MON	195	2,294	02/03/2003	11/01/2032
36200B-5G-8	GOVERNMENT NATIONAL MORT-POOL #596747			4	1	2,025	108.6766	2,127	1,957	2,012			2		6.000	5.288	MON	10	116	02/03/2003	12/01/2032
36200B-5M-5	GOVERNMENT NATIONAL MORT-POOL #596752			4	1	2,075	107.2843	2,151	2,005	2,062			7		6.000	5.284	MON	10	108	02/03/2003	11/01/2032
36200B-5Y-9	GOVERNMENT NATIONAL MORT-POOL #596763			4	1	3,528	107.2843	3,658	3,409	3,491			(4)		6.000	5.395	MON	17	203	02/03/2003	12/01/2032
36200B-6T-9	GOVERNMENT NATIONAL MORT-POOL #596782			4	1	332	107.2843	344	321	328					6.000	5.405	MON	2	20	02/03/2003	12/01/2032
36200B-ZX-8	GOVERNMENT NATIONAL MORT-POOL #596658			4	1	1,858	107.7020	1,934	1,795	1,837			(3)		6.000	5.407	MON	9	107	02/03/2003	10/01/2032
36200C-AT-2	GOVERNMENT NATIONAL MORT-POOL #596818			4	1	17,257	107.2843	17,893	16,679	17,071			(24)		6.000	5.404	MON	83	996	02/03/2003	12/01/2032
36200C-BF-1	GOVERNMENT NATIONAL MORT-POOL #596838			4	1	182,882	108.0666	197,019	182,313	182,803			28		5.500	5.436	MON	836	9,857	11/22/2002	01/01/2033
36200C-CJ-7	GOVERNMENT NATIONAL MORT-POOL #596883			4	1	548	106.8240	583	546	548					5.500	5.419	MON	3	28	11/22/2002	01/01/2033
36200C-L7-0	GOVERNMENT NATIONAL MORT-POOL #597374			4	1	40,546	106.5820	43,134	40,470	40,518			(1)		5.500	5.472	MON	185	2,211	11/22/2002	01/01/2033
36200D-2U-6	GOVERNMENT NATIONAL MORT-POOL #598487			4	1	7,846	107.3180	8,135	7,581	7,801			(12)		6.000	5.268	MON	38	453	02/03/2003	12/01/2032
36200D-6X-6	GOVERNMENT NATIONAL MORT-POOL #598586			4	1	13,560	108.1851	14,643	13,535	13,554					5.500	5.466	MON	62	738	11/22/2002	01/01/2033
36200D-AE-3	GOVERNMENT NATIONAL MORT-POOL #597705			4	1	23,307	108.0942	24,342	22,519	23,049			(34)		6.000	5.401	MON	113	1,344	02/03/2003	10/01/2032
36200D-LN-1	GOVERNMENT NATIONAL MORT-POOL #598033			4	1	1,147	107.2843	1,190	1,109	1,135			(2)		6.000	5.412	MON	6	66	02/03/2003	12/01/2032
36200D-ZJ-5	GOVERNMENT NATIONAL MORT-POOL #598445			4	1	9,213	106.1800	9,764	9,196	9,213			4		5.500	5.454	MON	42	478	11/22/2002	12/01/2032
36200E-ZC-8	GOVERNMENT NATIONAL MORT-POOL #599339			4	1	2,556	106.1800	2,709	2,551	2,556			1		5.500	5.457	MON	12	127	11/22/2002	11/01/2032
36200F-HS-0	GOVERNMENT NATIONAL MORT-POOL #599741			4	1	2,824	107.2843	2,928	2,729	2,792			(5)		6.000	5.415	MON	14	163	02/03/2003	10/01/2032
36200F-KC-1	GOVERNMENT NATIONAL MORT-POOL #599791			4	1	366	107.2843	379	353	362					6.000	5.394	MON	2	22	02/03/2003	11/01/2032
36200F-KJ-6	GOVERNMENT NATIONAL MORT-POOL #599797			4	1	37,394	107.2843	38,773	36,140	37,199			(53)		6.000	5.259	MON	181	2,157	02/03/2003	11/01/2032
36200F-YP-0	GOVERNMENT NATIONAL MORT-POOL #600122			4	1	3,068	107.2843	3,180	2,964	3,356			227		6.000	2.938	MON	15	104	02/03/2003	01/01/2033
36200H-AU-8	GOVERNMENT NATIONAL MORT-POOL #601319			4	1	67,489	107.2843	69,977	65,226	66,739			(108)		6.000	5.416	MON	326	3,899	02/03/2003	02/01/2033
36200J-PV-6	GOVERNMENT NATIONAL MORT-POOL #602636			4	1	4,835	106.1800	5,118	4,820	4,830					5.500	5.451	MON	22	264	11/22/2002	01/01/2033
36200J-RY-8	GOVERNMENT NATIONAL MORT-POOL #602703			4	1	61,274	106.1800	63,493	59,797	60,838			(51)		5.500	5.102	MON	274	3,278	01/14/2004	01/01/2034
36200J-TG-5	GOVERNMENT NATIONAL MORT-POOL #602751			4	1	113,752	106.4577	120,721	113,398	113,747			37		5.500	5.426	MON	520	6,006	11/22/2002	01/01/2033
36200K-C6-2	GOVERNMENT NATIONAL MORT-POOL #603193			4	1	12,827	106.1800	13,292	12,518	12,846			100		5.500	4.905	MON	57	641	01/14/2004	01/01/2034
36200K-HD-2	GOVERNMENT NATIONAL MORT-POOL #603328			4	1	6,434	107.5599	6,907	6,422	6,432			1		5.500	5.462	MON	29	347	11/22/2002	12/01/2032
36200K-JQ-1	GOVERNMENT NATIONAL MORT-POOL #603371			4	1	945	108.2006	1,019	944	944					5.500	5.439	MON	4	51	11/22/2002	01/01/2033
36200K-KB-2	GOVERNMENT NATIONAL MORT-POOL #603390			4	1	9,525	108.1849	10,278	9,501	9,519			1		5.500	5.452	MON	44	515	11/22/2002	01/01/2033
36200K-KC-0	GOVERNMENT NATIONAL MORT-POOL #603391			4	1	1,900	108.2132	2,049	1,894	1,898					5.500	5.445	MON	9	104	11/22/2002	01/01/2033
36200K-KD-8	GOVERNMENT NATIONAL MORT-POOL #603392			4	1	1,717	108.9637	1,808	1,660	1,701					6.000	5.369	MON	8	98	02/03/2003	01/01/2033
36200K-KU-0	GOVERNMENT NATIONAL MORT-POOL #603407			4	1	7,782	108.8042	8,183	7,521	7,732			18		6.000	5.295	MON	38	439	02/03/2003	01/01/2033
36200K-LP-0	GOVERNMENT NATIONAL MORT-POOL #603434			4	1	24,837	106.1800	26,322	24,790	24,831			(1)		5.500	5.460	MON	114	1,356	11/22/2002	11/01/2032
36200K-RH-2	GOVERNMENT NATIONAL MORT-POOL #603588			4	1	6,344	107.5555	6,659	6,191	6,336			17		5.500	4.956	MON	28	331	01/14/2004	04/01/2033
36200K-T6-4	GOVERNMENT NATIONAL MORT-POOL #603673			4	1	13,054	108.1893	13,762	12,720	13,024			12		5.500	4.945	MON	58	694	01/16/2004	05/01/2033
36200K-UP-0	GOVERNMENT NATIONAL MORT-POOL #603690			4	1	19,380	108.1945	20,463	18,913	19,344			52		5.500	4.970	MON	87	1,012	01/14/2004	05/01/2033
36200K-IV-2	GOVERNMENT NATIONAL MORT-POOL #603768			4	1	128,591	108.9935	136,571	125,302	128,108			71		5.500	4.980	MON	574	6,804	01/16/2004	06/01/2033
36200K-XP-7	GOVERNMENT NATIONAL MORT-POOL #603786			4	1	53,863	106.1800	54,802	51,613	53,214			(68)		5.500	4.785	MON	237	2,824	06/30/2003	06/01/2033
36200K-YY-7	GOVERNMENT NATIONAL MORT-POOL #603827			4	1	4,449	106.1800	4,715	4,441	4,450					5.500	5.448	MON	20	243	11/22/2002	12/01/2032
36200K-VZ-4	GOVERNMENT NATIONAL MORT-POOL #603828			4	1	4,487	108.7172	4,715	4,337	4,471			(8)		6.000	5.223	MON	22	259	02/03/2003	12/01/2032
36200K-Z9-1	GOVERNMENT NATIONAL MORT-POOL #603868			4	1	96,423	108.1687	103,975	96,123	96,374			10		5.500	5.437	MON	441	5,207	11/22/2002	01/01/2033
36200M-FW-8	GOVERNMENT NATIONAL MORT-POOL #604181			4	1	17,917	108.1347	18,907	17,861	17,861					5.500	4.998	MON	80	948	01/14/2004	04/01/2033
36200M-QH-9	GOVERNMENT NATIONAL MORT-POOL #604456			4	1	24,310	106.1800	25,191	23,725	24,327			58		5.500	4.914	MON	109	1,272	01/14/2004	07/01/2033
36200N-AA-9	GOVERNMENT NATIONAL MORT-POOL #604901			4	1	17,907	107.6454	18,811	17,475	17,874			39		5.500	4.981	MON	80	932	01/14/2004	01/01/2034
36200N-CL-3	GOVERNMENT NATIONAL MORT-POOL #604975			4	1	81,357	108.1823	85,893	79,397	81,107			(49)		5.500	5.011	MON	364	4,346	01/14/2004	02/01/2034
36200O-2R-4	GOVERNMENT NATIONAL MORT-POOL #569684			4	1	8,918	108.7392	9,370	8,617	8,888			6		6.000	5.185	MON	43	507	02/03/2003	02/01/2032
36200O-3M-4	GOVERNMENT NATIONAL MORT-POOL #569704			4	1	14,275	108.8242	15,014	13,797	14,202			15		6.000	5.238	MON	69	815	02/03/2003	02/01/2032
36200O-3S-1	GOVERNMENT NATIONAL MORT-POOL #569709			4	1	268	107.2843	278	259	268					6.000	5.058	MON	1	15	02/03/2003	02/01/2032
36200O-3T-9	GOVERNMENT NATIONAL MORT-POOL #569710			4	1	2,541	107.9582	2,738	2,537	2,540			2		5.500	5.471	MON	12	138	11/22/2002	02/01/2032
36200O-HL-5	GOVERNMENT NATIONAL MORT-POOL #569263			4	1	160,393	107.6929	172,489	160,168	160,286			(7)		6.500	6.479	MON	1,204	10,317	03/13/2002	04/01/2032
36200O-QN-7	GOVERNMENT NATIONAL MORT-POOL #569361			4	1	183,659	107.6929	197,510	183,401	183,564			25		6.500	6.474	MON	1,164	11,668	03/13/2002	04/01/2032
36200R-2G-6	GOVERNMENT NATIONAL MORT-POOL #570575			4	1	15,049	106.1800	15,594	14,686	15,068			114		5.500	4.910	MON	67	741	01/14/2004	01/01/2034
36200R-3V-2	GOVERNMENT NATIONAL MORT-POOL #570612			4	1	2,915	107.6929	3,066	2,847	2,891			(4)		6.500	6.056	MON	15	184	11/13/2001	09/01/2031
36200R-AA-0	GOVERNMENT NATIONAL MORT-POOL #569801			4	1	30,899	107.8389	33,690	31,241	30,911			(56)		6.000	6.281	MON	156	1,784	02/03/2003	05/01/2032
36200R-BF-8	GOVERNMENT NATIONAL MORT-POOL #569838			4	1	5,359	108.1022	5,598	5,179	5,317			(9)		6.000	5.313	MON	26	310	02/03/2003	06/01/2032
36200R-LN-0	GOVERNMENT NATIONAL MORT-POOL #570133			4	1	15,749	108.4591	16,508	15,221	15,612			(21)		6.000	5.326	MON	76	902	02/03/2003	12/01/2031
36200R-LW-0	GOVERNMENT NATIONAL MORT-POOL #570141			4	1	2,981	114.1570	3,323	2,911	2,964			(1)		6.500	5.978	MON	16	187	11/13/2001	12/01/2031
36200R-LX-8	GOVERNMENT NATIONAL MORT-POOL #570142			4	1	903	108.7914	950	873	897					6.000	5.279	MON	4	51	02/03/2003	12/01/2031

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36200R-RB-0	GOVERNMENT NATIONAL MORT-POOL #570282		4		1	11,923	107.2843	12,362	11,523	11,784	(20)			6.000	5.406	MON	58	689	02/03/2003	01/01/2032	
36200R-VJ-8	GOVERNMENT NATIONAL MORT-POOL #570417		4		1	2,598	112.0990	2,844	2,589	2,589	(2)			6.500	5.910	MON	14	163	11/13/2001	10/01/2031	
36200R-YB-2	GOVERNMENT NATIONAL MORT-POOL #570506		4		1	6,588	107.6929	6,929	6,434	6,551	10			6.500	5.975	MON	35	404	11/13/2001	12/01/2031	
36200S-UJ-4	GOVERNMENT NATIONAL MORT-POOL #571299		4		1	23,958	107.6929	25,199	23,999	23,918	(3)			6.500	5.860	MON	127	1,493	11/13/2001	11/01/2031	
36200S-VJ-6	GOVERNMENT NATIONAL MORT-POOL #571317		4		1	84,434	107.6929	88,806	82,463	83,806	(42)			6.500	6.028	MON	447	5,289	11/13/2001	11/01/2031	
36200S-HI-3	GOVERNMENT NATIONAL MORT-POOL #571358		4		1	62,079	107.6929	65,294	60,629	61,817	180			6.500	5.996	MON	328	3,733	11/13/2001	12/01/2031	
36200S-XG-0	GOVERNMENT NATIONAL MORT-POOL # 571379		4		1	23,548	107.2843	24,416	22,759	23,286	(33)			6.000	5.391	MON	114	1,357	02/03/2003	12/01/2031	
36200T-3K-2	GOVERNMENT NATIONAL MORT-POOL #572402		4		1	9,253	107.6929	9,732	9,037	9,221	35			6.500	5.912	MON	49	552	11/13/2001	11/01/2031	
36200T-6Y-9	GOVERNMENT NATIONAL MORT-POOL #572487		4		1	12,010	106.1800	12,445	11,720	11,916	(10)			5.500	5.090	MON	54	641	01/14/2004	01/01/2032	
36200T-K9-8	GOVERNMENT NATIONAL MORT-POOL #571920		4		1	4,373	107.6929	4,600	4,271	4,335	(7)			6.500	6.067	MON	23	276	11/13/2001	11/01/2031	
36200U-6C-4	GOVERNMENT NATIONAL MORT-POOL #573367		4		1	3,281	107.6929	3,451	3,204	3,252	(5)			6.500	6.069	MON	17	207	11/13/2001	11/01/2031	
36200U-L8-6	GOVERNMENT NATIONAL MORT-POOL # 572851		4		1	9,914	107.7093	10,321	9,582	9,800	(16)			6.000	5.405	MON	48	573	02/03/2003	01/01/2032	
36200U-PE-9	GOVERNMENT NATIONAL MORT-POOL #572921		4		1	5,395	107.6929	5,674	5,269	5,347	(8)			6.500	6.070	MON	29	341	11/13/2001	11/01/2031	
36200V-5K-5	GOVERNMENT NATIONAL MORT-POOL #574250		4		1	33,487	107.2843	34,711	32,355	33,480	(59)			6.000	5.099	MON	162	1,933	02/03/2003	01/01/2032	
36200V-XK-4	GOVERNMENT NATIONAL MORT-POOL #574082		4		1	72,001	107.6929	75,729	70,319	71,753	275			6.500	5.913	MON	381	4,300	11/13/2001	12/01/2031	
36200W-BU-4	GOVERNMENT NATIONAL MORT-POOL #574351		4		1	384	107.2843	399	371	382	1			6.000	5.236	MON	2	21	02/03/2003	01/01/2032	
36200W-SS-1	GOVERNMENT NATIONAL MORT-POOL #574840		4		1	5,774	107.6929	6,072	5,639	5,755	6			6.500	5.906	MON	31	357	11/13/2001	11/01/2031	
36200W-T7-6	GOVERNMENT NATIONAL MORT-POOL #574874		4		1	10,267	107.6929	10,798	10,027	10,218	(18)			6.500	5.952	MON	54	649	11/13/2001	12/01/2031	
36200W-UU-1	GOVERNMENT NATIONAL MORT-POOL # 574959		4		1	4,140	107.2843	4,293	4,002	4,093	(7)			6.000	5.404	MON	20	239	02/03/2003	01/01/2032	
36200W-ZE-4	GOVERNMENT NATIONAL MORT-POOL #575041		4		1	24,231	107.2843	25,117	23,412	23,944	(40)			6.000	5.400	MON	117	1,398	02/03/2003	11/01/2031	
36200W-ZF-1	GOVERNMENT NATIONAL MORT-POOL #575042		4		1	17,379	107.6929	18,279	16,974	17,226	(27)			6.500	6.069	MON	92	1,099	11/13/2001	11/01/2031	
36200X-2K-4	GOVERNMENT NATIONAL MORT-POOL #575978		4		1	3,012	106.1800	3,192	3,006	3,012				5.500	5.450	MON	14	164	11/22/2002	02/01/2032	
36200X-F5-3	GOVERNMENT NATIONAL MORT-POOL #575388		4		1	3,831	107.6929	4,030	3,742	3,797	(6)			6.500	6.069	MON	20	243	11/13/2001	11/01/2031	
36200X-FA-2	GOVERNMENT NATIONAL MORT-POOL #575361		4		1	98,210	108.7110	103,593	95,292	97,214	(165)			7.000	6.377	MON	556	6,612	01/23/2002	11/01/2031	
36200X-H7-7	GOVERNMENT NATIONAL MORT-POOL #575454		4		1	4,717	107.2843	4,891	4,559	4,673	3			6.000	5.343	MON	23	269	02/03/2003	12/01/2031	
36200X-YK-9	GOVERNMENT NATIONAL MORT-POOL #575914		4		1	2,443	107.2843	2,533	2,361	2,416	(3)			6.000	5.393	MON	12	141	02/03/2003	01/01/2032	
36200Y-P8-4	GOVERNMENT NATIONAL MORT-POOL #576547		4		1	38,582	107.6929	40,580	37,681	38,341	33			6.500	5.995	MON	204	2,386	11/13/2001	12/01/2031	
36201A-2A-5	GOVERNMENT NATIONAL MORT-POOL #577769		4		1	13,528	107.2843	14,026	13,074	13,497	2			6.000	5.184	MON	65	774	02/03/2003	11/01/2032	
36201A-2D-9	GOVERNMENT NATIONAL MORT-POOL #577772		4		1	54,321	107.6929	57,647	53,529	54,165	(31)			6.500	6.156	MON	290	3,447	11/13/2001	12/01/2031	
36201A-3D-8	GOVERNMENT NATIONAL MORT-POOL #577796		4		1	2,462	107.2843	2,552	2,379	2,433	(4)			6.000	5.402	MON	12	142	02/03/2003	01/01/2032	
36201A-3V-8	GOVERNMENT NATIONAL MORT-POOL #577812		4		1	68,735	108.9603	72,669	66,693	68,383	243			7.000	6.226	MON	389	4,615	01/23/2002	01/01/2032	
36201A-NH-4	GOVERNMENT NATIONAL MORT-POOL #577405		4		1	1,831	109.1881	1,952	1,788	1,824	(1)			6.500	5.916	MON	10	114	11/13/2001	12/01/2031	
36201A-RA-8	GOVERNMENT NATIONAL MORT-POOL #577481		4		1	52,670	107.2843	54,612	50,904	52,508	348			6.000	5.178	MON	255	2,859	02/03/2003	12/01/2031	
36201A-TP-3	GOVERNMENT NATIONAL MORT-POOL #577558		4		1	4,433	107.2843	4,596	4,284	4,396	4			6.000	5.320	MON	21	253	02/03/2003	02/01/2032	
36201A-XT-0	GOVERNMENT NATIONAL MORT-POOL #577690		4		1	5,783	107.2843	5,995	5,588	5,782	39			6.000	5.123	MON	28	317	02/03/2003	09/01/2032	
36201A-V5-1	GOVERNMENT NATIONAL MORT-POOL #577732		4		1	2,095	107.2843	2,172	2,025	2,073	(3)			6.000	5.393	MON	10	121	02/03/2003	10/01/2032	
36201A-Z3-5	GOVERNMENT NATIONAL MORT-POOL #577762		4		1	3,863	107.2843	4,006	3,734	3,853	13			6.000	5.190	MON	19	217	02/03/2003	10/01/2032	
36201B-MD-5	GOVERNMENT NATIONAL MORT-POOL #578256		4		1	4,077	106.4691	4,328	4,065	4,074				5.500	5.444	MON	19	223	11/22/2002	12/01/2032	
36201B-MH-6	GOVERNMENT NATIONAL MORT-POOL #578260		4		1	1,729	106.3840	1,834	1,724	1,729				5.500	5.425	MON	8	92	11/22/2002	01/01/2033	
36201B-P6-7	GOVERNMENT NATIONAL MORT-POOL # 578345		4		1	1,219	108.3385	1,276	1,178	1,210	(2)			6.000	5.291	MON	6	71	02/03/2003	08/01/2032	
36201B-RQ-1	GOVERNMENT NATIONAL MORT-POOL #578395		4		1	522	107.2843	541	504	518	(1)			6.000	5.336	MON	3	31	02/03/2003	10/01/2032	
36201C-4Q-4	GOVERNMENT NATIONAL MORT-POOL #579631		4		1	367	107.2843	380	354	367	3			6.000	5.107	MON	2	20	02/03/2003	02/01/2032	
36201C-4S-0	GOVERNMENT NATIONAL MORT-POOL #579633		4		1	708	107.8834	738	684	702	(1)			6.000	5.326	MON	3	40	02/03/2003	02/01/2032	
36201C-J5-4	GOVERNMENT NATIONAL MORT-POOL #579084		4		1	21,316	106.5142	22,662	21,276	21,309	(2)			5.500	5.461	MON	98	1,165	11/22/2002	12/01/2031	
36201C-J9-6	GOVERNMENT NATIONAL MORT-POOL #579088		4		1	541	107.6929	569	528	536	(1)			6.500	6.066	MON	3	35	11/13/2001	12/01/2031	
36201C-JI-5	GOVERNMENT NATIONAL MORT-POOL # 579077		4		1	1,737	108.1655	1,816	1,679	1,729	5			6.000	5.214	MON	8	97	02/03/2003	12/01/2031	
36201C-JK-3	GOVERNMENT NATIONAL MORT-POOL #579078		4		1	856	110.7461	926	836	850	(1)			6.500	6.019	MON	5	54	11/13/2001	12/01/2031	
36201C-JY-1	GOVERNMENT NATIONAL MORT-POOL #579079		4		1	113,357	112.7684	124,033	109,989	112,205	(283)			7.000	6.380	MON	642	7,664	01/23/2002	12/01/2031	
36201C-KC-7	GOVERNMENT NATIONAL MORT-POOL #579091		4		1	3,282	107.6929	3,452	3,205	3,280	5			6.500	5.830	MON	17	202	11/13/2001	12/01/2031	
36201C-KG-8	GOVERNMENT NATIONAL MORT-POOL #579095		4		1	603	107.6929	634	589	598	(1)			6.500	6.054	MON	3	38	11/13/2001	12/01/2031	
36201C-LV-4	GOVERNMENT NATIONAL MORT-POOL #579140		4		1	109	107.6929	113	105	108				6.500	5.787	MON	1	7	11/17/2008	01/01/2032	
36201C-NE-0	GOVERNMENT NATIONAL MORT-POOL #579189		4		1	4,123	107.2843	4,274	3,984	4,105				6.000	5.208	MON	20	234	02/03/2003	02/01/2032	
36201C-ZB-3	GOVERNMENT NATIONAL MORT-POOL #579538		4		1	5,213	107.2843	5,405	5,038	5,226	7			6.000	5.041	MON	25	287	02/03/2003	03/01/2032	
36201D-FH-0	GOVERNMENT NATIONAL MORT-POOL # 579868		4		1	2,880	107.2843	2,986	2,784	2,850	(4)			6.000	5.372	MON	14	166	02/03/2003	12/01/2031	
36201E-4A-5	GOVERNMENT NATIONAL MORT-POOL #581417		4		1	212	104.3100	215	212	212	(1)			7.000	6.086	MON	1	15	11/17/2008	07/01/2032	
36201E-NH-9	GOVERNMENT NATIONAL MORT-POOL #580992		4		1	7,890	107.2843	8,181	7,625	7,901	89			6.000	5.068	MON	38	418	02/03/2003	02/01/2032	
36201E-P8-7	GOVERNMENT NATIONAL MORT-POOL #581047		4		1	2,166	107.2843	2,246	2,093	2,141	(4)			6.000	5.403	MON	10	125	02/03/2003	02/01/2032	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36201F-4L-8	GOVERNMENT NATIONAL MORT-POOL #582327			4	1	1,765	107.6493	1,836	1,706	1,753					6.000	5.295	MON	9	101	02/03/2003	09/01/2032
36201F-5N-3	GOVERNMENT NATIONAL MORT-POOL # 58353			4	1	28,146	107.8905	29,344	27,198	27,849					6.000	5.389	MON	136	1,620	02/03/2003	09/01/2032
36201F-6X-0	GOVERNMENT NATIONAL MORT-POOL #582386			4	1	9,822	108.7247	10,318	9,490	9,770					6.000	5.254	MON	47	563	02/03/2003	10/01/2032
36201F-T2-3	GOVERNMENT NATIONAL MORT-POOL #582069			4	1	9,131	100.2880	9,145	9,118	9,128					6.500	6.470	MON	49	571	03/13/2002	03/01/2032
36201F-TX-5	GOVERNMENT NATIONAL MORT-POOL #582066			4	1	97,094	107.6929	104,417	96,958	97,047					6.500	6.473	MON	525	5,916	03/13/2002	03/01/2032
36201F-V6-1	GOVERNMENT NATIONAL MORT-POOL #582137			4	1	1,260	107.2843	1,307	1,218	1,250					6.000	5.322	MON	6	72	02/03/2003	05/01/2032
36201F-X7-7	GOVERNMENT NATIONAL MORT-POOL #582202			4	1	544	107.2874	564	526	539			(1)		6.000	5.346	MON	3	33	02/03/2003	01/01/2032
36201F-XS-1	GOVERNMENT NATIONAL MORT-POOL #582189			4	1	786	107.2843	815	760	778			(1)		6.000	5.371	MON	4	46	02/03/2003	01/01/2032
36201G-AH-8	GOVERNMENT NATIONAL MORT-POOL #582408			4	1	6,874	107.2843	7,127	6,643	6,823			(10)		6.000	5.312	MON	33	396	02/03/2003	10/01/2032
36201G-AQ-8	GOVERNMENT NATIONAL MORT-POOL #582415			4	1	13,974	108.8071	14,695	13,505	13,848			(10)		6.000	5.357	MON	68	801	02/03/2003	11/01/2032
36201H-2W-2	GOVERNMENT NATIONAL MORT-POOL # 584089			4	1	829	107.2843	859	801	819			(1)		6.000	5.413	MON	4	49	02/03/2003	10/01/2032
36201H-4C-4	GOVERNMENT NATIONAL MORT-POOL #584119			4	1	1,006	106.1800	1,066	1,004	1,006					5.500	5.455	MON	5	49	11/22/2002	11/01/2032
36201H-5G-4	GOVERNMENT NATIONAL MORT-POOL #584147			4	1	2,173	107.2843	2,253	2,100	2,181			15		6.000	5.042	MON	11	120	02/03/2003	12/01/2032
36201H-C7-6	GOVERNMENT NATIONAL MORT-POOL #583394			4	1	9,527	106.1800	10,097	9,510	9,531			1		5.500	5.445	MON	44	513	11/22/2002	01/01/2033
36201H-L7-6	GOVERNMENT NATIONAL MORT-POOL #583650			4	1	676	106.1800	717	675	677					5.500	5.428	MON	3	36	11/22/2002	11/01/2032
36201J-5J-4	GOVERNMENT NATIONAL MORT-POOL # 585049			4	1	282	107.2843	292	272	279					6.000	5.383	MON	1	17	02/03/2003	12/01/2032
36201J-5U-9	GOVERNMENT NATIONAL MORT-POOL #585059			4	1	182	107.2843	189	176	182					6.000	5.128	MON	1	11	02/03/2003	12/01/2032
36201J-6J-3	GOVERNMENT NATIONAL MORT-POOL #585073			4	1	3,971	109.6792	4,209	3,838	3,930			(5)		6.000	5.396	MON	19	229	02/03/2003	01/01/2033
36201J-7J-2	GOVERNMENT NATIONAL MORT-POOL #585097			4	1	63,941	108.0953	66,783	61,782	63,228			(101)		6.000	5.409	MON	309	3,692	02/03/2003	01/01/2033
36201J-7M-5	GOVERNMENT NATIONAL MORT-POOL #585100			4	1	8,477	107.8807	8,839	8,193	8,384			(13)		6.000	5.413	MON	41	490	02/03/2003	01/01/2033
36201J-EW-5	GOVERNMENT NATIONAL MORT-POOL #584349			4	1	17,421	102.3659	14,993	14,647	16,892					7.000	2,821	MON	85	991	01/01/2013	04/01/2032
36201K-AR-7	GOVERNMENT NATIONAL MORT-POOL #585116			4	1	58,896	107.2843	61,067	56,921	58,245			(91)		6.000	5.413	MON	285	3,402	02/03/2003	01/01/2033
36201K-AY-2	GOVERNMENT NATIONAL MORT-POOL #585123			4	1	174,338	108.0138	181,996	168,494	172,421			(280)		6.000	5.410	MON	842	10,071	02/03/2003	12/01/2032
36201L-7G-3	GOVERNMENT NATIONAL MORT-POOL #586895			4	1	11,175	107.2843	11,584	10,797	11,049			(17)		6.000	5.404	MON	54	645	02/03/2003	08/01/2032
36201L-SY-1	GOVERNMENT NATIONAL MORT-POOL #586535			4	1	14,917	109.3185	15,755	14,412	14,770			(6)		6.000	5.356	MON	72	855	02/03/2003	03/01/2032
36201M-6N-7	GOVERNMENT NATIONAL MORT-POOL #587777			4	1	450	107.2843	467	435	446			(1)		6.000	5.403	MON	2	27	02/03/2003	12/01/2032
36201M-GU-0	GOVERNMENT NATIONAL MORT-POOL #587111			4	1	22,962	108.6297	25,263	23,257	22,974			(5)		6.000	5.323	MON	116	1,373	05/28/2002	06/01/2032
36201M-LG-5	GOVERNMENT NATIONAL MORT-POOL #587227			4	1	2,397	107.2843	2,485	2,316	2,370			(4)		6.000	5.405	MON	12	138	02/03/2003	08/01/2032
36201M-M5-8	GOVERNMENT NATIONAL MORT-POOL #587280			4	1	123	107.6929	127	118	121					6.500	5.794	MON	1	8	11/17/2008	09/01/2032
36201M-NT-5	GOVERNMENT NATIONAL MORT-POOL #587302			4	1	1,242	109.4110	1,313	1,200	1,237					6.000	5.229	MON	6	71	02/03/2003	09/01/2032
36201M-OX-3	GOVERNMENT NATIONAL MORT-POOL #587370			4	1	1,304	108.8284	1,372	1,260	1,300			5		6.000	5.203	MON	6	75	02/03/2003	10/01/2032
36201M-SM-5	GOVERNMENT NATIONAL MORT-POOL #587424			4	1	2,181	107.2901	2,262	2,108	2,182			17		6.000	5.123	MON	11	118	02/03/2003	11/01/2032
36201M-SX-1	GOVERNMENT NATIONAL MORT-POOL #587434			4	1	3,996	108.0828	4,311	3,989	3,995					5.500	5.459	MON	18	219	11/22/2002	12/01/2032
36201M-T4-4	GOVERNMENT NATIONAL MORT-POOL #587471			4	1	1,327	107.2843	1,376	1,283	1,312			(2)		6.000	5.412	MON	6	77	02/03/2003	04/01/2032
36201M-YX-4	GOVERNMENT NATIONAL MORT-POOL #587626			4	1	116,455	107.6739	105,425	97,911	112,128			193		7.000	3,006	MON	571	6,668	01/01/2013	03/01/2032
36201N-LA-6	GOVERNMENT NATIONAL MORT-POOL #588121			4	1	140	107.2843	145	135	138					6.000	5.422	MON	1	8	02/03/2003	11/01/2032
36201N-LV-0	GOVERNMENT NATIONAL MORT-POOL #588140			4	1	20,569	107.0500	21,958	20,512	20,559			(2)		5.500	5.445	MON	94	1,124	11/22/2002	12/01/2032
36201P-3U-7	GOVERNMENT NATIONAL MORT-POOL # 589511			4	1	346	107.2843	358	334	344					6.000	5.280	MON	2	21	02/03/2003	10/01/2032
36201P-VR-0	GOVERNMENT NATIONAL MORT-POOL #589420			4	1	9,655	107.2843	10,008	9,328	9,543			(16)		6.000	5.407	MON	47	558	02/03/2003	06/01/2032
36201Q-4J-9	GOVERNMENT NATIONAL MORT-POOL #590425			4	1	2,449	107.2843	2,539	2,366	2,439			(4)		6.000	5.221	MON	12	141	02/03/2003	09/01/2032
36201Q-6N-8	GOVERNMENT NATIONAL MORT-POOL #590477			4	1	27,615	108.7143	29,008	26,682	27,387			(43)		6.000	5.327	MON	133	1,593	02/03/2003	09/01/2032
36201Q-7B-3	GOVERNMENT NATIONAL MORT-POOL #590490			4	1	1,633	107.2843	1,692	1,578	1,616			(2)		6.000	5.381	MON	8	94	02/03/2003	09/01/2032
36201Q-RZ-8	GOVERNMENT NATIONAL MORT-POOL #590104			4	1	22,498	106.1800	23,313	21,956	22,338			(19)		5.500	5.103	MON	101	1,204	01/14/2004	02/01/2034
36201Q-VR-1	GOVERNMENT NATIONAL MORT-POOL # 590224			4	1	810	107.2843	840	783	801			(1)		6.000	5.414	MON	4	48	02/03/2003	08/01/2032
36201R-3M-1	GOVERNMENT NATIONAL MORT-POOL #591304			4	1	7,790	107.8638	8,119	7,527	7,755			8		6.000	5.231	MON	38	444	02/03/2003	09/01/2032
36201S-5Z-8	GOVERNMENT NATIONAL MORT-POOL #592264			4	1	24,671	106.1800	26,146	24,624	24,663					5.500	5.463	MON	113	1,277	11/22/2002	01/01/2033
36201S-6P-9	GOVERNMENT NATIONAL MORT-POOL #592278			4	1	3,898	108.1909	4,116	3,804	3,890			4		5.500	4.973	MON	17	205	01/14/2004	02/01/2033
36201S-J7-5	GOVERNMENT NATIONAL MORT-POOL #591686			4	1	7,827	108.0246	8,171	7,564	7,739			(13)		6.000	5.414	MON	38	452	02/03/2003	10/01/2032
36201S-LJ-6	GOVERNMENT NATIONAL MORT-POOL #591729			4	1	20,399	107.2843	21,147	19,711	20,297			(37)		6.000	5.249	MON	99	1,178	02/03/2003	11/01/2032
36201S-M9-7	GOVERNMENT NATIONAL MORT-POOL #591784			4	1	1,330	107.2843	1,379	1,285	1,315			(2)		6.000	5.414	MON	6	77	02/03/2003	11/01/2032
36201S-ME-6	GOVERNMENT NATIONAL MORT-POOL #591757			4	1	52,725	107.2843	54,670	50,958	52,132			(86)		6.000	5.415	MON	255	3,047	02/03/2003	11/01/2032
36201S-MG-1	GOVERNMENT NATIONAL MORT-POOL #591759			4	1	9,802	108.2015	10,586	9,783	9,796					5.500	5.470	MON	45	532	11/22/2002	11/01/2032
36201S-NA-3	GOVERNMENT NATIONAL MORT-POOL #591785			4	1	891	107.2843	923	861	898			9		6.000	4.918	MON	4	48	02/03/2003	11/01/2032
36201S-NH-5	GOVERNMENT NATIONAL MORT-POOL #591805			4	1	67,537	108.1987	72,861	67,340	67,482			(6)		5.500	5.450	MON	309	3,687	11/22/2002	12/01/2032
36201S-PS-2	GOVERNMENT NATIONAL MORT-POOL #591833			4	1	29,689	107.2843	30,774	28,685	29,738			190		6.000	5.080	MON	143	1,645	02/03/2003	12/01/2032
36201S-YH-3	GOVERNMENT NATIONAL MORT-POOL # 592125			4	1	22,105	107.2843	22,919	21,363	21,860			(37)		6.000	5.409	MON	107	1,277	02/03/2003	11/01/2032
36201T-6Z-5	GOVERNMENT NATIONAL MORT-POOL #593188			4	1	67,071	111.0204	62,605	56,390	65,208			840		7.000	2,784	MON	329	3,790	01/01/2013	07/01/2032

E10.4

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36201T-AW-7	GOVERNMENT NATIONAL MORT-POOL #592321			4	1	799	107.2843	828	772	790			(1)		6.000	5.415	MON	4	47	02/03/2003	09/01/2032
36201T-JZ-1	GOVERNMENT NATIONAL MORT-POOL # 592580			4	1	32,904	108.6941	34,565	31,800	32,561			(55)		6.000	5.393	MON	159	1,901	02/03/2003	11/01/2032
36201U-AZ-0	GOVERNMENT NATIONAL MORT-POOL #593225			4	1	2,348	107.8649	2,448	2,270	2,351			13		6.000	5.093	MON	11	130	02/03/2003	09/01/2032
36201U-A7-9	GOVERNMENT NATIONAL MORT-POOL #593230			4	1	13,082	107.7604	13,621	12,640	12,938			(19)		6.000	5.400	MON	63	755	02/03/2003	10/01/2032
36201U-WF-7	GOVERNMENT NATIONAL MORT-POOL # 593846			4	1	32,606	107.2843	33,806	31,510	32,245			(50)		6.000	5.408	MON	158	1,882	02/03/2003	11/01/2032
36201V-LR-1	GOVERNMENT NATIONAL MORT-POOL #594436			4	1	552	107.2843	573	534	557			(1)		6.000	4.907	MON	3	33	02/03/2003	10/01/2032
36201V-QM-7	GOVERNMENT NATIONAL MORT-POOL #594560			4	1	72,504	106.1800	75,130	70,758	72,566			(70)		5.500	4.920	MON	324	3,879	01/14/2004	01/01/2034
36201X-7J-1	GOVERNMENT NATIONAL MORT-POOL #606697			4	1	70,625	106.1800	73,183	68,924	70,745			564		5.500	4.900	MON	316	3,519	01/14/2004	01/01/2034
36201Y-MD-5	GOVERNMENT NATIONAL MORT-POOL #607056			4	1	2,198	106.1985	2,278	2,145	2,189			(2)		5.500	5.035	MON	10	118	01/14/2004	02/01/2034
36201Y-RX-6	GOVERNMENT NATIONAL MORT-POOL #607202			4	1	29,821	107.0215	31,146	29,102	29,745			71		5.500	4.997	MON	133	1,561	01/14/2004	01/01/2034
36202C-BZ-5	GOVERNMENT NATIONAL MORT-POOL #1856			4	1	308	100.0860	298	309	309			3		9.000	7.211	MON	2	10	10/24/2000	08/01/2024
36202C-CG-6	GOVERNMENT NATIONAL MORT-POOL #1871			4	1	7,152	101.6842	7,039	6,923	7,018			(20)		9.000	8.279	MON	52	616	10/24/2000	09/01/2024
36202C-TA-1	GOVERNMENT NATIONAL MORT-POOL #2345			4	1	31,651	109.6636	33,719	30,748	31,217			(67)		8.500	7.856	MON	218	2,581	12/19/2000	12/01/2026
36202D-4Q-1	GOVERNMENT NATIONAL MORT-POOL #3531			4	1	960,234	108.3769	924,196	852,761	954,996		4,287			6.000	3.346	MON		50,347	01/01/2013	03/01/2034
36202D-RD-5	GOVERNMENT NATIONAL MORT-POOL #3184			4	1	69,061	104.1667	76,760	73,690	67,239			(253)		5.000	7.271	MON	491	3,635	06/19/2002	01/01/2032
36202D-RT-0	GOVERNMENT NATIONAL MORT-POOL #3198			4	1	7,892	104.1667	8,772	8,421	8,129			94		5.000	6.378	MON	35	419	06/19/2002	02/01/2032
36202E-3E-7	GOVERNMENT NATIONAL MORT-POOL #4397			4	1	1,911,644	104.9843	1,829,379	1,742,527	1,933,944		18,950			4.500	2.549	MON		77,026	01/01/2013	03/01/2039
36202E-AL-3	GOVERNMENT NATIONAL MORT-POOL #3611			4	1	653,509	109.6783	638,264	581,942	648,894		1,908			6.000	3.539	MON		34,393	01/01/2013	09/01/2034
36202E-GN-3	GOVERNMENT NATIONAL MORT-POOL #3805			4	1	903,402	106.2332	987,168	929,246	902,328			(3,114)		5.000	5.660	MON	3,872	45,582	01/19/2006	01/01/2036
36202F-QN-4	GOVERNMENT NATIONAL MORT-POOL #4577			4	1	276,319	104.9718	263,080	250,620	279,177		2,545			4.500	2.503	MON		11,078	01/01/2013	11/01/2039
36202F-DB-9	GOVERNMENT NATIONAL MORT-POOL #4598			4	1	277,594	104.9287	264,185	251,776	280,568		2,534			4.500	2.494	MON		11,129	01/01/2013	12/01/2039
36202F-E6-9	GOVERNMENT NATIONAL MORT-POOL #4657			4	1	1,405,586	104.9334	1,333,892	1,271,181	1,423,801		13,763			4.500	2.444	MON		56,190	01/01/2013	03/01/2040
36202F-EH-5	GOVERNMENT NATIONAL MORT-POOL #4636			4	1	1,673,984	104.9318	1,588,578	1,513,914	1,692,591		16,609			4.500	2.451	MON		66,881	01/01/2013	02/01/2040
36202F-GD-2	GOVERNMENT NATIONAL MORT-POOL #4696			4	1	1,546,833	104.9309	1,472,148	1,402,969	1,567,241		15,229			4.500	2.499	MON		62,006	01/01/2013	05/01/2040
36202F-GI-0	GOVERNMENT NATIONAL MORT-POOL #4713			4	1	6,015,232	104.9367	5,708,599	5,440,042	5,917,071			(113,649)		4.500	2.194	MON		240,625	01/01/2013	06/01/2040
36202F-GY-6	GOVERNMENT NATIONAL MORT-POOL #4715			4	1	1,683,071	107.5460	1,638,925	1,523,930	1,704,805		20,643			5.000	2.996	MON		74,801	01/01/2013	06/01/2040
36202F-HY-5	GOVERNMENT NATIONAL MORT-POOL #4747			4	1	954,919	106.6809	919,305	861,734	969,619		12,049			5.000	2.900	MON		42,298	01/01/2013	07/01/2040
36202F-JR-8	GOVERNMENT NATIONAL MORT-POOL #4772			4	1	1,178,089	105.6121	1,124,351	1,064,605	1,193,546		14,983			5.000	2.966	MON		52,235	01/01/2013	08/01/2040
36202F-KM-7	GOVERNMENT NATIONAL MORT-POOL #4800			4	1	1,223,467	103.4215	1,153,483	1,115,322	1,233,498		9,714			4.000	2.223	MON		43,896	01/01/2013	09/01/2040
36202F-KN-5	GOVERNMENT NATIONAL MORT-POOL #4801			4	1	14,777,478	104.9230	14,022,231	13,364,301	14,515,162		(277,535)			4.500	2.208	MON		591,016	01/01/2013	09/01/2040
36202F-LN-4	GOVERNMENT NATIONAL MORT-POOL #4833			4	1	9,258,582	103.2869	8,707,691	8,430,590	9,101,110			(158,024)		4.000	1.951	MON		331,856	01/01/2013	10/01/2040
36202F-LP-9	GOVERNMENT NATIONAL MORT-POOL #4834			4	1	2,164,294	104.9332	2,053,898	1,957,339	2,181,977		16,211			4.500	2.496	MON		86,659	01/01/2013	10/01/2040
36202K-7A-7	GOVERNMENT NATIONAL MORT-POOL #8989 ARMS			4	1	2,584	102.9106	2,646	2,572	2,506		40			3.125	4.426	MON		80	11/19/1996	10/01/2026
36202K-LC-7	GOVERNMENT NATIONAL MORT-POOL #8423 ARMS			4	1	129,982	101.9602	133,029	130,471	127,107		2,736			3.625	5.418	MON	394	3,993	03/17/1995	05/01/2024
36202K-HS-1	GOVERNMENT NATIONAL MORT-POOL #8480 ARMS			4	1	54,548	102.4164	56,681	55,343	53,971		1,082			3.750	5.415	MON	354	1,684	07/29/1994	08/01/2024
36202K-QL-2	GOVERNMENT NATIONAL MORT-POOL #8559 ARMS			4	1	77,944	101.3967	80,033	78,931	76,977		1,494			3.125	4.734	MON	206	2,434	03/15/1995	12/01/2024
36202K-SG-1	Government National Mort-Pool #8619 ARMS			4,5	1	19,631	102.1915	19,798	19,374	18,895		341			3.625	4.923	MON	59	584	03/28/1996	04/01/2025
36202K-VJ-1	GOVERNMENT NATIONAL MORT-POOL #8717 ARMS			4	1	54,195	102.6697	55,430	53,989	52,767		873			3.125	4.505	MON	196	1,666	10/19/1995	10/01/2025
36202K-WF-8	GOVERNMENT NATIONAL MORT-POOL #8746 ARMS			4	1	103,694	102.6917	106,601	103,807	101,252		1,790			3.125	4.594	MON	270	3,204	12/01/1996	11/01/2025
36202S-A5-7	GOVERNMENT NATIONAL MORT-POOL #607628			4	1	11,169	108.6498	11,728	10,795	11,170		35			6.000	5.130	MON	54	641	02/03/2003	01/01/2033
36202S-AX-6	GOVERNMENT NATIONAL MORT-POOL #607622			4	1	3,212	106.1800	3,404	3,206	3,214		3			5.500	5.443	MON	15	156	11/22/2002	01/01/2033
36202S-BE-7	GOVERNMENT NATIONAL MORT-POOL #607637			4	1	8,125	106.1800	8,604	8,103	8,118					5.500	5.456	MON	37	443	11/22/2002	01/01/2033
36202S-OH-9	GOVERNMENT NATIONAL MORT-POOL #607672			4	1	20,600	107.2843	21,359	19,909	20,840		(64)			6.000	4.833	MON	100	1,190	02/03/2003	10/01/2032
36202U-D6-7	GOVERNMENT NATIONAL MORT-POOL #609525			4	1	274,466	108.0528	288,982	267,445	273,178		532			5.500	5.010	MON	1,226	14,544	01/16/2004	12/01/2033
36202V-H5-3	GOVERNMENT NATIONAL MORT-POOL #610552			4	1	6,695	106.1800	6,938	6,534	6,647		(6)			5.500	5.104	MON	30	358	01/14/2004	11/01/2033
36202V-H9-5	GOVERNMENT NATIONAL MORT-POOL #610556			4	1	52,446	106.1800	54,346	51,183	52,075		(41)			5.500	5.099	MON	235	2,804	01/14/2004	11/01/2033
36202V-HG-9	GOVERNMENT NATIONAL MORT-POOL #610531			4	1	5,432	106.1800	5,629	5,302	5,397		(3)			5.500	5.087	MON	24	290	01/14/2004	11/01/2033
36202V-HH-7	GOVERNMENT NATIONAL MORT-POOL #610532			4	1	35,009	106.1800	36,277	34,166	34,897		105			5.500	5.010	MON	157	1,813	01/14/2004	11/01/2033
36202V-K6-7	GOVERNMENT NATIONAL MORT-POOL #610617			4	1	82,185	106.1800	85,162	80,205	81,598		(66)			5.500	5.103	MON	368	4,395	01/14/2004	01/01/2034
36202V-KT-7	GOVERNMENT NATIONAL MORT-POOL #610606			4	1	145,565	106.2073	150,876	142,058	144,911		(79)			5.500						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22	
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date	
36203A-IJ-2	GOVERNMENT NATIONAL MORT-POOL #343361			4	1	1,109	100.1224	1,048	1,046	1,088		7			7.500	5.060	MON		7	68	01/01/2013	05/01/2023
36203A-TL-0	GOVERNMENT NATIONAL MORT-POOL #343555			4	1	4,175	103.9175	4,280	4,119	4,137		(4)			7.500	7.216	MON		26	302	10/25/1995	04/01/2023
36203A-VJ-2	GOVERNMENT NATIONAL MORT-POOL #343617			4	1	3,881	107.6929	4,141	3,846	3,858		(2)			6.500	6.311	MON		21	244	02/03/1999	06/01/2023
36203B-K0-6	GOVERNMENT NATIONAL MORT-POOL #344203			4	1	8,060	100.5410	7,985	7,942	7,989		(6)			7.000	6.608	MON		46	533	02/24/1993	01/01/2023
36203B-IA-9	GOVERNMENT NATIONAL MORT-POOL #344253			4	1	144	100.1174	142	141	142					7.500	7.030	MON		1	10	11/02/1995	03/01/2023
36203B-VU-5	GOVERNMENT NATIONAL MORT-POOL #344527			4	1	5,610	107.6929	5,258	4,883	5,222		(77)			6.500	2.812	MON		26	312	01/01/2013	10/01/2023
36203B-WT-7	GOVERNMENT NATIONAL MORT-POOL #344558			4	1	4,866	107.6929	5,192	4,821	4,847		7			6.500	6.211	MON		26	246	02/03/1999	12/01/2023
36203C-2A-9	GOVERNMENT NATIONAL MORT-POOL #345569			4	1	6,603	107.6929	6,245	5,799	6,235		(45)			6.500	2.731	MON		31	365	01/01/2013	02/01/2024
36203C-EF-5	GOVERNMENT NATIONAL MORT-POOL #344934			4	1	977	102.8962	999	971	973					7.000	6.889	MON		6	67	11/26/1997	07/01/2023
36203C-KB-7	GOVERNMENT NATIONAL MORT-POOL #345090			4	1	344	103.7354	355	342	343					7.000	6.854	MON		2	23	11/26/1997	11/01/2023
36203C-KM-3	GOVERNMENT NATIONAL MORT-POOL #345100			4	1	3,127	107.6929	3,337	3,098	3,112		(2)			6.500	6.260	MON		17	197	02/03/1999	11/01/2023
36203C-MG-4	GOVERNMENT NATIONAL MORT-POOL #345159			4	1	1,282	107.6929	1,368	1,270	1,274		(1)			6.500	6.320	MON		7	81	02/03/1999	01/01/2024
36203C-RF-1	GOVERNMENT NATIONAL MORT-POOL #345286			4	1	597	100.5043	596	593	596					7.000	6.726	MON		3	40	11/26/1997	06/01/2023
36203C-T4-4	GOVERNMENT NATIONAL MORT-POOL #345371			4	1	542	100.1136	486	486	528		(1)			7.500	2.076	MON		3	34	01/01/2013	01/01/2023
36203C-VJ-8	GOVERNMENT NATIONAL MORT-POOL #345417			4	1	212	107.6929	200	186	212		8			6.500	(0.454)	MON		1	6	01/01/2013	11/01/2023
36203C-ZK-1	GOVERNMENT NATIONAL MORT-POOL #345546			4	1	2,497	100.1237	2,455	2,452	2,467		(3)			7.500	7.161	MON		15	182	11/02/1995	02/01/2024
36203D-SN-6	GOVERNMENT NATIONAL MORT-POOL #346553			4	1	583	101.2676	507	500	548		(8)			7.500	1.927	MON		3	36	01/01/2013	05/01/2023
36203D-6Y-1	GOVERNMENT NATIONAL MORT-POOL #346587			4	1	109,822	103.0699	112,509	109,158	109,392		(5)			7.000	6.869	MON		1,126	7,127	06/09/1993	06/01/2023
36203D-HB-9	GOVERNMENT NATIONAL MORT-POOL #345826			4	1	733	107.6929	782	726	730		1			6.500	6.251	MON		4	39	02/03/1999	01/01/2024
36203D-J4-3	GOVERNMENT NATIONAL MORT-POOL #345983			4	1	12,882	107.6929	13,919	12,925	12,897		5			6.500	6.616	MON		70	823	01/23/2001	12/01/2023
36203D-JE-1	GOVERNMENT NATIONAL MORT-POOL #345961			4	1	3,553	107.6929	3,791	3,520	3,534		(2)			6.500	6.295	MON		19	223	02/03/1999	11/01/2023
36203D-XQ-8	GOVERNMENT NATIONAL MORT-POOL #346387			4	1	984	100.1222	967	966	971		(1)			7.500	7.140	MON		6	71	11/02/1995	01/01/2023
36203E-E6-1	GOVERNMENT NATIONAL MORT-POOL #346757			4	1	469	100.6585	465	462	465					7.500	7.096	MON		3	33	10/25/1995	09/01/2023
36203E-FE-3	GOVERNMENT NATIONAL MORT-POOL #346765			4	1	477	100.7414	474	470	473		(1)			7.500	7.195	MON		3	34	10/25/1995	09/01/2023
36203E-G7-7	GOVERNMENT NATIONAL MORT-POOL #346822			4	1	453	100.9064	451	447	451		(1)			7.500	7.004	MON		3	33	10/25/1995	10/01/2023
36203E-LM-8	GOVERNMENT NATIONAL MORT-POOL #346932			4	1	23,248	107.6929	25,119	23,324	23,280		9			6.500	6.603	MON		126	1,492	01/23/2001	12/01/2023
36203E-LV-8	GOVERNMENT NATIONAL MORT-POOL #346940			4	1	2,014	107.6929	2,149	1,996	2,002		(1)			6.500	6.319	MON		11	128	02/03/1999	12/01/2023
36203E-N9-5	GOVERNMENT NATIONAL MORT-POOL #347016			4	1	238	107.6929	254	235	236					6.500	6.299	MON		1	17	02/03/1999	01/01/2024
36203F-2R-5	GOVERNMENT NATIONAL MORT-POOL #348284			4	1	230	100.1230	227	226	228					7.500	7.119	MON		1	16	10/25/1995	10/01/2023
36203F-FU-4	GOVERNMENT NATIONAL MORT-POOL #347679			4	1	964	100.6515	953	947	956					7.500	6.971	MON		6	66	11/02/1995	06/01/2024
36203F-GC-3	GOVERNMENT NATIONAL MORT-POOL #347695			4	1	935	107.6929	998	926	930					6.500	6.306	MON		5	58	02/03/1999	10/01/2023
36203F-GO-2	GOVERNMENT NATIONAL MORT-POOL #347707			4	1	16,554	107.6929	17,665	16,403	16,461		(9)			6.500	6.309	MON		89	1,042	02/03/1999	01/01/2024
36203F-GV-1	GOVERNMENT NATIONAL MORT-POOL #347712			4	1	202	107.6929	216	201	201					6.500	6.295	MON		1	12	02/03/1999	01/01/2024
36203F-GW-9	GOVERNMENT NATIONAL MORT-POOL #347713			4	1	9,016	107.6929	9,621	8,934	8,972		(5)			6.500	6.273	MON		48	564	02/03/1999	01/01/2024
36203F-UD-5	GOVERNMENT NATIONAL MORT-POOL #348080			4	1	113	100.0881	113	113	113					7.000	6.895	MON		1	9	11/26/1997	05/01/2023
36203F-VJ-1	GOVERNMENT NATIONAL MORT-POOL #348117			4	1	4,142	101.5492	4,131	4,068	4,095		(4)			7.500	7.089	MON		25	296	11/02/1995	06/01/2023
36203F-XX-8	GOVERNMENT NATIONAL MORT-POOL #348194			4	1	115	100.1232	114	114	114		(1)			7.500	6.232	MON		1	9	10/25/1995	08/01/2023
36203G-OX-4	GOVERNMENT NATIONAL MORT-POOL #348870			4	1	3,089	103.1349	3,165	3,069	3,078					7.000	6.829	MON		18	198	11/26/1997	07/01/2023
36203H-O4-6	GOVERNMENT NATIONAL MORT-POOL #349775			4	1	5,485	101.7795	5,275	5,182	5,313		(35)			7.500	5.937	MON		32	383	01/01/2013	05/01/2023
36203J-AJ-3	GOVERNMENT NATIONAL MORT-POOL #351025			4	1	4,578	107.6929	5,277	4,900	4,769		28			6.500	8.175	MON		27	312	02/22/2000	04/01/2023
36203K-HM-9	GOVERNMENT NATIONAL MORT-POOL #351336			4	1	560	107.6929	597	555	557					6.500	6.318	MON		3	35	02/03/1999	12/01/2023
36203K-JV-7	GOVERNMENT NATIONAL MORT-POOL #351376			4	1	35,303	107.6929	38,144	35,419	35,351		12			6.500	6.605	MON		192	2,258	01/23/2001	12/01/2023
36203K-KS-2	GOVERNMENT NATIONAL MORT-POOL #351405			4	1	32,856	107.6929	39,297	36,490	34,535		149			6.500	9.516	MON		198	2,256	04/05/1994	01/01/2024
36203K-KV-5	GOVERNMENT NATIONAL MORT-POOL #351408			4	1	14,982	107.6929	15,988	14,846	14,905		(10)			6.500	6.286	MON		80	947	02/03/1999	01/01/2024
36203K-KX-1	GOVERNMENT NATIONAL MORT-POOL #351410			4	1	8,359	107.6929	8,920	8,283	8,316		(4)			6.500	6.282	MON		45	522	02/03/1999	01/01/2024
36203K-LD-4	GOVERNMENT NATIONAL MORT-POOL #351424			4	1	2,154	107.6929	2,296	2,132	2,142					6.500	6.247	MON		12	131	10/21/1998	02/01/2024
36203K-PE-8	GOVERNMENT NATIONAL MORT-POOL #351521			4	1	6,558	100.1227	6,546	6,538	6,545		(2)			7.500	7.433	MON		41	483	01/01/2013	06/01/2023
36203L-SZ-3	GOVERNMENT NATIONAL MORT-POOL #352816			4	1	13,944	107.6929	15,609	14,494	14,254		48			6.500	7.391	MON		79	930	09/22/1999	02/01/2024
36203L-4C-3	GOVERNMENT NATIONAL MORT-POOL #352819			4	1	233	107.6929	249	231	232					6.500	6.281	MON		1	14	02/03/1999	03/01/2024
36203L-4H-2	GOVERNMENT NATIONAL MORT-POOL #352824			4	1	1,178	107.6929	1,257	1,167	1,172					6.500	6.270	MON		6	67	02/03/1999	04/01/2024
36203L-4U-3	GOVERNMENT NATIONAL MORT-POOL #352835			4	1	42	100.8957	42	42	42					7.500	7.083	MON		4	4	10/24/1995	02/01/2024
36203L-A3-6	GOVERNMENT NATIONAL MORT-POOL #352026			4	1	1,135	104.2816	1,168	1,120	1,128					7.500	7.107	MON		7	78	10/25/1995	11/01/2023
36203L-A4-4	GOVERNMENT NATIONAL MORT-POOL #352027			4	1	229	102.2742	231	226	228					7.500	7.177	MON		1	16	10/25/1995	11/01/2023
36203L-A5-1	GOVERNMENT NATIONAL MORT-POOL #352028			4	1	9,794	107.6929	10,582	9,826	9,805		3			6.500	6.618	MON		53	625	01/23/2001	11/01/2023
36203L-BV-3	GOVERNMENT NATIONAL MORT-POOL #352052			4	1	2,488	104.9369	2,564	2,443	2,462		(3)			7.500	7.060	MON		15	177	11/02/1995	10/01/2023
36203L-E7-3	GOVERNMENT NATIONAL MORT-POOL #352158			4	1	303	101.9009	305	299	300					7.500	7.223	MON		2	22	10/25/1995	05/01/2023
36203L-FE-7	GOVERNMENT NATIONAL MORT-POOL #352165			4	1	158	100.1229	134	134	155		(5)			7.500	(1.231)	MON		1	11	01/01/2013	06/01/2023

E10.6

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	Code	For Eig n	Bond Char	NAIC Designation and Admini- strative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor- tization) Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36203M-2C-3	GOVERNMENT NATIONAL MORT-POOL #353671		4		1	394	100.0998	391	390	392					7.500	7.240	MON	2	23	01/01/2013	05/01/2023
36203M-B5-8	GOVERNMENT NATIONAL MORT-POOL #352960		4		1	1,088	107.6929	1,218	1,131	1,077		(6)			6.500	9.073	MON	6	62	09/22/1999	05/01/2024
36203M-BR-0	GOVERNMENT NATIONAL MORT-POOL #352948		4		1	7,272	107.6929	6,778	6,293	6,790		(92)			6.500	2.646	MON	34	403	01/01/2013	04/01/2024
36203M-J7-6	GOVERNMENT NATIONAL MORT-POOL #353186		4		1	743	101.6634	751	758	740					7.000	6.877	MON	4	51	11/26/1997	08/01/2023
36203M-JQ-4	GOVERNMENT NATIONAL MORT-POOL #353171		4		1	1,638	100.1992	1,593	1,589	1,611		(6)			7.500	6.651	MON	10	118	01/01/2013	05/01/2023
36203M-T7-5	GOVERNMENT NATIONAL MORT-POOL #353474		4		1	979	100.5546	971	966	973					7.000	6.720	MON	6	67	02/02/2001	10/01/2027
36203N-5N-4	GOVERNMENT NATIONAL MORT-POOL #354653		4		1	2,244	104.4829	2,313	2,214	2,226		(1)			7.500	7.177	MON	14	162	10/25/1995	09/01/2023
36203N-KY-3	GOVERNMENT NATIONAL MORT-POOL #354111		4		1	199	100.1224	196	195	196					7.500	7.135	MON	1	14	11/02/1995	05/01/2023
36203P-4K-6	GOVERNMENT NATIONAL MORT-POOL #355526		4		1	694	101.1509	698	690	691					7.000	6.872	MON	4	45	11/26/1997	11/01/2023
36203P-BA-0	GOVERNMENT NATIONAL MORT-POOL #354733		4		1	2,879	107.6929	3,072	2,852	2,864		(1)			6.500	6.292	MON	15	178	02/03/1999	01/01/2024
36203P-C3-5	GOVERNMENT NATIONAL MORT-POOL #354790		4		1	277	107.6929	282	288	282					6.500	7.567	MON	2	18	09/22/1999	04/01/2024
36203P-CQ-4	GOVERNMENT NATIONAL MORT-POOL #354779		4		1	2,733	107.6929	2,916	2,708	2,719		(2)			6.500	6.274	MON	15	171	02/03/1999	03/01/2024
36203P-HQ-3	GOVERNMENT NATIONAL MORT-POOL #355067		4		1	9,383	107.6929	10,012	9,297	9,327		(6)			6.500	6.326	MON	50	596	02/03/1999	01/01/2024
36203Q-6N-6	GOVERNMENT NATIONAL MORT-POOL #356477		4		1	2,399	107.6929	2,560	2,377	2,389		1			6.500	6.236	MON	13	136	02/03/1999	11/01/2023
36203Q-CT-6	GOVERNMENT NATIONAL MORT-POOL #356682		4		1	6,392	100.1227	6,274	6,266	6,321		(14)			7.500	6.949	MON	39	462	01/01/2013	05/01/2023
36203Q-FM-8	GOVERNMENT NATIONAL MORT-POOL #355772		4		1	1,255	100.1209	1,242	1,245	1,245		(1)			7.500	7.262	MON	8	91	10/24/1995	08/01/2023
36203Q-JH-5	GOVERNMENT NATIONAL MORT-POOL #355864		4		1	1,169	107.6929	1,247	1,158	1,164					6.500	6.242	MON	6	65	02/03/1999	04/01/2024
36203Q-JR-3	GOVERNMENT NATIONAL MORT-POOL #355872		4		1	8,634	107.6929	9,665	8,974	8,791		32			6.500	7.563	MON	49	575	09/22/1999	05/01/2024
36203Q-PW-5	GOVERNMENT NATIONAL MORT-POOL #356037		4		1	8,465	100.1225	8,361	8,351	8,401		(13)			7.500	7.128	MON	52	616	01/01/2013	06/01/2023
36203Q-S6-9	GOVERNMENT NATIONAL MORT-POOL #356141		4		1	12,535	107.6929	13,376	12,421	12,464		(8)			6.500	6.308	MON	67	791	02/03/1999	11/01/2023
36203R-3R-8	GOVERNMENT NATIONAL MORT-POOL #357308		4		1	177	100.6742	175	174	175					7.500	7.168	MON	1	13	10/25/1995	08/01/2023
36203R-3S-6	GOVERNMENT NATIONAL MORT-POOL #357309		4		1	1,182	103.8622	1,220	1,175	1,178					7.000	6.854	MON	7	79	11/26/1997	08/01/2023
36203R-4F-3	GOVERNMENT NATIONAL MORT-POOL #357322		4		1	477	103.4494	490	474	475					7.000	6.842	MON	3	32	11/26/1997	09/01/2023
36203R-G4-5	GOVERNMENT NATIONAL MORT-POOL #356719		4		1	6,590	107.6929	7,032	6,530	6,550		(4)			6.500	6.325	MON	35	419	02/03/1999	09/01/2023
36203R-GH-6	GOVERNMENT NATIONAL MORT-POOL #356700		4		1	292	107.6929	311	289	290					6.500	6.297	MON	2	19	02/03/1999	07/01/2023
36203R-Y8-6	GOVERNMENT NATIONAL MORT-POOL #357235		4		1	1,185	100.1233	1,170	1,169	1,175		(1)			7.500	7.164	MON	7	87	10/25/1995	10/01/2023
36203S-4L-8	GOVERNMENT NATIONAL MORT-POOL #358227		4		1	126	107.6929	134	124	125					6.500	6.322	MON	1	9	02/03/1999	08/01/2023
36203S-6T-9	GOVERNMENT NATIONAL MORT-POOL #358282		4		1	1,031	100.1229	1,026	1,024	1,027		(1)			7.500	7.331	MON	6	75	01/01/2013	05/01/2023
36203S-LF-2	GOVERNMENT NATIONAL MORT-POOL #357726		4		1	7,266	100.1229	7,180	7,171	7,205		(7)			7.500	7.236	MON	45	529	10/24/1995	01/01/2024
36203S-XL-6	GOVERNMENT NATIONAL MORT-POOL #358083		4		1	2,393	107.6929	2,553	2,371	2,379		(1)			6.500	6.315	MON	13	151	02/03/1999	10/01/2023
36203T-3F-0	GOVERNMENT NATIONAL MORT-POOL #359098		4		1	2,589	100.7947	2,593	2,572	2,578		(1)			7.000	6.874	MON	15	174	11/26/1997	07/01/2023
36203T-5A-9	GOVERNMENT NATIONAL MORT-POOL #359141		4		1	1,100	107.6929	1,174	1,090	1,094		(1)			6.500	6.323	MON	6	70	02/03/1999	01/01/2024
36203T-DR-3	GOVERNMENT NATIONAL MORT-POOL #358412		4		1	698	107.6929	745	691	694					6.500	6.323	MON	4	45	02/03/1999	09/01/2023
36203T-EF-8	GOVERNMENT NATIONAL MORT-POOL #358434		4		1	2,637	107.6929	2,813	2,613	2,621		(2)			6.500	6.324	MON	14	168	02/03/1999	10/01/2023
36203T-TD-7	GOVERNMENT NATIONAL MORT-POOL #358848		4		1	1,691	107.6929	1,597	1,483	1,590		(18)			6.500	2.687	MON	8	95	01/01/2013	10/01/2023
36203T-XF-7	GOVERNMENT NATIONAL MORT-POOL #358978		4		1	12,251	107.6929	13,073	12,139	12,185		(6)			6.500	6.295	MON	66	769	02/03/1999	12/01/2023
36203U-2N-1	GOVERNMENT NATIONAL MORT-POOL #359981		4		1	6,943	107.6929	7,772	7,217	7,079		5			6.500	7.548	MON	39	444	09/22/1999	01/01/2024
36203U-RR-5	GOVERNMENT NATIONAL MORT-POOL #359696		4		1	841	107.6929	942	875	847		(2)			6.500	8.258	MON	5	56	09/22/1999	01/01/2024
36203U-WA-6	GOVERNMENT NATIONAL MORT-POOL #359841		4		1	364	107.6929	388	360	362					6.500	6.277	MON	2	22	02/03/1999	09/01/2023
36203U-YV-9	GOVERNMENT NATIONAL MORT-POOL #359892		4		1	357	100.0487	355	355	356					7.000	6.750	MON	2	20	11/26/1997	10/01/2023
36203U-YP-1	GOVERNMENT NATIONAL MORT-POOL #359918		4		1	8,894	107.6929	9,490	8,813	8,845		(6)			6.500	6.298	MON	48	563	02/03/1999	11/01/2023
36203U-Z5-4	GOVERNMENT NATIONAL MORT-POOL #359964		4		1	2,554	104.6587	2,638	2,520	2,534					7.500	7.185	MON	16	180	10/24/1995	12/01/2023
36203V-BV-1	GOVERNMENT NATIONAL MORT-POOL #360152		4		1	919	100.1230	904	903	908		(1)			7.500	7.140	MON	6	66	11/02/1995	07/01/2023
36203V-EM-8	GOVERNMENT NATIONAL MORT-POOL #360240		4		1	18,409	107.6929	20,608	19,136	18,765		57			6.500	7.520	MON	104	1,223	09/22/1999	04/01/2024
36203V-J6-8	GOVERNMENT NATIONAL MORT-POOL #360385		4		1	8,403	101.9084	8,411	8,253	8,303		(12)			7.500	7.139	MON	52	610	11/02/1995	08/01/2023
36203V-TF-7	GOVERNMENT NATIONAL MORT-POOL #360650		4		1	1,890	107.6929	2,017	1,872	1,879		(1)			6.500	6.323	MON	119	119	02/03/1999	01/01/2024
36203V-W2-2	GOVERNMENT NATIONAL MORT-POOL #360765		4		1	6,674	107.6929	7,145	6,635	6,655		(2)			6.500	6.397	MON	36	429	11/17/1998	12/01/2028
36203V-Y2-0	GOVERNMENT NATIONAL MORT-POOL #360829		4		1	2,517	107.6929	2,686	2,494	2,504		(2)			6.500	6.306	MON	14	160	02/03/1999	03/01/2024
36203W-PY-8	GOVERNMENT NATIONAL MORT-POOL #361439		4		1	126	100.1220	125	125	126					7.500	7.126	MON	1	7	10/27/1995	06/01/2024
36203X-4G-8	GOVERNMENT NATIONAL MORT-POOL #362723		4		1	537	107.6929	573	532	534					6.500	6.302	MON	3	33	02/03/1999	12/01/2023
36203X-06-1	GOVERNMENT NATIONAL MORT-POOL #361993		4		1	1,559	107.6929	1,663	1,545	1,550		(1)			6.500	6.323	MON	8	99	02/03/1999	12/01/2023
36203X-D4-5	GOVERNMENT NATIONAL MORT-POOL #362023		4		1	5,120	100.0883	5,092	5,087	5,097		(2)			7.000	6.891	MON	30	351	11/26/1997	09/01/2023
36203X-E5-1	GOVERNMENT NATIONAL MORT-POOL #362056		4		1	3,540	100.1225	3,116	3,112	3,413		(72)			7.500	1.905	MON	19	229	01/01/2013	06/01/2023
36203X-H7-4	GOVERNMENT NATIONAL MORT-POOL #362154		4		1	5,884	107.6929	6,278	5,830	5,857		3			6.500	6.250	MON	32	339	02/03/1999	12/01/2023
36203X-J8-0	GOVERNMENT NATIONAL MORT-POOL #362187		4		1	7,860	107.6929	8,387	7,788	7,814		(5)			6.500	6.318	MON	42	498	02/03/1999	01/01/2024
36203X-LD-6	GOVERNMENT NATIONAL MORT-POOL #362224		4		1	4,508	107.6929	4,811	4,467	4,482		(3)			6.500	6.325	MON	24	287	02/03/1999	03/01/2024
36203Y-2W-3	GOVERNMENT NATIONAL MORT-POOL #363589		4		1	541	107.6929	577	536	540		1			6.500	6.102	MON	3	31	02/03/1999	02/01/2024

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36203Y-6R-0	GOVERNMENT NATIONAL MORT-POOL #363680			4	1	12,493	107.6929	13,331	12,379	12,420		(8)			6.500	6.319	MON	67	791	02/03/1999	11/01/2023
36203Y-HZ-0	GOVERNMENT NATIONAL MORT-POOL #363048			4	1	310	107.6929	331	308	309					6.500	6.320	MON	2	20	02/03/1999	10/01/2023
36203Y-TW-4	GOVERNMENT NATIONAL MORT-POOL #363365			4	1	2,042	100.1714	2,018	2,015	2,028		(2)			7.500	7.114	MON	13	147	10/25/1995	11/01/2023
36204A-6U-4	GOVERNMENT NATIONAL MORT-POOL #364583			4	1	666	107.6929	710	660	662					6.500	6.323	MON	4	42	02/03/1999	08/01/2023
36204A-F2-6	GOVERNMENT NATIONAL MORT-POOL #363885			4	1	5,403	107.6929	6,048	5,616	5,435		(6)			6.500	8.283	MON	30	336	09/22/1999	01/01/2024
36204A-PN-9	GOVERNMENT NATIONAL MORT-POOL #364129			4	1	7,209	107.6929	7,693	7,143	7,165		(5)			6.500	6.326	MON	39	457	02/03/1999	08/01/2023
36204A-SY-2	GOVERNMENT NATIONAL MORT-POOL #364235			4	1	2,365	107.6929	2,524	2,344	2,352		(1)			6.500	6.310	MON	13	149	02/03/1999	04/01/2024
36204A-T2-1	GOVERNMENT NATIONAL MORT-POOL #364269			4	1	5,135	107.6929	5,479	5,088	5,105		(3)			6.500	6.320	MON	28	325	02/03/1999	01/01/2024
36204A-WC-5	GOVERNMENT NATIONAL MORT-POOL #364343			4	1	336	100.1179	332	331	333					7.500	7.195	MON	2	25	10/25/1995	09/01/2023
36204B-BA-0	GOVERNMENT NATIONAL MORT-POOL #364633			4	1	1,685	100.7812	1,668	1,655	1,666		(2)			7.500	7.138	MON	10	122	11/02/1995	09/01/2023
36204C-5D-9	GOVERNMENT NATIONAL MORT-POOL #366344			4	1	3,375	107.6929	3,189	2,961	3,273		(17)			6.500	1.042	MON	16	184	01/01/2013	10/01/2023
36204C-5Y-3	GOVERNMENT NATIONAL MORT-POOL #366363			4	1	820	107.6929	875	812	818		(1)			6.500	6.126	MON	4	52	02/03/1999	11/01/2023
36204C-7J-4	GOVERNMENT NATIONAL MORT-POOL #366397			4	1	41,688	107.6929	46,667	43,334	42,468		137			6.500	7.593	MON	235	2,760	09/22/1999	01/01/2024
36204C-LR-0	GOVERNMENT NATIONAL MORT-POOL #365836			4	1	12,024	100.1234	11,876	11,861	11,914		(13)			7.500	7.234	MON	74	877	10/25/1995	09/01/2023
36204C-N6-4	GOVERNMENT NATIONAL MORT-POOL #365913			4	1	66,828	107.6929	71,345	66,248	66,492		(38)			6.500	6.303	MON	359	4,181	01/19/1999	01/01/2024
36204C-OB-0	GOVERNMENT NATIONAL MORT-POOL #365950			4	1	2,098	107.6929	2,239	2,079	2,086		(1)			6.500	6.314	MON	11	132	02/03/1999	11/01/2023
36204C-TP-6	GOVERNMENT NATIONAL MORT-POOL #366058			4	1	248	100.0870	246	246	247					7.000	6.832	MON	1	16	11/26/1997	12/01/2023
36204C-W6-4	GOVERNMENT NATIONAL MORT-POOL #366169			4	1	208	100.1233	206	206	206					7.500	7.325	MON	1	15	10/27/1995	01/01/2024
36204C-Y5-4	GOVERNMENT NATIONAL MORT-POOL #366232			4	1	9,157	107.6929	9,771	9,073	9,106		(3)			6.500	6.303	MON	49	568	02/03/1999	01/01/2024
36204D-D4-8	GOVERNMENT NATIONAL MORT-POOL #366523			4	1	3,569	107.6929	3,809	3,537	3,549		(2)			6.500	6.305	MON	19	225	02/03/1999	10/01/2023
36204D-EI-5	GOVERNMENT NATIONAL MORT-POOL #366549			4	1	11,602	107.6929	12,381	11,496	11,534		(8)			6.500	6.324	MON	62	737	02/03/1999	01/01/2024
36204D-FU-8	GOVERNMENT NATIONAL MORT-POOL #366579			4	1	2,427	100.1239	2,399	2,396	2,406		(3)			7.500	7.244	MON	15	177	10/24/1995	01/01/2024
36204D-JX-8	GOVERNMENT NATIONAL MORT-POOL #366678			4	1	4,082	107.6929	4,356	4,045	4,058		(3)			6.500	6.319	MON	22	259	02/03/1999	01/01/2024
36204D-KG-3	GOVERNMENT NATIONAL MORT-POOL #366695			4	1	2,265	107.6929	2,146	1,993	2,164		(2)			6.500	2.162	MON	11	123	01/01/2013	01/01/2024
36204D-LC-1	GOVERNMENT NATIONAL MORT-POOL #366723			4	1	426	107.6929	477	443	436		1			6.500	7.401	MON	2	28	09/22/1999	02/01/2024
36204D-HP-1	GOVERNMENT NATIONAL MORT-POOL #366766			4	1	1,751	107.6929	1,661	1,542	1,707		(29)			6.500	1.380	MON	8	99	01/01/2013	04/01/2024
36204D-SU-4	GOVERNMENT NATIONAL MORT-POOL #366931			4	1	1,022	101.0158	1,019	1,009	1,014		(1)			7.500	7.239	MON	6	75	10/24/1995	10/01/2024
36204E-2U-0	GOVERNMENT NATIONAL MORT-POOL #368087			4	1	6,645	107.6929	7,091	6,585	6,608		(4)			6.500	6.308	MON	36	419	02/03/1999	12/01/2023
36204F-2G-8	GOVERNMENT NATIONAL MORT-POOL #368975			4	1	21,145	107.6929	25,291	23,484	22,292		62			6.500	9.315	MON	127	1,454	04/05/1994	02/01/2024
36204F-4D-3	GOVERNMENT NATIONAL MORT-POOL #369020			4	1	1,021	107.6929	1,090	1,012	1,017					6.500	6.235	MON	5	60	02/03/1999	12/01/2023
36204F-E3-4	GOVERNMENT NATIONAL MORT-POOL #368354			4	1	20,134	107.6929	21,485	19,950	20,015		(13)			6.500	6.325	MON	108	1,280	02/03/1999	01/01/2024
36204F-EN-0	GOVERNMENT NATIONAL MORT-POOL #368341			4	1	31	99.8393	30	30	31					7.500	6.588	MON	1	18	11/02/1995	01/01/2024
36204F-LB-8	GOVERNMENT NATIONAL MORT-POOL #368522			4	1	21,403	107.6929	23,959	22,247	21,785		54			6.500	7.609	MON	121	1,413	09/22/1999	03/01/2024
36204F-NS-9	GOVERNMENT NATIONAL MORT-POOL #368601			4	1	120	107.6929	128	118	119					6.500	6.155	MON	1	8	02/03/1999	03/01/2024
36204F-UE-2	GOVERNMENT NATIONAL MORT-POOL #368781			4	1	243	107.6929	259	240	241					6.500	6.318	MON	1	17	02/03/1999	10/01/2023
36204F-UV-4	GOVERNMENT NATIONAL MORT-POOL #368796			4	1	3,922	107.6929	4,186	3,887	3,902		(2)			6.500	6.292	MON	21	245	02/03/1999	01/01/2024
36204F-WI-0	GOVERNMENT NATIONAL MORT-POOL #368853			4	1	409	100.1237	405	404	407		(1)			7.500	7.156	MON	3	30	10/24/1995	11/01/2023
36204F-XY-5	GOVERNMENT NATIONAL MORT-POOL #368895			4	1	4,431	107.6929	4,729	4,391	4,408		(2)			6.500	6.289	MON	24	276	02/03/1999	01/01/2024
36204G-5Y-4	GOVERNMENT NATIONAL MORT-POOL #369963			4	1	1,662	100.1232	1,641	1,639	1,647		(2)			7.500	7.232	MON	10	121	10/25/1995	09/01/2023
36204G-FZ-0	GOVERNMENT NATIONAL MORT-POOL #369284			4	1	111	107.6929	118	110	111					6.500	6.064	MON	1	8	02/03/1999	02/01/2024
36204G-KN-1	GOVERNMENT NATIONAL MORT-POOL #369401			4	1	1,911	107.6929	2,040	1,894	1,900		(1)			6.500	6.323	MON	10	122	02/03/1999	01/01/2024
36204G-XR-8	GOVERNMENT NATIONAL MORT-POOL #369788			4	1	4,508	107.6929	4,811	4,467	4,481		(3)			6.500	6.324	MON	24	286	02/03/1999	11/01/2023
36204G-Y3-0	GOVERNMENT NATIONAL MORT-POOL #369830			4	1	1,839	107.6929	1,962	1,822	1,829		(1)			6.500	6.299	MON	10	115	02/03/1999	12/01/2023
36204H-5N-6	GOVERNMENT NATIONAL MORT-POOL #370853			4	1	7,091	107.6929	7,567	7,026	7,051		(4)			6.500	6.303	MON	4	445	02/03/1999	10/01/2023
36204H-BU-3	GOVERNMENT NATIONAL MORT-POOL #370051			4	1	3,466	107.6929	3,699	3,435	3,448		(2)			6.500	6.283	MON	19	219	02/03/1999	11/01/2023
36204H-DY-3	GOVERNMENT NATIONAL MORT-POOL #370119			4	1	8,219	101.4597	8,226	8,108	8,142		(8)			7.500	7.254	MON	51	600	10/25/1995	11/01/2023
36204H-E9-7	GOVERNMENT NATIONAL MORT-POOL #370160			4	1	179	100.1234	176	178	178					7.500	6.950	MON	1	14	11/02/1995	12/01/2023
36204H-KC-3	GOVERNMENT NATIONAL MORT-POOL #370291			4	1	6,806	107.6929	7,262	6,744	6,765		(4)			6.500	6.324	MON	37	432	02/03/1999	12/01/2023
36204H-KQ-2	GOVERNMENT NATIONAL MORT-POOL #370303			4	1	2,603	107.6929	2,777	2,579	2,589					6.500	6.292	MON	14	160	02/03/1999	01/01/2024
36204H-LJ-7	GOVERNMENT NATIONAL MORT-POOL #370329			4	1	1,502	107.6929	1,407	1,307	1,398		(21)			6.500	2.852	MON	7	83	01/01/2013	11/01/2023
36204H-XB-1	GOVERNMENT NATIONAL MORT-POOL #370674			4	1	10,204	107.6929	11,025	10,237	10,207		(5)			6.500	6.663	MON	55	556	01/23/2001	11/01/2023
36204H-ZP-8	GOVERNMENT NATIONAL MORT-POOL #370750			4	1	2,185	107.6929	2,048	1,902	2,032		(30)			6.500	2.814	MON	10	121	01/01/2013	09/01/2023
36204J-6J-0	GOVERNMENT NATIONAL MORT-POOL #371773			4	1	9,233	107.6929	9,853	9,149	9,196		(6)			6.500	6.238	MON	50	580	02/03/1999	05/01/2024
36204J-C5-3	GOVERNMENT NATIONAL MORT-POOL #370992			4	1	5,881	107.6929	6,275	5,827	5,848		(3)			6.500	6.303	MON	32	371	02/03/1999	12/01/2023
36204J-DC-7	GOVERNMENT NATIONAL MORT-POOL #370999			4	1	1,880	107.6929	2,104	1,954	1,905		(3)			6.500	7.878	MON	11	118	09/22/1999	01/01/2024
36204J-EW-2	GOVERNMENT NATIONAL MORT-POOL #371049			4	1	5,057	104.6926	5,225	4,991	5,016		(5)			7.500	7.224	MON	31	367	10/24/1995	03/01/2024
36204J-JF-4	GOVERNMENT NATIONAL MORT-POOL #371162			4	1	1,563	100.0887	1,554	1,553	1,556		(1)			7.000	6.891	MON	9	107	11/26/1997	10/01/2023

E10.8

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22	
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date	
36204J-JX-5	GOVERNMENT NATIONAL MORT-POOL #371178		4		1	2,428	107.6929	2,624	2,436	2,431			1		6.500	6.614	MON		13	154	01/23/2001	11/01/2023
36204J-HD-5	GOVERNMENT NATIONAL MORT-POOL #371256		4		1	3,294	107.6929	3,515	3,264	3,275			(2)		6.500	6.321	MON		18	209	02/03/1999	01/01/2024
36204K-AB-9	GOVERNMENT NATIONAL MORT-POOL #371802		4		1	53	100.0974	52	52	53					7.500	6.809	MON			1	11/02/1995	05/01/2024
36204K-DA-2	GOVERNMENT NATIONAL MORT-POOL #371923		4		1	4,727	107.6929	5,291	4,913	4,816			18		6.500	7.563	MON		27	315	09/22/1999	03/01/2024
36204K-HJ-5	GOVERNMENT NATIONAL MORT-POOL #372033		4		1	2,210	107.6929	2,359	2,190	2,199			(1)		6.500	6.276	MON		12	138	02/03/1999	01/01/2024
36204K-KC-2	GOVERNMENT NATIONAL MORT-POOL #372475		4		1	357	102.0762	355	348	352			(1)		7.000	6.517	MON		2	25	09/24/1998	01/01/2028
36204L-DP-3	GOVERNMENT NATIONAL MORT-POOL #372810		4		1	99	100.1220	98	98	98					7.500	7.213	MON		1	8	10/25/1995	10/01/2023
36204L-KM-2	GOVERNMENT NATIONAL MORT-POOL #373000		4		1	3,815	107.6929	4,271	3,966	3,865			(5)		6.500	7.844	MON		21	237	09/22/1999	04/01/2024
36204L-YF-2	GOVERNMENT NATIONAL MORT-POOL #373410		4		1	35,283	107.6929	33,071	30,709	32,867			(477)		6.500	2.820	MON		166	1,967	01/01/2013	11/01/2023
36204N-FV-4	GOVERNMENT NATIONAL MORT-POOL #374680		4		1	2,898	107.6929	3,092	2,871	2,883			(1)		6.500	6.297	MON		16	181	02/03/1999	03/01/2024
36204N-L6-2	GOVERNMENT NATIONAL MORT-POOL #374849		4		1	331	107.6929	353	328	330					6.500	6.216	MON		2	21	02/03/1999	12/01/2023
36204N-HD-5	GOVERNMENT NATIONAL MORT-POOL #374888		4		1	2,494	107.6929	2,662	2,472	2,483					6.500	6.262	MON		13	151	02/03/1999	01/01/2024
36204N-XH-5	GOVERNMENT NATIONAL MORT-POOL #375180		4		1	1,713	100.1136	1,684	1,682	1,696			(1)		7.500	7.041	MON		11	120	11/02/1995	01/01/2024
36204P-QL-9	GOVERNMENT NATIONAL MORT-POOL #375859		4		1	5,282	107.6929	5,637	5,234	5,253			(3)		6.500	6.314	MON		28	333	02/03/1999	02/01/2024
36204Q-2U-3	GOVERNMENT NATIONAL MORT-POOL #377087		4		1	4,858	107.6929	5,184	4,813	4,838			5		6.500	6.218	MON		26	265	02/03/1999	12/01/2023
36204Q-AS-9	GOVERNMENT NATIONAL MORT-POOL #376317		4		1	404	100.6535	401	399	402					7.500	7.020	MON		2	29	10/25/1995	01/01/2024
36204Q-BN-9	GOVERNMENT NATIONAL MORT-POOL #376345		4		1	41,003	107.6929	44,302	41,138	41,052			10		6.500	6.613	MON		223	2,576	01/23/2001	12/01/2023
36204Q-DC-1	GOVERNMENT NATIONAL MORT-POOL #376399		4		1	67,872	107.6929	72,425	67,547	67,547			(52)		6.500	6.267	MON		622	4,299	02/03/1999	02/01/2024
36204Q-ES-5	GOVERNMENT NATIONAL MORT-POOL #376445		4		1	15,586	107.6929	16,632	15,443	15,510					6.500	6.278	MON		84	944	02/03/1999	04/01/2024
36204Q-GP-9	GOVERNMENT NATIONAL MORT-POOL #376506		4		1	4,123	107.6929	4,615	4,286	4,201			14		6.500	7.530	MON		23	275	09/22/1999	05/01/2024
36204Q-RE-2	GOVERNMENT NATIONAL MORT-POOL #376785		4		1	81	107.6929	87	80	81					6.500	6.290	MON			6	02/03/1999	12/01/2023
36204Q-RL-6	GOVERNMENT NATIONAL MORT-POOL #376791		4		1	668	107.6929	712	661	667			(1)		6.500	6.084	MON		4	43	02/03/1999	02/01/2024
36204Q-RR-3	GOVERNMENT NATIONAL MORT-POOL #376796		4		1	71	107.6929	75	70	70					6.500	6.262	MON			5	02/03/1999	03/01/2024
36204R-6J-2	GOVERNMENT NATIONAL MORT-POOL #378073		4		1	4,325	107.6929	4,615	4,285	4,301			(2)		6.500	6.304	MON		23	272	02/03/1999	02/01/2024
36204R-AY-4	GOVERNMENT NATIONAL MORT-POOL #377223		4		1	1,310	100.1246	1,289	1,287	1,306			5		7.500	6.751	MON		8	69	11/02/1995	07/01/2024
36204R-CA-4	GOVERNMENT NATIONAL MORT-POOL #377265		4		1	71,033	108.1400	74,061	68,487	69,677			(211)		8.500	7.754	MON		485	5,774	11/17/1999	09/01/2026
36204R-Y7-7	GOVERNMENT NATIONAL MORT-POOL #377934		4		1	86	107.6929	92	85	85					6.500	6.361	MON			6	02/03/1999	02/01/2024
36204R-YN-2	GOVERNMENT NATIONAL MORT-POOL #377917		4		1	18,675	107.6929	19,928	18,505	18,585			(15)		6.500	6.269	MON		100	1,186	02/03/1999	01/01/2024
36204S-EY-8	GOVERNMENT NATIONAL MORT-POOL #378251		4		1	6,698	107.6929	7,147	6,637	6,666			3		6.500	6.263	MON		36	391	02/03/1999	01/01/2024
36204T-HD-9	GOVERNMENT NATIONAL MORT-POOL #379228		4		1	347	107.6929	370	344	345					6.500	6.318	MON		2	22	02/03/1999	03/01/2024
36204T-PQ-1	GOVERNMENT NATIONAL MORT-POOL #379431		4		1	1,924	107.6929	2,053	1,906	1,913			(1)		6.500	6.317	MON		10	122	02/03/1999	04/01/2024
36204U-RQ-6	GOVERNMENT NATIONAL MORT-POOL #380395		4		1	9,587	107.6929	9,078	8,429	9,016			(120)		6.500	2.902	MON		46	539	01/01/2013	12/01/2023
36204V-2E-8	GOVERNMENT NATIONAL MORT-POOL #381573		4		1	5,479	107.6929	5,846	5,429	5,446			(4)		6.500	6.324	MON		29	348	02/03/1999	01/01/2024
36204V-AP-4	GOVERNMENT NATIONAL MORT-POOL #380814		4		1	936	107.6929	998	931	931					6.500	6.299	MON		5	58	02/03/1999	02/01/2024
36204W-P9-2	GOVERNMENT NATIONAL MORT-POOL #382148		4		1	2,397	107.6929	2,558	2,375	2,383			(2)		6.500	6.325	MON		13	152	02/03/1999	12/01/2023
36204W-PL-5	GOVERNMENT NATIONAL MORT-POOL #382127		4		1	11,219	107.6929	11,972	11,117	11,153			(7)		6.500	6.323	MON		60	712	02/03/1999	01/01/2024
36204W-OP-5	GOVERNMENT NATIONAL MORT-POOL #382162		4		1	1,497	100.1239	1,472	1,470	1,479			(2)		7.500	7.140	MON		9	109	11/02/1995	01/01/2024
36204X-NB-7	GOVERNMENT NATIONAL MORT-POOL #382986		4		1	523	107.6929	558	518	520					6.500	6.322	MON		3	33	02/03/1999	04/01/2024
36204Y-AD-5	GOVERNMENT NATIONAL MORT-POOL #383504		4		1	3,339	107.6929	3,563	3,308	3,321			(2)		6.500	6.303	MON		18	210	02/03/1999	03/01/2024
36204Y-FX-6	GOVERNMENT NATIONAL MORT-POOL #383682		4		1	4,239	107.6929	4,523	4,200	4,217			(1)		6.500	6.284	MON		23	261	02/03/1999	02/01/2024
36205A-5C-4	GOVERNMENT NATIONAL MORT-POOL #385243		4		1	649	107.6929	692	643	645					6.500	6.318	MON		3	41	02/03/1999	04/01/2024
36205A-5Z-3	GOVERNMENT NATIONAL MORT-POOL #385264		4		1	991	100.1245	976	974	981			(1)		7.500	7.159	MON		6	72	11/02/1995	06/01/2024
36205B-EF-5	GOVERNMENT NATIONAL MORT-POOL #385434		4		1	365	107.6929	389	362	363					6.500	6.279	MON		2	23	02/03/1999	02/01/2024
36205B-EG-3	GOVERNMENT NATIONAL MORT-POOL #385435		4		1	3,831	107.6929	4,088	3,796	3,809			(2)		6.500	6.314	MON		21	242	02/03/1999	02/01/2024
36205B-LA-8	GOVERNMENT NATIONAL MORT-POOL #385621		4		1	2,136	107.6929	2,279	2,116	2,123			(1)		6.500	6.322	MON		11	136	02/03/1999	04/01/2024
36205B-TE-2	GOVERNMENT NATIONAL MORT-POOL #385849		4		1	35	100.0587	34	34	35					7.500	6.789	MON		2	2	11/02/1995	08/01/2024
36205B-WH-1	GOVERNMENT NATIONAL MORT-POOL #385948		4		1	8,558	101.0432	8,387	8,300	8,400			(20)		8.500	7.875	MON		59	696	12/08/2000	10/01/2024
36205B-YP-1	GOVERNMENT NATIONAL MORT-POOL #386018		4		1	2,001	100.0902	1,954	1,952	1,974			(4)		7.000	6.491	MON		11	135	09/24/1998	08/01/2025
36205C-G2-0	GOVERNMENT NATIONAL MORT-POOL #386417		4		1	66	107.6929	71	66	66					6.500	6.325	MON			5	02/03/1999	03/01/2024
36205C-V5-6	GOVERNMENT NATIONAL MORT-POOL #386836		4		1	3,983	107.6929	4,459	4,140	4,052			5		6.500	7.628	MON		22	224	09/22/1999	04/01/2024
36205D-DD-7	GOVERNMENT NATIONAL MORT-POOL #387200		4		1	660	107.6929	615	571	616					6.500	2.607	MON		3	37	01/01/2013	03/01/2024
36205E-FC-5	GOVERNMENT NATIONAL MORT-POOL #388163		4		1	4,096	107.6929	4,586	4,258	4,181			12		6.500	7.462	MON		23	271	09/22/1999	03/01/2024
36205E-K3-9	GOVERNMENT NATIONAL MORT-POOL #388314		4		1	2,916	107.6929	3,111	2,889	2,901			(1)		6.500	6.279	MON		16	182	02/03/1999	02/01/2024
36205F-SZ-2	GOVERNMENT NATIONAL MORT-POOL #389764		4		1	1,305	108.9637	1,375	1,261	1,300			1		6.000	5.236	MON		6	75	02/03/2003	11/01/2032
36205F-7A-5	GOVERNMENT NATIONAL MORT-POOL #389789		4		1	17,789	107.2843	18,445	17,193	17,589			(29)		6.000	5.417	MON		86	1,028	02/03/2003	12/01/2032
36205F-HE-6	GOVERNMENT NATIONAL MORT-POOL #389129		4		1	43,399	101.3766	43,290	42,702	43,074			(55)		7.000	6.681	MON		249	2,970	06/21/2001	05/01/2028
36205G-EP-2	GOVERNMENT NATIONAL MORT-POOL #389942		4		1	567	107.6929	605	561	563					6.500	6.319	MON		3	36	02/03/1999	03/01/2024

E10.9

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
362056-VF-5	GOVERNMENT NATIONAL MORT-POOL #390414			4	1	2,893	100.1230	2,858	2,855	2,868		(2)			7.500	7.247	MON	18	210	10/24/1995	04/01/2024
362058-SR-1	GOVERNMENT NATIONAL MORT-POOL #391228			4	1	622	100.1220	615	614	617		(1)			7.500	7.226	MON	4	45	10/24/1995	04/01/2024
36205J-RL-1	GOVERNMENT NATIONAL MORT-POOL #392091			4	1	1,777	107.6929	1,897	1,761	1,773					6.500	6.158	MON	10	107	02/03/1999	04/01/2024
36205J-U9-4	GOVERNMENT NATIONAL MORT-POOL #392208			4	1	3,214	107.6929	2,995	2,781	3,013		(36)			6.500	2.487	MON	15	177	01/01/2013	05/01/2024
36205J-YD-1	GOVERNMENT NATIONAL MORT-POOL #392308			4	1	1,021	100.1212	1,004	1,003	1,011		(1)			7.500	7.093	MON	6	72	11/02/1995	06/01/2024
36205K-4Y-5	GOVERNMENT NATIONAL MORT-POOL #393339			4	1	39,152	105.2623	40,609	38,579	38,948		(48)			7.000	6.619	MON	225	2,674	02/02/2001	02/01/2027
36205K-Y8-9	GOVERNMENT NATIONAL MORT-POOL #393235			4	1	30,774	109.0166	32,537	29,846	30,327		(82)			8.500	7.824	MON	211	2,518	12/08/2000	01/01/2027
36205L-F3-9	GOVERNMENT NATIONAL MORT-POOL #393586			4	1	3,792	107.6929	4,047	3,757	3,772		(2)			6.500	6.306	MON	20	239	02/03/1999	04/01/2024
36205L-QM-5	GOVERNMENT NATIONAL MORT-POOL #393860			4	1	2,797	107.6929	3,131	2,907	2,858		9			6.500	7.390	MON	16	187	09/22/1999	04/01/2024
36205M-2R-8	GOVERNMENT NATIONAL MORT-POOL #395084			4	1	4,942	101.6160	4,956	4,878	4,904		(3)			7.500	7.209	MON	30	355	10/24/1995	06/01/2024
36205N-3R-5	GOVERNMENT NATIONAL MORT-POOL #396008			4	1	292	105.1507	303	288	290					7.500	7.247	MON	2	22	10/24/1995	05/01/2024
36205R-SA-6	GOVERNMENT NATIONAL MORT-POOL #398413			4	1	1,495	107.6929	1,601	1,487	1,494		2			6.500	6.340	MON	8	84	03/21/2001	06/01/2029
36205S-JD-8	GOVERNMENT NATIONAL MORT-POOL #399060			4	1	7,138	107.6929	7,792	7,235	7,175		7			6.500	6.773	MON	39	467	05/12/1999	06/01/2029
36205W-Z9-0	GOVERNMENT NATIONAL MORT-POOL #403168			4	1	2,921	100.8246	2,897	2,874	2,912		(5)			7.000	6.506	MON	17	200	06/21/2001	04/01/2028
36205X-YA-6	GOVERNMENT NATIONAL MORT-POOL #404005			4	1	13,647	102.2046	13,175	12,891	13,336		(32)			8.500	6.759	MON	595	1,060	06/30/2003	11/01/2024
36206A-W3-3	GOVERNMENT NATIONAL MORT-POOL #405766			4	1	14,989	107.2843	15,540	14,485	14,847		2			6.000	5.364	MON	72	856	02/03/2003	10/01/2032
36206F-5F-5	GOVERNMENT NATIONAL MORT-POOL #410446			4	1	2,865	102.0580	2,876	2,818	2,843		(4)			7.000	6.673	MON	16	196	06/21/2001	02/01/2028
36206F-50-1	GOVERNMENT NATIONAL MORT-POOL #410455			4	1	141	100.7386	140	139	140					7.000	6.692	MON	1	10	06/21/2001	03/01/2028
36206L-6R-5	GOVERNMENT NATIONAL MORT-POOL #414980			4	1	10,032	104.2621	10,643	10,208	10,046		(10)			7.000	7.706	MON	60	660	06/23/1999	01/01/2026
36206N-TQ-8	GOVERNMENT NATIONAL MORT-POOL #416459			4	1	27,376	107.6929	29,303	27,210	27,299		(10)			6.500	6.390	MON	147	1,755	11/13/1998	12/01/2028
36206P-S2-7	GOVERNMENT NATIONAL MORT-POOL #417337			4	1	310	107.6929	352	327	317		1			6.500	7.791	MON	2	21	06/24/1999	03/01/2026
36206Q-LB-2	GOVERNMENT NATIONAL MORT-POOL #418278			4	1	10,112	107.6929	11,466	10,647	10,346		33			6.500	7.690	MON	58	683	06/24/1999	04/01/2026
36206R-GY-6	GOVERNMENT NATIONAL MORT-POOL #418815			4	1	22,768	105.2192	23,365	22,206	22,460		(45)			7.000	6.494	MON	130	1,540	09/24/1998	11/01/2025
36206W-5E-1	GOVERNMENT NATIONAL MORT-POOL #423945			4	1	59,645	104.8154	60,276	57,506	58,980		(52)			8.500	7.415	MON	407	4,716	11/17/1999	10/01/2026
36206W-7A-7	GOVERNMENT NATIONAL MORT-POOL #423989			4	1	13,336	100.1966	12,884	12,858	13,244		(68)			8.500	7.216	MON	91	1,085	11/17/1999	08/01/2026
36206W-C3-7	GOVERNMENT NATIONAL MORT-POOL #423190			4	1	65,851	102.3917	65,393	63,866	64,882		(167)			8.500	7.872	MON	452	5,392	12/08/2000	12/01/2027
36206W-Y9-0	GOVERNMENT NATIONAL MORT-POOL #423836			4	1	103	108.7147	104	99	99					8.000	6.207	MON	1	7	11/17/2008	08/01/2026
36206W-YX-7	GOVERNMENT NATIONAL MORT-POOL #423826			4	1	26,095	108.4962	27,297	25,159	25,607		(79)			8.500	7.721	MON	178	2,119	11/17/1999	06/01/2026
36206Y-RM-5	GOVERNMENT NATIONAL MORT-POOL #425392			4	1	1,857	106.3859	1,710	1,608	1,746		(26)			7.500	4.009	MON	10	120	01/01/2013	06/01/2026
36207A-7M-8	GOVERNMENT NATIONAL MORT-POOL #426700			4	1	16,150	101.4712	16,124	15,890	16,029		(21)			7.000	6.682	MON	93	1,106	06/21/2001	06/01/2028
36207A-A3-6	GOVERNMENT NATIONAL MORT-POOL #425826			4	1	16,593	100.8082	16,819	16,684	16,629		9			7.500	7.628	MON	104	1,243	04/13/2000	01/01/2028
36207A-DH-2	GOVERNMENT NATIONAL MORT-POOL #425904			4	1	49,456	108.4687	51,721	47,683	48,542		(138)			8.500	7.731	MON	338	4,012	11/17/1999	10/01/2026
36207A-HK-1	GOVERNMENT NATIONAL MORT-POOL #426034			4	1	596	107.6929	635	590	597					6.500	6.029	MON	3	37	10/21/1998	04/01/2026
36207A-LG-5	GOVERNMENT NATIONAL MORT-POOL #426127			4	1	1,482	101.0680	1,267	1,254	1,452		45			7.500	1.468	MON	8	83	01/01/2013	07/01/2026
36207A-LW-0	GOVERNMENT NATIONAL MORT-POOL #426141			4	1	2,609	107.6929	2,793	2,594	2,608		(1)			6.500	6.273	MON	14	167	11/17/1998	05/01/2026
36207B-5F-3	GOVERNMENT NATIONAL MORT-POOL #427546			4	1	57,546	107.6929	61,099	56,734	57,372		(46)			6.500	6.174	MON	307	3,662	10/12/2001	12/01/2031
36207D-YR-1	GOVERNMENT NATIONAL MORT-POOL #429220			4	1	6,763	107.6929	7,240	6,723	6,741		(3)			6.500	6.388	MON	36	433	11/17/1998	04/01/2026
36207E-M7-6	GOVERNMENT NATIONAL MORT-POOL #429782			4	1	12,248	108.0994	12,921	11,953	12,181		10			5.500	5.063	MON	55	648	01/14/2004	12/01/2033
36207F-KA-8	GOVERNMENT NATIONAL MORT-POOL #430589			4	1	8,283	107.2843	8,588	8,005	8,163		(17)			6.000	5.357	MON	40	477	02/03/2003	02/01/2028
36207J-SZ-2	GOVERNMENT NATIONAL MORT-POOL #433864			4	1	8,523	106.1384	9,314	8,775	8,595		(8)			7.000	7.766	MON	51	605	10/15/1999	07/01/2028
36207J-6J-7	GOVERNMENT NATIONAL MORT-POOL #433873			4	1	665	100.0890	655	654	667					7.000	6.293	MON	4	45	06/21/2001	07/01/2028
36207J-6T-5	GOVERNMENT NATIONAL MORT-POOL #433882			4	1	18,242	107.3585	20,164	18,782	18,472		44			7.000	7.612	MON	110	1,306	10/15/1999	07/01/2028
36207J-G3-1	GOVERNMENT NATIONAL MORT-POOL #433218			4	1	39,672	102.6828	39,276	38,250	39,135		94			8.500	7.511	MON	271	3,017	11/17/1999	09/01/2026
36207J-KU-6	GOVERNMENT NATIONAL MORT-POOL #433307			4	1	24,215	101.2286	23,633	23,347	23,772		(72)			8.500	7.728	MON	165	1,967	11/17/1999	11/01/2026
36207J-N9-0	GOVERNMENT NATIONAL MORT-POOL #433416			4	1	1,465	100.1972	1,424	1,421	1,443		(4)			8.500	7.862	MON	10	120	12/08/2000	02/01/2027
36207J-U7-6	GOVERNMENT NATIONAL MORT-POOL #433606			4	1	4,025	103.4627	4,061	3,926	3,986		1			7.000	6.425	MON	23	264	09/24/1998	02/01/2028
36207J-UA-9	GOVERNMENT NATIONAL MORT-POOL #433577			4	1	4,648	106.5849	4,843	4,544	4,598		(8)			7.000	6.558	MON	27	316	09/23/1998	02/01/2028
36207J-VT-7	GOVERNMENT NATIONAL MORT-POOL #433626			4	1	60	99.8380	58	58	62		2			7.000	5.264	MON	29	29	09/30/1998	02/01/2028
36207J-YX-5	GOVERNMENT NATIONAL MORT-POOL #433726			4	1	68	101.9669	68	66	67					7.000	6.451	MON	5	5	09/30/1998	04/01/2028
36207J-ZR-7	GOVERNMENT NATIONAL MORT-POOL #433752			4	1	36,194	106.9303	37,850	35,397	35,867		(37)			7.000	6.515	MON	206	2,441	09/24/1998	05/01/2028
36207K-AH-3	GOVERNMENT NATIONAL MORT-POOL #433908			4	1	126	107.6929	134	125	125					6.500	6.350	MON	1	8	10/21/1998	08/01/2028
36207K-AQ-3	GOVERNMENT NATIONAL MORT-POOL #433915			4	1	72,647	107.6929	77,581	72,039	72,378		(29)			6.500	6.341	MON	542	4,635	09/22/1998	11/01/2028
36207K-AU-4	GOVERNMENT NATIONAL MORT-POOL #433919			4	1	5,953	106.1183	6,504	5,985	5,985		11			7.000	7.871	MON	36	423	10/15/1999	08/01/2028
36207K-B6-6	GOVERNMENT NATIONAL MORT-POOL #433961			4	1	24,439	107.2403	25,592	23,864	24,215		(49)			7.000	6.473	MON	139	1,661	10/21/1998	08/01/2028
36207K-J2-7	GOVERNMENT NATIONAL MORT-POOL #434181			4	1	323	107.6929	346	323	323					6.500	6.342	MON	2	20	03/21/2001	02/01/2029
36207K-LS-7	GOVERNMENT NATIONAL MORT-POOL #434237			4	1	3,748	107.2843	3,886	3,623	3,736		29			6.000	5.060	MON	18	198	02/03/2003	03/01/2029
36207K-WC-0	GOVERNMENT NATIONAL MORT-POOL #434543			4	1	605	108.5593	655	604	604					7.500	7.458	MON	4	44	11/18/1999	09/01/2029

E10.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36207L-UL-0	GOVERNMENT NATIONAL MORT-POOL #435387			4	1	16,326	100.1973	15,865	15,833	16,074		(43)		8.500	7.870	MON		112	1,337	12/08/2000	03/01/2027
36207M-4N-3	GOVERNMENT NATIONAL MORT-POOL #436529			4	1	18,619	100.1970	17,987	17,951	18,574		(93)		8.500	7.051	MON		127	1,515	11/17/1999	11/01/2026
36207M-UM-6	GOVERNMENT NATIONAL MORT-POOL #436288			4	1	658	100.8661	653	648	654				7.000	6.624	MON		4	44	06/21/2001	03/01/2028
36207N-6R-0	GOVERNMENT NATIONAL MORT-POOL # 437480			4	1	22,465	107.2843	23,293	21,712	22,299		(13)		6.000	5.185	MON		109	1,282	02/03/2003	03/01/2029
36207O-JY-4	GOVERNMENT NATIONAL MORT-POOL #438679			4	1	2,286	101.1658	2,234	2,208	2,254		(8)		7.500	6.666	MON		14	164	01/01/2013	03/01/2027
36207R-F2-6	GOVERNMENT NATIONAL MORT-POOL #439485			4	1	30,605	100.1884	30,223	30,166	30,464		50		7.000	6.605	MON		176	1,926	02/02/2001	01/01/2027
36207R-GE-9	GOVERNMENT NATIONAL MORT-POOL #439497			4	1	750	104.4043	650	623	717		(17)		7.500	1.941	MON		4	47	01/01/2013	02/01/2027
36207T-X3-0	GOVERNMENT NATIONAL MORT-POOL #441798			4	1	3,835	101.6650	3,646	3,586	3,745		(19)		7.500	5.749	MON		22	265	01/01/2013	03/01/2027
36207T-XM-8	GOVERNMENT NATIONAL MORT-POOL #441784			4	1	30,046	100.9482	29,416	29,139	29,582		(80)		8.500	7.862	MON		206	2,460	12/08/2000	01/01/2027
36207U-AK-4	GOVERNMENT NATIONAL MORT-POOL #442010			4	1	16,102	100.9642	15,674	15,525	15,896		(1)		8.500	7.516	MON		110	1,272	11/17/1999	03/01/2027
36207U-D2-1	GOVERNMENT NATIONAL MORT-POOL #442121			4	1	31,731	102.8556	31,467	30,593	31,220		(25)		8.500	7.633	MON		217	2,514	11/17/1999	11/01/2026
36207U-ED-6	GOVERNMENT NATIONAL MORT-POOL #442132			4	1	51,563	108.6116	53,995	49,714	50,778		(2)		8.500	7.596	MON		352	4,084	11/17/1999	11/01/2026
36207U-FT-0	GOVERNMENT NATIONAL MORT-POOL #442178			4	1	16,341	107.6379	16,958	15,755	16,062		(46)		8.500	7.680	MON		112	1,324	11/17/1999	12/01/2026
36207U-GE-1	GOVERNMENT NATIONAL MORT-POOL #442453			4	1	48,469	108.2490	51,624	47,690	48,111		(58)		7.000	6.677	MON		278	3,314	06/21/2001	05/01/2028
36207U-TB-4	GOVERNMENT NATIONAL MORT-POOL #442546			4	1	13,223	106.9954	13,732	12,834	13,047		(32)		8.000	7.325	MON		86	1,016	02/14/2001	05/01/2027
36207V-2M-7	GOVERNMENT NATIONAL MORT-POOL #443680			4	1	1,440	107.6929	1,554	1,443	1,439				6.500	6.591	MON		9	86	03/16/1999	06/01/2028
36207V-4M-5	GOVERNMENT NATIONAL MORT-POOL #443728			4	1	6,903	107.2843	7,158	6,672	6,829		(10)		6.000	5.254	MON		33	396	02/03/2003	07/01/2028
36207V-IA-0	GOVERNMENT NATIONAL MORT-POOL #443541			4	1	1,003	106.8444	1,045	978	991		(2)		7.000	6.513	MON		6	68	09/24/1998	01/01/2028
36207V-X9-2	GOVERNMENT NATIONAL MORT-POOL #443604			4	1	25,947	106.1800	28,485	26,827	26,154		(9)		5.500	6.258	MON		123	1,448	05/10/2002	01/01/2029
36207W-4C-5	GOVERNMENT NATIONAL MORT-POOL #444619			4	1	723	102.7613	691	672	701		(4)		8.000	6.273	MON		4	54	11/17/2008	03/01/2027
36208C-F6-9	GOVERNMENT NATIONAL MORT-POOL #446689			4	1	12,584	107.6929	13,418	12,459	12,526		(8)		6.500	6.318	MON		67	805	10/21/1998	09/01/2028
36208C-FZ-5	GOVERNMENT NATIONAL MORT-POOL #446684			4	1	62,927	105.5705	68,376	64,768	63,657		133		7.000	7.634	MON		378	4,494	10/14/1999	08/01/2028
36208C-JQ-1	GOVERNMENT NATIONAL MORT-POOL #446771			4	1	2,967	106.8039	3,076	2,880	2,928		(6)		7.000	6.407	MON		17	201	09/30/1998	10/01/2028
36208C-NB-6	GOVERNMENT NATIONAL MORT-POOL #446915			4	1	2,567	100.1886	2,494	2,490	2,536		(4)		8.500	7.740	MON		18	207	12/08/2000	05/01/2027
36208C-RL-3	GOVERNMENT NATIONAL MORT-POOL #446991			4	1	24,922	101.6481	24,569	24,170	24,551		(64)		8.500	7.855	MON		171	2,040	12/08/2000	05/01/2027
36208C-UV-7	GOVERNMENT NATIONAL MORT-POOL #447096			4	1	10,268	100.7691	10,035	9,958	10,110		(27)		8.500	7.876	MON		71	841	12/08/2000	05/01/2027
36208C-WF-0	GOVERNMENT NATIONAL MORT-POOL #447146			4	1	12,308	101.3700	12,100	11,936	12,176		19		8.500	7.681	MON		85	959	12/08/2000	05/01/2027
36208D-DM-4	GOVERNMENT NATIONAL MORT-POOL #447508			4	1	43,290	105.6389	44,352	41,984	42,655		(18)		8.500	7.841	MON		297	3,545	12/08/2000	04/01/2027
36208D-FQ-3	GOVERNMENT NATIONAL MORT-POOL #447575			4	1	19,923	100.1970	19,247	19,209	19,602		(67)		8.500	7.666	MON		136	1,621	11/17/1999	05/01/2027
36208D-HB-4	GOVERNMENT NATIONAL MORT-POOL #447626			4	1	21,315	101.1325	20,907	20,673	20,994		(55)		8.500	7.867	MON		146	1,745	12/08/2000	06/01/2027
36208D-RJ-6	GOVERNMENT NATIONAL MORT-POOL #447889			4	1	33,861	102.5158	33,666	32,840	33,366		(89)		8.500	7.865	MON		233	2,774	12/08/2000	11/01/2027
36208D-UF-0	GOVERNMENT NATIONAL MORT-POOL #447982			4	1	150	102.0067	150	148	149				7.000	6.706	MON		1	11	06/21/2001	06/01/2028
36208D-UK-9	GOVERNMENT NATIONAL MORT-POOL #447986			4	1	150	106.3792	157	147	149				7.000	6.545	MON		1	10	06/21/2001	06/01/2028
36208D-UQ-6	GOVERNMENT NATIONAL MORT-POOL #447991			4	1	12,029	100.6086	11,762	11,691	11,883		(20)		7.500	6.884	MON		73	864	06/22/1998	06/01/2028
36208D-VN-2	GOVERNMENT NATIONAL MORT-POOL #448021			4	1	24,682	102.4143	24,534	23,956	24,322		(64)		8.000	7.373	MON		160	1,903	02/14/2001	04/01/2027
36208E-6V-0	GOVERNMENT NATIONAL MORT-POOL #449184			4	1	7,966	107.8199	8,568	7,946	7,956		(2)		7.500	7.451	MON		50	592	11/18/1999	10/01/2027
36208E-US-0	GOVERNMENT NATIONAL MORT-POOL #448904			4	1	9,391	100.1973	9,126	9,108	9,252		(23)		8.500	7.860	MON		65	767	12/08/2000	07/01/2027
36208E-XT-5	GOVERNMENT NATIONAL MORT-POOL #448990			4	1	34,433	102.4390	34,029	33,218	33,980		(97)		8.500	7.582	MON		235	2,793	12/08/2000	08/01/2027
36208E-ZF-3	GOVERNMENT NATIONAL MORT-POOL #449042			4	1	31,935	103.9300	32,233	31,014	31,484		(70)		8.500	7.918	MON		220	2,617	12/12/2000	06/01/2028
36208F-4R-8	GOVERNMENT NATIONAL MORT-POOL #450032			4	1	6,659	100.1258	6,704	6,695	6,668		(2)		7.500	7.652	MON		42	493	04/13/2000	07/01/2028
36208F-CP-3	GOVERNMENT NATIONAL MORT-POOL #449278			4	1	2,586	100.5232	2,541	2,528	2,558		(4)		7.000	6.562	MON		15	176	09/23/1998	02/01/2028
36208F-J7-6	GOVERNMENT NATIONAL MORT-POOL #449486			4	1	46,567	107.1794	49,181	45,886	46,474		18		7.000	6.517	MON		268	3,101	02/02/2001	11/01/2027
36208F-KM-1	GOVERNMENT NATIONAL MORT-POOL #449500			4	1	14,090	106.2614	15,055	14,168	14,118		7		7.500	7.635	MON		89	1,053	04/13/2000	01/01/2028
36208F-L5-7	GOVERNMENT NATIONAL MORT-POOL #449548			4	1	1,438	107.2843	1,491	1,390	1,418		(3)		6.000	5.360	MON		7	82	02/03/2003	06/01/2028
36208F-IM-9	GOVERNMENT NATIONAL MORT-POOL #449564			4	1	43,446	105.8370	45,243	42,748	43,173		(56)		7.000	6.638	MON		249	2,968	06/21/2001	06/01/2028
36208F-ZG-8	GOVERNMENT NATIONAL MORT-POOL #449943			4	1	3,763	107.6929	4,012	3,725	3,750		(3)		6.500	6.275	MON		20	240	10/21/1998	07/01/2028
36208G-L2-2	GOVERNMENT NATIONAL MORT-POOL #450445			4	1	21,664	102.7414	19,229	18,716	20,449		(286)		7.500	4.148	MON		117	1,394	01/01/2013	12/01/2027
36208H-LC-8	GOVERNMENT NATIONAL MORT-POOL #451323			4	1	1,371	100.1968	1,333	1,330	1,352		(2)		8.500	7.829	MON		9	111	12/08/2000	07/01/2027
36208H-IM-5	GOVERNMENT NATIONAL MORT-POOL #451364			4	1	4,688	109.7283	4,989	4,546	4,626		(4)		8.500	7.792	MON		32	376	12/08/2000	08/01/2027
36208H-NC-6	GOVERNMENT NATIONAL MORT-POOL #451387			4	1	18,411	107.5228	19,287	17,937	18,178		(40)		7.500	6.971	MON		112	1,336	03/08/2001	08/01/2027
36208H-P2-6	GOVERNMENT NATIONAL MORT-POOL #451441			4	1	3,754	109.0518	3,970	3,641	3,738		(14)		8.500	7.438	MON		26	307	12/08/2000	09/01/2027
36208K-A2-5	GOVERNMENT NATIONAL MORT-POOL #452825			4	1	1,651	100.1592	1,606	1,603	1,646		4		8.500	7.457	MON		11	127	12/12/2000	01/01/2028
36208K-V3-0	GOVERNMENT NATIONAL MORT-POOL #453434			4	1	11,527	107.1264	12,044	11,242	11,402		(20)		7.000	6.499	MON		66	780	09/24/1998	11/01/2028
36208L-AE-7	GOVERNMENT NATIONAL MORT-POOL #453705			4	1	6,928	106.7142	7,178	6,726	6,844		(18)		7.000	6.340	MON		39	468	09/30/1998	10/01/2027
36208L-LZ-8	GOVERNMENT NATIONAL MORT-POOL #454044			4	1	2,073	106.8444	2,190	2,049	2,061		(2)		7.000	6.782	MON		12	143	05/18/2001	04/01/2028
36208L-XP-7	GOVERNMENT NATIONAL MORT-POOL #454386			4	1	599	107.2323	632	590	597		1		7.000	6.573	MON		3	38	06/21/2001	04/01/2028
36208M-BF-1	GOVERNMENT NATIONAL MORT-POOL #454638			4	1	19,361	107.2843	20,068	18,706	19,087		(38)		6.000	5.359	MON		94	1,116	02/03/2003	0

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36208M-PX-7	GOVERNMENT NATIONAL MORT-POOL #455038			4	1	3,412	107.6929	3,638	3,378	3,403	(3)				6.500	6.233	MON	18	218	10/21/1998	12/01/2027
36208P-NB-0	GOVERNMENT NATIONAL MORT-POOL #456786			4	1	367	101.9851	368	361	361	(1)				7.000	6.487	MON	2	26	06/21/2001	04/01/2028
36208P-RE-0	GOVERNMENT NATIONAL MORT-POOL #456885			4	1	16,817	107.2883	17,753	16,547	16,691	(21)				7.000	6.681	MON	97	1,152	06/21/2001	05/01/2028
36208P-YK-8	GOVERNMENT NATIONAL MORT-POOL #457114			4	1	6,179	107.6929	6,616	6,143	6,168	1				6.500	6.366	MON	33	386	11/17/1998	12/01/2028
36208P-YX-0	GOVERNMENT NATIONAL MORT-POOL #457126			4	1	355	107.2843	368	343	351	(1)				6.000	5.283	MON	2	21	02/03/2003	02/01/2029
36208Q-3F-1	GOVERNMENT NATIONAL MORT-POOL #458098			4	1	3,236	107.6929	3,465	3,217	3,228					6.500	6.393	MON	17	207	03/21/2001	03/01/2029
36208Q-PC-4	GOVERNMENT NATIONAL MORT-POOL #457719			4	1	19,362	106.4500	20,011	18,798	19,119	(43)				7.000	6.367	MON	110	1,305	09/30/1998	01/01/2028
36208Q-Z7-4	GOVERNMENT NATIONAL MORT-POOL #458066			4	1	4,958	107.6929	5,310	4,930	4,946	(1)				6.500	6.392	MON	27	317	03/21/2001	03/01/2029
36208R-3Q-5	GOVERNMENT NATIONAL MORT-POOL # 459007			4	1	20,144	107.2843	20,887	19,469	19,883	(33)				6.000	5.352	MON	97	1,159	02/03/2003	02/01/2029
36208R-EQ-3	GOVERNMENT NATIONAL MORT-POOL #458343			4	1	43,527	102.0150	43,755	42,890	43,221	(47)				7.000	6.708	MON	250	2,979	02/02/2001	11/01/2027
36208R-F2-5	GOVERNMENT NATIONAL MORT-POOL #458385			4	1	25,133	100.3861	25,368	25,271	25,145	19				7.500	7.693	MON	158	1,884	04/13/2000	02/01/2028
36208R-FK-5	GOVERNMENT NATIONAL MORT-POOL #458370			4	1	1,183	105.0697	1,207	1,148	1,171	1				7.000	6.259	MON	7	80	09/30/1998	01/01/2028
36208R-TU-8	GOVERNMENT NATIONAL MORT-POOL #458763			4	1	1,279	103.3740	1,284	1,242	1,261	(3)				7.000	6.417	MON	7	86	09/30/1998	01/01/2028
36208R-UY-8	GOVERNMENT NATIONAL MORT-POOL #458799			4	1	5,453	101.3189	5,462	5,391	5,428	(5)				7.000	6.743	MON	31	351	05/18/2001	02/01/2028
36208R-VA-9	GOVERNMENT NATIONAL MORT-POOL #458809			4	1	6,295	102.7906	6,282	6,111	6,207	(14)				7.000	6.418	MON	36	425	09/30/1998	02/01/2028
36208R-UI-4	GOVERNMENT NATIONAL MORT-POOL #458859			4	1	12,874	103.1581	12,985	12,587	12,741	(18)				7.000	6.546	MON	73	871	09/23/1998	02/01/2028
36208R-IY-6	GOVERNMENT NATIONAL MORT-POOL #458863			4	1	4,849	104.3530	4,912	4,707	4,781	(11)				7.000	6.423	MON	27	328	09/30/1998	02/01/2028
36208R-YE-8	GOVERNMENT NATIONAL MORT-POOL #458909			4	1	21,068	102.1123	21,167	20,729	20,911	(27)				7.000	6.683	MON	121	1,442	06/21/2001	07/01/2028
36208R-YF-5	GOVERNMENT NATIONAL MORT-POOL #458910			4	1	9,865	102.8832	10,205	9,919	9,885	5				7.500	7.629	MON	62	739	04/13/2000	07/01/2028
36208T-CI-8	GOVERNMENT NATIONAL MORT-POOL #460085			4	1	59,442	105.0064	61,415	58,487	59,038	(52)				7.000	6.657	MON	341	4,033	06/21/2001	06/01/2028
36208T-PN-4	GOVERNMENT NATIONAL MORT-POOL #460429			4	1	6,992	100.3643	6,905	6,880	6,941	(9)				7.000	6.679	MON	40	478	06/21/2001	07/01/2028
36208T-IW-1	GOVERNMENT NATIONAL MORT-POOL #460670			4	1	154	101.0046	152	151	154					7.000	6.176	MON	1	11	09/23/1998	01/01/2028
36208T-YP-9	GOVERNMENT NATIONAL MORT-POOL #460718			4	1	924	108.6755	988	910	910					7.000	6.568	MON	5	63	06/21/2001	01/01/2028
36208U-HZ-3	GOVERNMENT NATIONAL MORT-POOL #461148			4	1	22,112	105.7298	23,037	21,789	22,015	(26)				7.000	6.610	MON	127	1,509	02/02/2001	12/01/2027
36208U-KA-4	GOVERNMENT NATIONAL MORT-POOL #461189			4	1	2,062	100.9735	2,022	2,002	2,034	(5)				7.000	6.410	MON	12	139	09/30/1998	01/01/2028
36208U-RU-3	GOVERNMENT NATIONAL MORT-POOL #461399			4	1	485	100.0827	480	479	483					7.000	6.684	MON	3	32	05/18/2001	01/01/2028
36208V-2A-2	GOVERNMENT NATIONAL MORT-POOL #462569			4	1	1,904	107.3457	2,011	1,873	1,892	(2)				7.000	6.628	MON	11	130	06/21/2001	03/01/2028
36208V-6E-0	GOVERNMENT NATIONAL MORT-POOL #462669			4	1	373	109.3727	402	367	371					7.000	6.658	MON	2	27	06/21/2001	04/01/2028
36208V-6R-1	GOVERNMENT NATIONAL MORT-POOL #462680			4	1	154	108.1841	164	152	153					7.000	6.627	MON	1	12	06/21/2001	04/01/2028
36208V-OS-7	GOVERNMENT NATIONAL MORT-POOL #462265			4	1	35,473	107.2843	36,781	34,283	34,988	(67)				6.000	5.367	MON	171	2,044	02/03/2003	12/01/2028
36208V-UH-6	GOVERNMENT NATIONAL MORT-POOL #462384			4	1	50	106.0667	51	48	50					7.000	6.110	MON	4	4	11/17/2008	11/01/2027
36208V-VR-3	GOVERNMENT NATIONAL MORT-POOL #462424			4	1	3,260	100.1993	3,168	3,162	3,210	(8)				8.500	7.896	MON	22	268	12/08/2000	12/01/2027
36208V-XM-2	GOVERNMENT NATIONAL MORT-POOL #462484			4	1	3,120	100.1918	3,036	3,030	3,106	19				8.500	7.528	MON	21	222	12/12/2000	01/01/2028
36208V-ZT-5	GOVERNMENT NATIONAL MORT-POOL #462554			4	1	4,015	106.4439	4,225	3,970	4,001	(4)				7.000	6.702	MON	23	275	05/18/2001	02/01/2028
36208W-B5-1	GOVERNMENT NATIONAL MORT-POOL #462760			4	1	1,419	100.0956	1,396	1,421	1,421	5				7.000	6.304	MON	8	86	03/19/1999	05/01/2028
36208W-B6-9	GOVERNMENT NATIONAL MORT-POOL #462761			4	1	2,135	108.2303	2,298	2,123	2,130	(1)				6.500	6.386	MON	12	137	11/17/1998	05/01/2028
36208W-DF-7	GOVERNMENT NATIONAL MORT-POOL #462802			4	1	192,724	108.9153	204,778	188,016	190,945	51				7.000	6.435	MON	1,097	12,612	10/21/1998	06/01/2028
36208W-ED-1	GOVERNMENT NATIONAL MORT-POOL #462832			4	1	7,702	100.8979	7,814	7,745	7,717	3				7.500	7.637	MON	48	572	04/13/2000	07/01/2028
36208W-GI-7	GOVERNMENT NATIONAL MORT-POOL #462913			4	1	144	100.0938	142	142	144					7.000	6.444	MON	9	9	06/21/2001	04/01/2028
36208X-N4-9	GOVERNMENT NATIONAL MORT-POOL #464011			4	1	6,927	107.6929	7,456	6,924	6,923					6.500	6.503	MON	38	418	03/01/2001	07/01/2028
36208Y-BI-8	GOVERNMENT NATIONAL MORT-POOL #464553			4	1	7,278	107.6929	7,767	7,213	7,250	(4)				6.500	6.329	MON	39	465	01/04/1999	02/01/2029
36208Y-GR-4	GOVERNMENT NATIONAL MORT-POOL #464708			4	1	3,066	100.0865	3,020	3,017	3,050	(1)				7.000	6.604	MON	18	206	06/21/2001	07/01/2028
36208Y-JD-2	GOVERNMENT NATIONAL MORT-POOL #464760			4	1	31,869	107.1486	35,158	32,813	32,269	76				7.000	7.612	MON	191	2,283	10/15/1999	08/01/2028
36208Y-KB-4	GOVERNMENT NATIONAL MORT-POOL #464790			4	1	17,156	108.3807	18,696	17,250	17,190	8				7.500	7.632	MON	108	1,284	04/13/2000	08/01/2028
36208Y-LY-3	GOVERNMENT NATIONAL MORT-POOL #464843			4	1	7,542	101.7749	7,718	7,583	7,555	3				7.500	7.638	MON	47	562	04/13/2000	09/01/2028
36208Y-NY-1	GOVERNMENT NATIONAL MORT-POOL #464907			4	1	10,115	102.6744	10,207	9,941	10,031	(14)				7.000	6.664	MON	58	692	03/19/1999	02/01/2028
36208Y-P7-8	GOVERNMENT NATIONAL MORT-POOL #464946			4	1	5,969	100.1257	6,009	6,002	5,981	3				7.500	7.634	MON	38	446	04/13/2000	05/01/2028
36208Y-T4-1	GOVERNMENT NATIONAL MORT-POOL #465071			4	1	27,988	100.8064	28,369	28,142	28,048	15				7.500	7.628	MON	176	2,099	04/13/2000	05/01/2028
36209A-D9-8	GOVERNMENT NATIONAL MORT-POOL # 465528			4	1	1,010	107.2843	1,047	976	996	(2)				6.000	5.398	MON	5	58	02/03/2003	04/01/2028
36209A-NQ-9	GOVERNMENT NATIONAL MORT-POOL #465799			4	1	5,734	100.0943	5,648	5,642	5,691	(7)				7.000	6.682	MON	33	393	06/21/2001	05/01/2028
36209A-NU-0	GOVERNMENT NATIONAL MORT-POOL #465803			4	1	20,067	100.6733	19,877	19,744	20,011	35				7.000	6.507	MON	115	1,256	06/21/2001	05/01/2028
36209A-R5-1	GOVERNMENT NATIONAL MORT-POOL #465908			4	1	1,711	108.6937	1,819	1,673	1,696	(2)				7.000	6.501	MON	10	116	09/23/1998	02/01/2028
36209A-S8-4	GOVERNMENT NATIONAL MORT-POOL #465943			4	1	191	101.7936	190	187	189					7.000	6.555	MON	1	14	09/23/1998	02/01/2028
36209A-SH-4	GOVERNMENT NATIONAL MORT-POOL #465920			4	1	22,811	106.1183	23,877	22,500	22,677	(18)				7.000	6.708	MON	131	1,555	06/21/2001	02/01/2028
36209A-WZ-9	GOVERNMENT NATIONAL MORT-POOL #466064			4	1	632	107.6929	665	626	626	(1)				6.500	6.058	MON	3	41	11/13/2001	07/01/2029
36209B-2Y-3	GOVERNMENT NATIONAL MORT-POOL #467091			4	1	14,289	107.2843	14,812	13,806	14,100	(23)				6.000	5.326	MON	69	821	02/03/2003	07/01/2028
36209B-A3-2	GOVERNMENT NATIONAL MORT-POOL #466326			4	1	4,825	100.1202	4,858	4,852	4,832	1				7.500	7.656	MON	30	356	04/13/2000	01/01/2028

E10.12

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36209B-E2-0	GOVERNMENT NATIONAL MORT-POOL # 466453			4	1	54,399	107.8260	56,681	52,567	53,762		(44)			6.000	5.312	MON	263	3,113	02/03/2003	03/01/2029
36209B-H5-0	GOVERNMENT NATIONAL MORT-POOL #466552			4	1	2,106	107.5690	2,190	2,036	2,089		2			6.000	5.218	MON	10	118	02/03/2003	03/01/2029
36209B-HT-8	GOVERNMENT NATIONAL MORT-POOL #466542			4	1	3,406	107.6929	3,635	3,375	3,395		(2)			6.500	6.308	MON	18	218	01/04/1999	02/01/2029
36209B-R7-5	GOVERNMENT NATIONAL MORT-POOL #466810			4	1	759	106.6678	792	742	753		(1)			7.000	6.501	MON	4	52	09/23/1998	05/01/2028
36209C-5F-9	GOVERNMENT NATIONAL MORT-POOL #468046			4	1	2,121	107.6929	2,262	2,100	2,113		(1)			6.500	6.295	MON	11	136	10/21/1998	07/01/2028
36209C-K8-8	GOVERNMENT NATIONAL MORT-POOL #467519			4	1	19,740	107.6929	20,762	19,279	19,546		(30)			6.500	6.043	MON	104	1,244	11/13/2001	02/01/2029
36209C-QC-3	GOVERNMENT NATIONAL MORT-POOL #467651			4	1	39,490	101.1290	38,773	38,340	38,938		(91)			7.000	6.423	MON	224	2,667	09/30/1998	02/01/2028
36209D-BD-5	GOVERNMENT NATIONAL MORT-POOL #468136			4	1	2,522	105.0656	2,604	2,478	2,520		2			7.000	6.392	MON	14	166	03/19/1999	08/01/2028
36209D-BW-3	GOVERNMENT NATIONAL MORT-POOL #468153			4	1	1,082	107.2843	1,122	1,046	1,067		(2)			6.000	5.346	MON	5	62	02/03/2003	08/01/2028
36209D-JF-2	GOVERNMENT NATIONAL MORT-POOL #468362			4	1	8,522	107.2843	8,833	8,234	8,406		(16)			6.000	5.370	MON	41	491	02/03/2003	04/01/2029
36209E-DZ-2	GOVERNMENT NATIONAL MORT-POOL #469120			4	1	12,405	100.7757	12,570	12,474	12,431		7			7.500	7.631	MON	78	929	04/13/2000	02/01/2028
36209F-CS-6	GOVERNMENT NATIONAL MORT-POOL #469981			4	1	41,816	106.1800	45,907	43,235	42,334		67			5.500	6.121	MON	198	2,363	05/10/2002	02/01/2029
36209F-CV-9	GOVERNMENT NATIONAL MORT-POOL #469984			4	1	37,421	107.2843	38,801	36,167	37,082		(56)			6.000	5.232	MON	181	2,148	02/03/2003	02/01/2029
36209F-FC-8	GOVERNMENT NATIONAL MORT-POOL #470063			4	1	17,430	107.2843	18,067	16,840	17,414		111			6.000	4.971	MON	84	951	02/03/2003	02/01/2029
36209F-ND-7	GOVERNMENT NATIONAL MORT-POOL #470288			4	1	4,595	107.2843	4,764	4,440	4,533		(9)			6.000	5.377	MON	22	265	02/03/2003	05/01/2029
36209F-PZ-6	GOVERNMENT NATIONAL MORT-POOL #470340			4	1	3,018	107.7493	3,179	2,950	2,991		(4)			7.500	7.001	MON	18	219	03/12/2001	05/01/2029
36209F-T6-6	GOVERNMENT NATIONAL MORT-POOL #470473			4	1	2,576	107.6929	2,709	2,516	2,565		10			6.500	5.870	MON	14	162	11/13/2001	06/01/2029
36209F-TW-9	GOVERNMENT NATIONAL MORT-POOL #470465			4	1	301	107.6929	317	294	298					6.500	6.047	MON	2	20	11/13/2001	06/01/2029
36209F-TX-7	GOVERNMENT NATIONAL MORT-POOL #470466			4	1	45	107.6929	47	43	44					6.500	5.768	MON		3	11/13/2001	06/01/2029
36209G-6W-2	GOVERNMENT NATIONAL MORT-POOL #471685			4	1	9,527	107.2183	10,051	9,374	9,468		(13)			7.000	6.633	MON	55	652	06/21/2001	05/01/2028
36209G-7M-3	GOVERNMENT NATIONAL MORT-POOL #471700			4	1	2,811	107.6929	2,998	2,783	2,799		(1)			6.500	6.302	MON	15	179	10/21/1998	06/01/2028
36209G-MX-2	GOVERNMENT NATIONAL MORT-POOL #471174			4	1	151	100.0910	147	147	149					7.000	6.389	MON	1	11	09/30/1998	04/01/2028
36209G-P8-4	GOVERNMENT NATIONAL MORT-POOL #471247			4	1	739	106.6494	775	727	733		(1)			7.000	6.675	MON	4	51	06/21/2001	04/01/2028
36209G-YD-3	GOVERNMENT NATIONAL MORT-POOL #471508			4	1	388	103.4790	392	379	384		(1)			7.000	6.551	MON	2	28	09/23/1998	05/01/2028
36209H-JJ-5	GOVERNMENT NATIONAL MORT-POOL #471965			4	1	17,587	107.4999	18,602	17,304	17,460		(20)			7.000	6.674	MON	101	1,201	06/21/2001	07/01/2028
36209H-JM-8	GOVERNMENT NATIONAL MORT-POOL #471968			4	1	6,384	101.9717	6,405	6,281	6,352		8			7.000	6.589	MON	37	413	06/21/2001	07/01/2028
36209H-ZM-0	GOVERNMENT NATIONAL MORT-POOL #472448			4	1	10,071	107.2843	10,439	9,731	9,933		(19)			6.000	5.360	MON	49	580	02/03/2003	12/01/2028
36209J-LC-3	GOVERNMENT NATIONAL MORT-POOL #472923			4	1	1,427	101.1790	1,442	1,425	1,426					7.500	7.483	MON	9	106	09/30/1999	11/01/2029
36209J-P6-2	GOVERNMENT NATIONAL MORT-POOL #473045			4	1	6,993	107.6929	7,355	6,830	6,927		(10)			6.500	6.041	MON	37	440	11/13/2001	07/01/2029
36209J-RA-5	GOVERNMENT NATIONAL MORT-POOL #473107			4	1	15,083	107.6929	16,282	15,118	15,091		2			6.500	6.563	MON	82	971	03/16/1999	05/01/2028
36209J-SZ-5	GOVERNMENT NATIONAL MORT-POOL #473136			4	1	356	107.2843	369	344	352					6.000	5.296	MON	2	20	02/03/2003	09/01/2028
36209J-YE-5	GOVERNMENT NATIONAL MORT-POOL #473309			4	1	18,944	101.7659	18,717	18,393	18,688		(43)			7.000	6.419	MON	107	1,279	09/30/1998	06/01/2028
36209J-ZM-6	GOVERNMENT NATIONAL MORT-POOL #473348			4	1	73,582	102.9325	77,982	75,760	74,518		181			7.000	7.611	MON	442	5,273	10/15/1999	06/01/2028
36209K-2J-6	GOVERNMENT NATIONAL MORT-POOL #474277			4	1	464	101.3553	462	456	460		(1)			7.000	6.680	MON	3	33	06/21/2001	05/01/2028
36209K-QH-4	GOVERNMENT NATIONAL MORT-POOL #473956			4	1	15,954	100.0922	16,273	16,258	16,082		25			7.000	7.403	MON	95	1,131	06/30/2003	05/01/2028
36209K-T5-7	GOVERNMENT NATIONAL MORT-POOL #474072			4	1	2,479	102.7979	2,507	2,439	2,460		(3)			7.000	6.682	MON	14	170	06/21/2001	04/01/2028
36209K-WR-5	GOVERNMENT NATIONAL MORT-POOL #474156			4	1	43,045	102.0024	43,201	42,353	42,733		(48)			7.000	6.669	MON	247	2,938	06/21/2001	04/01/2028
36209K-YD-4	GOVERNMENT NATIONAL MORT-POOL #474208			4	1	687	102.4951	683	667	677		(2)			7.000	6.422	MON	4	46	09/30/1998	05/01/2028
36209L-3Q-7	GOVERNMENT NATIONAL MORT-POOL #475207			4	1	7,946	107.6929	8,507	7,899	7,930		(4)			6.500	6.366	MON	43	510	11/17/1998	08/01/2028
36209L-D3-7	GOVERNMENT NATIONAL MORT-POOL #474522			4	1	20,882	102.3089	21,481	20,997	20,926		11			7.500	7.627	MON	131	1,566	04/13/2000	08/01/2028
36209L-FU-5	GOVERNMENT NATIONAL MORT-POOL #474579			4	1	264	107.2843	273	255	267		5			6.000	4.558	MON	1	12	02/03/2003	12/01/2028
36209M-ZJ-6	GOVERNMENT NATIONAL MORT-POOL #476045			4	1	16,763	100.7939	16,625	16,494	16,641		(20)			7.000	6.675	MON	96	1,146	06/21/2001	06/01/2028
36209N-2T-8	GOVERNMENT NATIONAL MORT-POOL # 476986			4	1	6,646	107.2843	6,891	6,423	6,557		(12)			6.000	5.370	MON	32	383	02/03/2003	03/01/2029
36209N-3N-0	GOVERNMENT NATIONAL MORT-POOL #477005			4	1	871	107.6929	916	851	868		(2)			6.500	5.849	MON	5	55	11/13/2001	07/01/2029
36209N-3I-0	GOVERNMENT NATIONAL MORT-POOL #477013			4	1	83	100.1350	83	83	83					7.500	7.458	MON	1	6	11/18/1999	10/01/2029
36209N-6K-3	GOVERNMENT NATIONAL MORT-POOL #477074			4	1	2,245	107.6929	2,404	2,232	2,250		(1)			6.500	6.229	MON	12	144	11/17/1998	10/01/2028
36209N-AE-2	GOVERNMENT NATIONAL MORT-POOL #476205			4	1	210	107.6929	225	209	210					6.500	6.332	MON	1	14	11/17/1998	10/01/2028
36209N-CJ-9	GOVERNMENT NATIONAL MORT-POOL #476273			4	1	13,001	101.8415	13,028	12,792	12,970		(20)			7.000	6.494	MON	75	888	06/21/2001	05/01/2028
36209N-DK-5	GOVERNMENT NATIONAL MORT-POOL #476306			4	1	5,019	106.9816	5,213	4,872	4,961		(4)			7.000	6.341	MON	28	330	09/30/1998	05/01/2028
36209N-E3-2	GOVERNMENT NATIONAL MORT-POOL #476354			4	1	5,717	106.2934	5,972	5,619	5,672		(7)			7.000	6.657	MON	33	390	03/19/1999	06/01/2028
36209N-EH-1	GOVERNMENT NATIONAL MORT-POOL #476336			4	1	6,447	100.0941	6,350	6,344	6,399		(8)			7.000	6.682	MON	37	441	06/21/2001	05/01/2028
36209N-FP-2	GOVERNMENT NATIONAL MORT-POOL #476374			4	1	298	107.6929	314	291	295					6.500	6.044	MON	2	20	11/13/2001	06/01/2028
36209N-HW-9	GOVERNMENT NATIONAL MORT-POOL #476573			4	1	6,107	100.0866	6,014	6,009	6,072		(3)			7.000	6.620	MON	35	412	06/21/2001	07/01/2028
36209N-NM-0	GOVERNMENT NATIONAL MORT-POOL #476596			4	1	1,057	101.3534	1,054	1,040	1,049		(1)			7.000	6.682	MON	6	72	06/21/2001	07/01/2028
36209N-NZ-1	GOVERNMENT NATIONAL MORT-POOL #476608			4	1	1,376	100.0900	1,343	1,342	1,361		(2)			7.000	6.472	MON	8	93	09/24/1998	08/01/2028
36209P-HZ-7	GOVERNMENT NATIONAL MORT-POOL #477476			4	1	5,171	107.6929	5,513	5,120	5,164		6			6.500	6.210	MON	28	330	10/21/1998	10/01/2028
36209P-NP-8	GOVERNMENT NATIONAL MORT-POOL #477498			4	1	5,879	107.6929	6,329	5,877	5,876					6.500	6.502	MON	32	373	03/01/2001	10/01/2028

E10.13

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36209P-PL-5	GOVERNMENT NATIONAL MORT-POOL #477527			4	1	12,479	101.2641	12,359	12,204	12,353		(21)			7.000	6.569	MON	71	850	09/24/1998	11/01/2028
36209P-S6-5	GOVERNMENT NATIONAL MORT-POOL #477641			4	1	25,313	101.7550	25,343	25,306	25,306		29			7.000	6.418	MON	145	1,678	06/21/2001	06/01/2028
36209P-SP-3	GOVERNMENT NATIONAL MORT-POOL #477626			4	1	1,639	107.4869	1,710	1,591	1,619		(4)			7.000	6.363	MON	9	111	09/30/1998	07/01/2028
36209P-TT-4	GOVERNMENT NATIONAL MORT-POOL #477662			4	1	1,181	100.1633	1,149	1,147	1,165		(3)			7.000	6.418	MON	7	80	09/30/1998	06/01/2028
36209Q-AB-1	GOVERNMENT NATIONAL MORT-POOL #478002			4	1	495	107.6929	530	492	494					6.500	6.401	MON	3	33	11/17/1998	06/01/2028
36209Q-PW-9	GOVERNMENT NATIONAL MORT-POOL #478437			4	1	26,227	107.6929	28,078	26,072	26,153		(9)			6.500	6.395	MON	141	1,683	11/17/1998	11/01/2028
36209S-G9-6	GOVERNMENT NATIONAL MORT-POOL #480024			4	1	1,474	107.2843	1,529	1,425	1,454		(3)			6.000	5.371	MON	7	85	02/03/2003	12/01/2028
36209S-K2-6	GOVERNMENT NATIONAL MORT-POOL #480113			4	1	1,098	107.6929	1,206	1,120	1,101		2			6.500	7.078	MON	6	72	05/25/2003	04/01/2029
36209S-LS-8	GOVERNMENT NATIONAL MORT-POOL #480137			4	1	77,514	103.6784	82,745	79,809	78,467		179			7.000	7.618	MON	466	5,548	10/15/1999	09/01/2028
36209S-NG-2	GOVERNMENT NATIONAL MORT-POOL #480191			4	1	7,694	108.0249	8,031	7,434	7,603		(4)			6.000	5.311	MON	37	439	02/03/2003	02/01/2029
36209S-T5-0	GOVERNMENT NATIONAL MORT-POOL #480372			4	1	842	102.6569	851	829	829		(1)			7.000	6.647	MON	5	57	06/21/2001	07/01/2028
36209S-T7-6	GOVERNMENT NATIONAL MORT-POOL #480374			4	1	40,882	101.5452	42,742	42,092	41,097		128			7.000	7.882	MON	246	2,925	10/15/1999	07/01/2028
36209S-UM-1	GOVERNMENT NATIONAL MORT-POOL #480398			4	1	10,843	102.4495	11,169	10,902	10,865		5			7.500	7.629	MON	68	812	04/13/2000	07/01/2028
36209S-VA-6	GOVERNMENT NATIONAL MORT-POOL #480409			4	1	12,977	107.6929	13,837	12,848	12,928		(8)			6.500	6.286	MON	70	828	10/21/1998	07/01/2028
36209S-VL-2	GOVERNMENT NATIONAL MORT-POOL #480419			4	1	6,056	100.0898	5,964	5,958	6,017		(5)			7.000	6.640	MON	35	410	06/21/2001	07/01/2028
36209S-W2-3	GOVERNMENT NATIONAL MORT-POOL #480465			4	1	12,673	101.2882	12,689	12,528	12,605		(11)			7.000	6.778	MON	73	871	06/21/2001	07/01/2028
36209T-4H-9	GOVERNMENT NATIONAL MORT-POOL #481524			4	1	104	107.6929	111	103	104					6.500	6.296	MON	1	8	10/21/1998	09/01/2028
36209U-HG-4	GOVERNMENT NATIONAL MORT-POOL #481831			4	1	52,342	107.6929	57,478	53,372	52,470		105			6.500	7.093	MON	289	3,448	09/25/1999	07/01/2028
36209U-JQ-0	GOVERNMENT NATIONAL MORT-POOL #481871			4	1	34,657	101.9352	34,760	34,100	34,453		(25)			7.000	6.624	MON	199	2,348	06/21/2001	07/01/2028
36209V-FH-2	GOVERNMENT NATIONAL MORT-POOL #482668			4	1	113	106.7142	117	109	112					7.000	6.225	MON	1	8	11/17/2008	08/01/2028
36209V-P4-0	GOVERNMENT NATIONAL MORT-POOL #482943			4	1	6,466	107.6929	6,801	6,315	6,408		(7)			6.500	6.014	MON	34	406	11/13/2001	01/01/2029
36209V-PM-0	GOVERNMENT NATIONAL MORT-POOL #482928			4	1	2,133	107.6929	2,244	2,084	2,112		(3)			6.500	6.044	MON	11	134	11/13/2001	01/01/2029
36209W-5W-8	GOVERNMENT NATIONAL MORT-POOL #484261			4	1	13,374	101.1026	13,596	13,448	13,403		7			7.500	7.626	MON	84	1,003	04/13/2000	09/01/2028
36209W-6R-8	GOVERNMENT NATIONAL MORT-POOL #484280			4	1	20,512	100.4449	20,716	20,624	20,465		17			7.500	7.792	MON	129	1,532	04/13/2000	09/01/2028
36209W-LX-8	GOVERNMENT NATIONAL MORT-POOL #483998			4	1	18,601	101.4929	18,458	18,186	18,412		(31)			7.000	6.556	MON	106	1,264	09/23/1998	09/01/2028
36209X-SR-7	GOVERNMENT NATIONAL MORT-POOL #485156			4	1	912	107.6929	959	890	910		3			6.500	5.792	MON	5	55	11/13/2001	02/01/2029
36209X-6C-9	GOVERNMENT NATIONAL MORT-POOL #485167			4	1	71,208	106.1800	78,174	73,624	72,095		116			5.500	6.119	MON	337	4,025	05/10/2002	02/01/2029
36209X-VA-5	GOVERNMENT NATIONAL MORT-POOL #484909			4	1	164	100.0898	160	160	162					7.000	6.521	MON	1	12	09/23/1998	09/01/2028
36209X-ZK-9	GOVERNMENT NATIONAL MORT-POOL #485046			4	1	4,241	107.6929	4,540	4,216	4,229		(2)			6.500	6.397	MON	23	273	11/17/1998	11/01/2028
36209Y-FZ-6	GOVERNMENT NATIONAL MORT-POOL #485384			4	1	286	107.2843	296	276	285					6.000	5.117	MON	1	18	02/03/2003	04/01/2031
36209Y-TV-0	GOVERNMENT NATIONAL MORT-POOL #485764			4	1	7,036	107.9956	7,344	6,800	7,021		20			6.000	5.143	MON	34	396	02/03/2003	09/01/2031
36209Y-US-5	GOVERNMENT NATIONAL MORT-POOL #485793			4	1	4,950	107.6929	5,206	4,834	4,925		3			6.500	5.955	MON	26	307	11/13/2001	09/01/2031
3620A1-X7-8	GOVERNMENT NATIONAL MORT-POOL #716302			4	1	53,483	105.8827	50,972	48,141	56,371		2,332			5.000	2.106	MON	201	2,291	01/01/2013	06/01/2039
3620A8-LU-5	GOVERNMENT NATIONAL MORT-POOL #722239			4	1	166,334	105.9348	158,604	149,718	168,730		2,494			5.000	2.786	MON	624	7,322	01/01/2013	08/01/2039
3620A9-SH-5	GOVERNMENT NATIONAL MORT-POOL #723320			4	1	435,171	105.5622	413,487	391,700	436,850		3,291			5.000	2.975	MON	1,632	19,303	01/01/2013	09/01/2039
3620AA-SG-4	GOVERNMENT NATIONAL MORT-POOL #724219			4	1	990,549	105.6250	938,320	888,351	990,372		112			4.500	2.545	MON	3,331	39,487	01/01/2013	08/01/2039
3620AC-3Z-5	GOVERNMENT NATIONAL MORT-POOL #726316			4	1	929,760	105.9809	886,935	836,882	943,829		14,057			5.000	2.777	MON	3,487	40,971	01/01/2013	09/01/2039
3620AC-4G-6	GOVERNMENT NATIONAL MORT-POOL #726323			4	1	106,335	105.8894	101,350	95,713	109,983		2,642			5.000	2.448	MON	399	4,645	01/01/2013	09/01/2039
3620AF-HV-2	GOVERNMENT NATIONAL MORT-POOL #728444			4	1	2,177,187	105.3894	2,058,368	1,953,107	2,176,706		9,858			4.500	2.494	MON	7,324	86,814	01/01/2013	12/01/2039
36210A-4S-3	GOVERNMENT NATIONAL MORT-POOL #486933			4	1	6,848	108.7022	7,193	6,617	6,788		(3)			6.000	5.218	MON	33	391	02/03/2003	02/01/2029
36210A-5V-5	GOVERNMENT NATIONAL MORT-POOL #486960			4	1	2,064	108.7101	2,168	1,995	2,046					6.000	5.214	MON	10	117	02/03/2003	02/01/2029
36210A-6Q-5	GOVERNMENT NATIONAL MORT-POOL #486979			4	1	11,896	100.1334	11,645	11,629	11,802		(24)			7.500	6.966	MON	73	867	03/12/2001	03/01/2029
36210A-L5-4	GOVERNMENT NATIONAL MORT-POOL #486448			4	1	170,383	111.2889	165,942	167,081	169,139		(102)			7.000	6.556	MON	975	11,480	11/13/1998	08/01/2028
36210A-IM-6	GOVERNMENT NATIONAL MORT-POOL #486464			4	1	29,677	104.3474	31,138	29,840	29,713		(10)			7.500	7.662	MON	187	2,133	04/13/2000	08/01/2028
36210A-U4-7	GOVERNMENT NATIONAL MORT-POOL #486703			4	1	17,224	109.3437	18,198	16,643	17,051		(11)			6.000	5.244	MON	83	983	02/03/2003	11/01/2028
36210A-VA-2	GOVERNMENT NATIONAL MORT-POOL #486709			4	1	10,069	102.0252	10,044	9,845	9,966		(17)			7.000	6.561	MON	57	685	09/23/1998	11/01/2028
36210A-WX-1	GOVERNMENT NATIONAL MORT-POOL #486762			4	1	31,139	106.8339	33,450	31,310	31,199		15			7.500	7.632	MON	196	2,328	04/13/2000	12/01/2028
36210A-XZ-5	GOVERNMENT NATIONAL MORT-POOL #486796			4	1	207	107.8128	216	200	207					6.000	5.015	MON	1	12	02/03/2003	12/01/2028
36210B-B5-3	GOVERNMENT NATIONAL MORT-POOL #487060			4	1	6,122	108.4471	6,417	5,917	6,082		(6)			6.000	5.162	MON	30	350	02/03/2003	03/01/2029
36210B-VU-6	GOVERNMENT NATIONAL MORT-POOL #487627			4	1	1,042	102.1977	1,062	1,040	1,041					7.500	7.459	MON	7	77	11/18/1999	07/01/2029
36210B-VY-8	GOVERNMENT NATIONAL MORT-POOL #487631			4	1	1,888	107.6929	1,986	1,844	1,874		(1)			6.500	5.979	MON	10	118	11/13/2001	07/01/2029
36210C-CD-3	GOVERNMENT NATIONAL MORT-POOL #487968			4	1	611	107.6929	654	607	609					6.500	6.392	MON	3	39	11/17/1998	09/01/2028
36210C-PH-0	GOVERNMENT NATIONAL MORT-POOL #488324			4	1	15,028	107.6929	16,136	14,984	15,005		(2)			6.500	6.451	MON	81	967	01/05/2001	01/01/2029
36210E-3T-4	GOVERNMENT NATIONAL MORT-POOL #490510			4	1	7,409	107.2843	7,680	7,159	7,307		(14)			6.000	5.369	MON	36	427	02/03/2003	01/01/2029
36210E-J8-3	GOVERNMENT NATIONAL MORT-POOL #489987			4	1	2,954	107.2843	3,063	2,855	2,958		29			6.000	4.892	MON	14	153	02/03/2003	11/01/2028
36210E-NC-9	GOVERNMENT NATIONAL MORT-POOL #490087			4	1	846	107.2843	877	818	836		(1)			6.000	5.335	MON	4	49	02/03/2003	02/01/2029
36210F-4B-9	GOVERNMENT NATIONAL MORT-POOL #491418			4	1	957	107.6929	1,007	935	976					6.500	5.089	MON	5	59	11/13/2001	04/01/2029

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36210F-E8-5	GOVERNMENT NATIONAL MORT-POOL #490759			4	1	4,516	100.1294	4,420	4,415	4,470	(8)				7.500	7.044	MON	28	329	03/12/2001	11/01/2028
36210F-R7-3	GOVERNMENT NATIONAL MORT-POOL #491110			4	1	1,773	107.2843	1,838	1,714	1,783	(5)				6.000	4.797	MON	9	102	02/03/2003	03/01/2029
36210F-R6-3	GOVERNMENT NATIONAL MORT-POOL #491087			4	1	823	107.2843	853	795	815					6.000	5.233	MON	4	47	02/03/2003	01/01/2029
36210F-Y3-4	GOVERNMENT NATIONAL MORT-POOL #491330			4	1	6,144	107.2843	6,368	5,936	6,081	(14)				6.000	5.259	MON	30	354	02/03/2003	02/01/2029
36210F-YF-7	GOVERNMENT NATIONAL MORT-POOL #491310			4	1	2,039	107.2843	2,113	1,970	2,027	(4)				6.000	5.102	MON	10	117	02/03/2003	12/01/2028
36210G-V9-2	GOVERNMENT NATIONAL MORT-POOL #492140			4	1	785	107.6929	840	780	784					6.500	6.337	MON	4	49	03/21/2001	01/01/2029
36210G-VA-9	GOVERNMENT NATIONAL MORT-POOL #492109			4	1	32,940	107.6929	35,259	32,741	32,853	(10)				6.500	6.384	MON	177	2,106	11/13/1998	12/01/2028
36210G-VB-7	GOVERNMENT NATIONAL MORT-POOL #492110			4	1	556	107.6929	595	552	555					6.500	6.328	MON	3	35	11/17/1998	12/01/2028
36210H-DD-1	GOVERNMENT NATIONAL MORT-POOL #492500			4	1	15,400	107.6929	16,492	15,314	15,360	(5)				6.500	6.400	MON	83	990	03/21/2001	05/01/2029
36210H-LY-6	GOVERNMENT NATIONAL MORT-POOL #492743			4	1	6,629	107.6929	7,099	6,592	6,612	(2)				6.500	6.400	MON	36	426	03/21/2001	06/01/2029
36210H-PZ-9	GOVERNMENT NATIONAL MORT-POOL #492840			4	1	420	107.6929	450	417	419					6.500	6.390	MON	2	26	11/17/1998	10/01/2028
36210J-GH-2	GOVERNMENT NATIONAL MORT-POOL #493513			4	1	6,804	107.6929	7,156	6,645	6,747	(8)				6.500	6.016	MON	36	427	11/13/2001	01/01/2030
36210J-J3-3	GOVERNMENT NATIONAL MORT-POOL #493582			4	1	991	107.2843	1,028	958	986	(2)				6.000	5.215	MON	5	57	02/03/2003	08/01/2031
36210K-3H-3	GOVERNMENT NATIONAL MORT-POOL #495013			4	1	14,006	107.2843	14,523	13,537	13,885	6				6.000	5.226	MON	68	795	02/03/2003	04/01/2029
36210K-4G-7	GOVERNMENT NATIONAL MORT-POOL #495023			4	1	21,629	107.2843	22,427	20,904	21,336	(41)				6.000	5.377	MON	105	1,248	02/03/2003	04/01/2029
36210K-CR-4	GOVERNMENT NATIONAL MORT-POOL #494280			4	1	339	107.6929	356	331	335					6.500	6.041	MON	2	22	11/13/2001	01/01/2029
36210K-LR-4	GOVERNMENT NATIONAL MORT-POOL #494536			4	1	2,235	107.6929	2,350	2,182	2,227	6				6.500	5.827	MON	12	133	11/13/2001	03/01/2029
36210L-3M-3	GOVERNMENT NATIONAL MORT-POOL #495904			4	1	27	107.2843	28	26	28	1				6.000	4.327	MON	1	1	02/03/2003	02/01/2029
36210L-CY-7	GOVERNMENT NATIONAL MORT-POOL #495187			4	1	33,611	107.6929	36,689	34,068	33,791	34				6.500	6.776	MON	185	2,202	05/12/1999	12/01/2028
36210L-XC-2	GOVERNMENT NATIONAL MORT-POOL #495775			4	1	13,905	107.6929	15,270	14,179	14,015	19				6.500	6.894	MON	77	916	05/21/1999	12/01/2028
36210L-ZM-8	GOVERNMENT NATIONAL MORT-POOL #495848			4	1	15,151	107.2843	15,709	14,643	15,045	53				6.000	5.162	MON	73	838	02/03/2003	01/01/2029
36210M-FG-1	GOVERNMENT NATIONAL MORT-POOL #496167			4	1	1,658	107.6929	1,769	1,643	1,652					6.500	6.308	MON	9	105	01/04/1999	02/01/2029
36210M-GG-0	GOVERNMENT NATIONAL MORT-POOL #496199			4	1	5,432	107.2843	5,632	5,250	5,359	(10)				6.500	5.369	MON	26	313	02/03/2003	03/01/2029
36210M-TW-1	GOVERNMENT NATIONAL MORT-POOL #496565			4	1	3,851	107.2843	3,993	3,722	3,823	(7)				6.000	5.182	MON	19	222	02/03/2003	03/01/2029
36210N-UG-2	GOVERNMENT NATIONAL MORT-POOL #497483			4	1	21,087	107.2843	21,858	20,374	20,798	(40)				6.000	5.363	MON	102	1,215	02/03/2003	01/01/2029
36210N-Y3-7	GOVERNMENT NATIONAL MORT-POOL #497630			4	1	219	107.2843	227	211	219	1				6.000	4.989	MON	1	12	02/03/2003	02/01/2029
36210P-P5-7	GOVERNMENT NATIONAL MORT-POOL #498244			4	1	4,002	107.2843	4,149	3,868	3,983	(7)				6.000	5.201	MON	19	230	02/03/2003	06/01/2031
36210P-14-2	GOVERNMENT NATIONAL MORT-POOL #498467			4	1	9,235	107.2843	9,576	8,926	9,131	(9)				6.000	5.303	MON	45	528	02/03/2003	03/01/2029
36210Q-XG-2	GOVERNMENT NATIONAL MORT-POOL #499379			4	1	3,558	107.6929	3,798	3,526	3,544	(2)				6.500	6.334	MON	19	228	01/04/1999	01/01/2029
36210R-WC-0	GOVERNMENT NATIONAL MORT-POOL #500243			4	1	2,375	103.0929	2,444	2,372	2,373					7.500	7.485	MON	15	177	09/30/1999	09/01/2029
36210S-PE-2	GOVERNMENT NATIONAL MORT-POOL #500921			4	1	12,581	107.6929	13,473	12,510	12,548	(5)				6.500	6.400	MON	68	809	03/21/2001	05/01/2029
36210S-PP-7	GOVERNMENT NATIONAL MORT-POOL #500930			4	1	2,604	107.6929	2,738	2,543	2,578	(4)				6.500	6.054	MON	14	164	11/13/2001	06/01/2029
36210T-3L-8	GOVERNMENT NATIONAL MORT-POOL #502203			4	1	199	107.6929	213	198	198					6.500	6.420	MON	1	13	03/21/2001	05/01/2029
36210T-4D-5	GOVERNMENT NATIONAL MORT-POOL #502220			4	1	3,627	107.6929	3,884	3,607	3,618	(1)				6.500	6.399	MON	20	233	03/21/2001	06/01/2029
36210T-AE-6	GOVERNMENT NATIONAL MORT-POOL #501405			4	1	181	107.2843	188	175	179					6.000	5.355	MON	1	11	02/03/2003	03/01/2029
36210T-B8-8	GOVERNMENT NATIONAL MORT-POOL #501463			4	1	19,027	107.6929	20,376	18,921	18,978	(7)				6.500	6.400	MON	102	1,224	03/21/2001	03/01/2029
36210T-ED-4	GOVERNMENT NATIONAL MORT-POOL #501532			4	1	9,591	107.2843	9,944	9,269	9,461	(18)				6.000	5.372	MON	46	552	02/03/2003	03/01/2029
36210T-Q2-5	GOVERNMENT NATIONAL MORT-POOL #501873			4	1	11,215	107.2843	11,626	10,837	11,099	(20)				6.000	5.273	MON	54	632	02/03/2003	04/01/2029
36210V-2G-5	GOVERNMENT NATIONAL MORT-POOL #503975			4	1	435	108.8730	473	435	435					7.500	7.488	MON	3	32	09/30/1999	08/01/2029
36210V-DT-5	GOVERNMENT NATIONAL MORT-POOL #503314			4	1	25,824	107.6929	27,162	25,222	25,574	(41)				6.500	6.056	MON	137	1,631	11/13/2001	11/01/2029
36210V-F5-5	GOVERNMENT NATIONAL MORT-POOL #503388			4	1	2,364	107.2843	2,452	2,285	2,337	(2)				6.000	5.308	MON	11	136	02/03/2003	03/01/2029
36210V-HN-4	GOVERNMENT NATIONAL MORT-POOL #503437			4	1	2,964	107.6929	3,174	2,947	2,958					6.500	6.385	MON	16	188	03/21/2001	04/01/2029
36210V-MG-3	GOVERNMENT NATIONAL MORT-POOL #503559			4	1	1,566	107.2843	1,624	1,513	1,676	18				6.000	2.922	MON	8	87	02/03/2003	03/01/2029
36210V-WV-7	GOVERNMENT NATIONAL MORT-POOL #503861			4	1	5,762	107.2843	5,973	5,567	5,836	90				6.000	4.563	MON	28	291	02/03/2003	02/01/2029
36210V-Z4-6	GOVERNMENT NATIONAL MORT-POOL #503963			4	1	4,337	107.6929	4,561	4,236	4,294	(7)				6.500	6.054	MON	23	273	11/13/2001	08/01/2029
36210V-Z0-7	GOVERNMENT NATIONAL MORT-POOL #503951			4	1	3,917	107.6929	4,120	3,825	3,879	(6)				6.500	6.050	MON	21	248	11/13/2001	07/01/2029
36210W-B6-5	GOVERNMENT NATIONAL MORT-POOL #504161			4	1	6,480	107.6929	7,120	6,611	6,531	9				6.500	6.900	MON	36	427	05/25/1999	07/01/2029
36210X-3A-3	GOVERNMENT NATIONAL MORT-POOL #505793			4	1	720	107.6929	771	718	718					6.500	6.402	MON	4	46	03/21/2001	08/01/2029
36210X-4M-6	GOVERNMENT NATIONAL MORT-POOL #505828			4	1	3,926	101.8853	3,990	3,916	3,920	(1)				7.500	7.461	MON	24	292	11/18/1999	09/01/2029
36210X-JR-9	GOVERNMENT NATIONAL MORT-POOL #505272			4	1	2,913	101.7791	2,994	2,352	3,196	281				8.000	(1,872)	MON	16	161	01/01/2013	11/01/2029
36210X-T2-3	GOVERNMENT NATIONAL MORT-POOL #505569			4	1	3,849	107.2843	3,991	3,720	3,801	(6)				6.000	5.342	MON	19	221	02/03/2003	03/01/2029
36210X-T6-4	GOVERNMENT NATIONAL MORT-POOL #505573			4	1	9,394	107.2843	9,741	9,079	9,371	(15)				6.000	5.038	MON	45	540	02/03/2003	04/01/2029
36210X-WD-5	GOVERNMENT NATIONAL MORT-POOL #505644			4	1	2,855	107.6929	3,003	2,788	2,827	(4)				6.500	6.043	MON	15	180	11/13/2001	05/01/2029
36210Y-RX-5	GOVERNMENT NATIONAL MORT-POOL #506402			4	1	2,622	107.2843	2,718	2,534	2,599	(5)				6.000	5.230	MON	13	150	02/03/2003	04/01/2029
36210Y-TN-5	GOVERNMENT NATIONAL MORT-POOL #506457			4	1	128	107.2843	132	123	127	1				6.000	5.142	MON	1	7	02/03/2003	04/01/2029
36210Y-14-3	GOVERNMENT NATIONAL MORT-POOL #506567			4	1	2,105	107.6929	2,255	2,094	2,101					6.500	6.379	MON	11	133	03/21/2001	05/01/2029
36210Y-ZY-4	GOVERNMENT NATIONAL MORT-POOL #506659			4	1	1,531	107.2843	1,588	1,480	1,517	(3)				6.000	5.255	MON	7	88	02/03/2003	04/01/2029

E10.15

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest					Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22	
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date	
36211A-AD-8	GOVERNMENT NATIONAL MORT-POOL #506804		4		1	609	101.0661	596	590	602			(1)		7.000	6.256	MON		3	41	11/17/2008	05/01/2029
36211A-C8-7	GOVERNMENT NATIONAL MORT-POOL #506895		4		1	2,932	107.6929	3,084	2,864	2,903			(5)		6.500	6.051	MON		16	185	11/13/2001	05/01/2029
36211A-DT-0	GOVERNMENT NATIONAL MORT-POOL #506914		4		1	16	99.8380	15	15	17			1		7.000	3.567	MON		(2)		11/17/2008	05/01/2029
36211A-NL-6	GOVERNMENT NATIONAL MORT-POOL #507195		4		1	12,781	101.2342	12,906	12,749	12,763			(2)		7.500	7.461	MON		80	952	11/18/1999	11/01/2029
36211A-SE-7	GOVERNMENT NATIONAL MORT-POOL #507317		4		1	14,336	107.6929	15,078	14,001	14,212			(21)		6.500	6.063	MON		76	906	11/13/2001	11/01/2031
36211B-2N-3	GOVERNMENT NATIONAL MORT-POOL #508481		4		1	431	107.2843	447	417	426			(1)		6.000	5.391	MON		2	26	02/03/2003	05/01/2031
36211B-BF-0	GOVERNMENT NATIONAL MORT-POOL #507738		4		1	6,125	100.1259	5,995	5,988	6,067			(10)		7.500	7.022	MON		37	446	03/12/2001	04/01/2029
36211B-L6-9	GOVERNMENT NATIONAL MORT-POOL #508049		4		1	37,290	107.6929	40,998	38,069	37,589			52		6.500	6.918	MON		206	2,459	05/20/1999	06/01/2029
36211B-TU-8	GOVERNMENT NATIONAL MORT-POOL #508263		4		1	63,315	107.6929	69,283	64,334	63,708			72		6.500	6.822	MON		348	4,158	11/13/2001	06/01/2029
36211C-2P-6	GOVERNMENT NATIONAL MORT-POOL #509382		4		1	1,248	107.6929	1,336	1,241	1,245					6.500	6.397	MON		7	80	03/21/2001	07/01/2029
36211C-EE-8	GOVERNMENT NATIONAL MORT-POOL #508733		4		1	265	107.6929	291	270	267					6.500	6.888	MON		1	18	05/25/1999	05/01/2029
36211D-EE-6	GOVERNMENT NATIONAL MORT-POOL #509633		4		1	5,240	107.6929	5,512	5,118	5,189			(8)		6.500	6.051	MON		28	331	11/13/2001	07/01/2029
36211D-P4-6	GOVERNMENT NATIONAL MORT-POOL #509943		4		1	2,784	107.6929	2,928	2,719	2,757			(5)		6.500	6.052	MON		15	176	11/13/2001	06/01/2029
36211D-Q3-6	GOVERNMENT NATIONAL MORT-POOL #509963		4		1	12,716	107.8248	13,251	12,290	12,564			(24)		6.000	5.334	MON		61	733	02/03/2003	06/01/2029
36211D-U8-1	GOVERNMENT NATIONAL MORT-POOL #510107		4		1	6,556	111.0260	7,116	6,409	6,496			(6)		7.500	7.020	MON		40	472	03/12/2001	07/01/2029
36211E-EF-1	GOVERNMENT NATIONAL MORT-POOL #510534		4		1	768	108.8887	834	766	767					7.500	7.448	MON		5	57	11/18/1999	10/01/2029
36211E-KR-8	GOVERNMENT NATIONAL MORT-POOL #510704		4		1	146	106.8222	156	146	146					7.500	7.474	MON		1	12	11/18/1999	11/01/2029
36211E-OP-6	GOVERNMENT NATIONAL MORT-POOL #510862		4		1	1,819	102.7333	1,864	1,815	1,817					7.500	7.460	MON		11	136	11/18/1999	12/01/2029
36211E-UJ-6	GOVERNMENT NATIONAL MORT-POOL #510981		4		1	9,719	107.6929	10,679	9,916	9,794			13		6.500	6.908	MON		54	641	05/25/1999	06/01/2029
36211G-MC-4	GOVERNMENT NATIONAL MORT-POOL #512555		4		1	628	101.9361	592	581	608			(4)		8.000	6.417	MON		4	48	06/30/2003	04/01/2030
36211G-PJ-6	GOVERNMENT NATIONAL MORT-POOL #512625		4		1	240	107.6929	253	235	240			1		6.500	5.762	MON		1	14	11/13/2001	06/01/2029
36211H-U7-4	GOVERNMENT NATIONAL MORT-POOL #513706		4		1	925	106.3333	981	923	924					7.500	7.435	MON		6	69	11/18/1999	07/01/2029
36211H-UU-1	GOVERNMENT NATIONAL MORT-POOL #513759		4		1	3,338	107.6929	3,511	3,260	3,342			30		6.500	5.698	MON		18	171	11/13/2001	08/01/2029
36211J-ME-4	GOVERNMENT NATIONAL MORT-POOL #514357		4		1	403	107.6929	424	394	400					6.500	6.021	MON		2	25	11/13/2001	08/01/2029
36211M-N7-1	GOVERNMENT NATIONAL MORT-POOL #517114		4		1	1,203	101.5755	1,221	1,202	1,202					7.500	7.491	MON		8	90	09/30/1999	09/01/2029
36211M-SU-5	GOVERNMENT NATIONAL MORT-POOL #517231		4		1	2,327	104.9183	2,436	2,322	2,324					7.500	7.461	MON		15	173	11/18/1999	12/01/2029
36211N-6F-0	GOVERNMENT NATIONAL MORT-POOL #518470		4		1	1,617	102.3868	1,651	1,613	1,614					7.500	7.465	MON		10	120	11/18/1999	09/01/2029
36211N-JN-9	GOVERNMENT NATIONAL MORT-POOL #517869		4		1	7,628	101.6327	7,743	7,618	7,622			(1)		7.500	7.484	MON		48	568	09/30/1999	09/01/2029
36211N-VV-7	GOVERNMENT NATIONAL MORT-POOL #518228		4		1	2,559	103.6757	2,453	2,366	2,477			(18)		8.000	6.418	MON		16	189	06/30/2003	04/01/2030
36211P-CL-5	GOVERNMENT NATIONAL MORT-POOL #518575		4		1	2,019	103.7651	2,048	1,974	1,998			(4)		7.500	7.070	MON		12	147	03/12/2001	11/01/2029
36211P-RH-8	GOVERNMENT NATIONAL MORT-POOL #518988		4		1	1,998	106.1800	2,115	1,992	2,004					5.500	5.352	MON		9	109	11/22/2002	01/01/2033
36211Q-WE-7	GOVERNMENT NATIONAL MORT-POOL #520045		4		1	949	107.6929	999	927	954			7		6.500	5.660	MON		5	55	11/13/2001	06/01/2031
36211R-NK-2	GOVERNMENT NATIONAL MORT-POOL #520682		4		1	450	101.7013	447	440	446			(1)		7.500	7.052	MON		3	34	03/12/2001	04/01/2030
36211U-R9-5	GOVERNMENT NATIONAL MORT-POOL # 523512		4		1	2,961	107.2843	3,070	2,861	2,944			13		6.000	5.243	MON		14	164	02/03/2003	11/01/2031
36211U-SQ-6	GOVERNMENT NATIONAL MORT-POOL #523527		4		1	5,780	107.6929	6,079	5,645	5,729			(9)		6.500	6.070	MON		31	365	11/13/2001	12/01/2031
36211V-M9-6	GOVERNMENT NATIONAL MORT-POOL #525184		4		1	40,971	101.1165	40,107	39,664	40,411			(115)		8.250	7.593	MON		273	3,259	01/29/2001	05/01/2030
36212C-DE-8	GOVERNMENT NATIONAL MORT-POOL #529401		4		1	2,499	107.6929	2,628	2,440	2,507			10		6.500	5.708	MON		13	150	11/13/2001	06/01/2031
36212D-HD-4	GOVERNMENT NATIONAL MORT-POOL #530428		4		1	1,311	107.6929	1,379	1,280	1,300			(2)		6.500	6.051	MON		7	83	11/13/2001	07/01/2031
36212D-NE-5	GOVERNMENT NATIONAL MORT-POOL # 530589		4		1	517	107.2843	536	499	518			6		6.000	5.015	MON		3	27	02/03/2003	04/01/2031
36212D-PE-3	GOVERNMENT NATIONAL MORT-POOL #530621		4		1	1,539	107.6929	1,619	1,503	1,532			4		6.500	5.941	MON		8	93	11/13/2001	09/01/2031
36212F-C7-7	GOVERNMENT NATIONAL MORT-POOL #532094		4		1	959	102.3335	959	952	952					7.500	6.971	MON		6	69	03/12/2001	05/01/2030
36212F-KM-5	GOVERNMENT NATIONAL MORT-POOL #532300		4		1	2,787	102.1771	2,784	2,725	2,760			(5)		7.500	7.055	MON		17	203	03/12/2001	06/01/2030
36212G-OA-3	GOVERNMENT NATIONAL MORT-POOL #533349		4		1	1,756	101.8823	1,749	1,717	1,740			(3)		7.500	7.056	MON		11	129	03/12/2001	09/01/2030
36212H-EX-4	GOVERNMENT NATIONAL MORT-POOL #533950		4		1	521	107.2843	540	503	522			4		6.000	5.051	MON		3	28	02/03/2003	04/01/2032
36212J-6H-4	GOVERNMENT NATIONAL MORT-POOL #535572		4		1	2,198	107.6929	2,354	2,186	2,204			(1)		6.500	6.252	MON		12	141	03/21/2001	02/01/2031
36212L-AK-7	GOVERNMENT NATIONAL MORT-POOL #536510		4		1	1,844	107.6929	1,974	1,833	1,841					6.500	6.372	MON		10	117	03/21/2001	02/01/2031
36212M-6F-1	GOVERNMENT NATIONAL MORT-POOL #538270		4		1	3,907	110.2073	4,205	3,815	3,886			(7)		6.500	5.969	MON		21	247	11/13/2001	11/01/2031
36212M-6H-4	GOVERNMENT NATIONAL MORT-POOL #538285		4		1	5,468	111.3807	5,948	5,341	5,426			(4)		6.500	6.039	MON		29	344	11/13/2001	12/01/2031
36212M-KL-2	GOVERNMENT NATIONAL MORT-POOL #537699		4		1	2,255	107.8055	2,377	2,205	2,240			(2)		7.500	6.972	MON		14	163	03/12/2001	11/01/2030
36212N-3L-9	GOVERNMENT NATIONAL MORT-POOL #539103		4		1	5,831	107.6929	6,244	5,798	5,817			(2)		6.500	6.402	MON		31	376	03/21/2001	03/01/2031
36212N-A9-8	GOVERNMENT NATIONAL MORT-POOL #538332		4		1	31,105	107.6929	33,561	31,164	31,083			(31)		6.500	6.572	MON		169	1,747	03/18/2002	03/01/2032
36212O-ED-8	GOVERNMENT NATIONAL MORT-POOL #540232		4		1	26,827	107.6929	28,730	26,677	26,764			(9)		6.500	6.402	MON		145	1,727	03/21/2001	03/01/2031
36212O-JJ-0	GOVERNMENT NATIONAL MORT-POOL #540365		4		1	1,473	107.6929	1,549	1,439	1,460			(2)		6.500	6.056	MON		8	92	11/13/2001	06/01/2031
36212R-VA-3	GOVERNMENT NATIONAL MORT-POOL #541609		4		1	81,842	106.1800	84,806	79,870	81,338			(29)		5.500	5.080	MON		366	4,364	01/14/2004	01/01/2034
36212S-VY-2	GOVERNMENT NATIONAL MORT-POOL #542624		4		1	1,342	107.6929	1,438	1,335	1,343					6.500	6.309	MON		7	82	03/21/2001	03/01/2031
36212V-BH-1	GOVERNMENT NATIONAL MORT-POOL #544640		4		1	2,255	104.2237	2,174	2,086	2,231			(2)		8.000	5.732	MON		14	167	06/30/2003	11/01/2030
36212W-L3-9	GOVERNMENT NATIONAL MORT-POOL #545846		4		1	392	107.6929	412	383	403			3		6.500	5.006	MON		2	24	11/13/2001	07/01/2031

E10.16

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36212W-NM-5	GOVERNMENT NATIONAL MORT-POOL #545896			4	1	203	107.6929	213	198	206		4			6.500	5.390	MON	1	5	11/13/2001	08/01/2031
36212Y-UL-5	GOVERNMENT NATIONAL MORT-POOL # 547887			4	1	3,426	107.2843	3,552	3,311	3,384		(6)			6.000	5.405	MON	17	198	02/03/2003	06/01/2031
36213A-B7-8	GOVERNMENT NATIONAL MORT-POOL #548262			4	1	6,825	107.6929	7,179	6,666	6,765		(10)			6.500	6.069	MON	36	432	11/13/2001	12/01/2031
36213A-BV-5	GOVERNMENT NATIONAL MORT-POOL #548252			4	1	20,167	107.6929	21,212	19,697	19,988		(31)			6.500	6.068	MON	107	1,275	11/13/2001	09/01/2031
36213A-BX-1	GOVERNMENT NATIONAL MORT-POOL #548254			4	1	1,183	108.6684	1,256	1,156	1,178		(21)			6.500	5.954	MON	6	75	11/13/2001	10/01/2031
36213A-RY-2	GOVERNMENT NATIONAL MORT-POOL #548703			4	1	3,750	107.2843	3,888	3,624	3,708		(6)			6.000	5.412	MON	18	216	02/03/2003	11/01/2032
36213B-RG-9	GOVERNMENT NATIONAL MORT-POOL #549587			4	1	18,754	108.0822	19,797	18,316	18,755		(38)			6.500	5.807	MON	99	1,184	11/13/2001	09/01/2031
36213C-VE-7	GOVERNMENT NATIONAL MORT-POOL #550613			4	1	697,991	105.9276	744,483	702,823	697,802		(515)			5.000	5.150	MON	2,928	34,331	02/09/2006	08/01/2035
36213D-3C-0	GOVERNMENT NATIONAL MORT-POOL #551695			4	1	8,385	107.6929	7,730	8,131	8,131		(48)			6.500	3.037	MON	39	462	01/01/2013	02/01/2032
36213D-6E-3	GOVERNMENT NATIONAL MORT-POOL #551769			4	1	332	107.2843	345	321	329					6.000	5.373	MON	2	20	02/03/2003	04/01/2032
36213D-CX-4	GOVERNMENT NATIONAL MORT-POOL #550986			4	1	8,151	114.2272	9,093	7,960	8,123		3			6.500	5.907	MON	43	507	11/13/2001	10/01/2031
36213D-FB-9	GOVERNMENT NATIONAL MORT-POOL #551062			4	1	3,318	107.6929	3,490	3,241	3,313		19			6.500	5.860	MON	18	191	11/13/2001	11/01/2031
36213D-G3-6	GOVERNMENT NATIONAL MORT-POOL # 551118			4	1	1,257	108.0366	1,312	1,214	1,245		1			6.000	5.335	MON	6	72	02/03/2003	06/01/2031
36213D-G8-8	GOVERNMENT NATIONAL MORT-POOL #551094			4	1	2,125	113.9815	2,366	2,076	2,116		1			6.500	5.942	MON	11	133	11/13/2001	11/01/2031
36213D-LM-8	GOVERNMENT NATIONAL MORT-POOL #551488			4	1	2,338	107.2843	2,425	2,260	2,312		(4)			6.000	5.388	MON	11	135	02/03/2003	06/01/2031
36213E-CI-4	GOVERNMENT NATIONAL MORT-POOL #551885			4	1	1,537	107.2843	1,594	1,486	1,546		(4)			6.000	4.949	MON	7	89	02/03/2003	11/01/2031
36213E-DZ-6	GOVERNMENT NATIONAL MORT-POOL #551920			4	1	766	107.2843	794	740	762		4			6.000	5.229	MON	4	42	02/03/2003	12/01/2031
36213E-F2-7	GOVERNMENT NATIONAL MORT-POOL #551985			4	1	2,882	107.2843	2,987	2,784	2,848		(5)			6.000	5.398	MON	14	166	02/03/2003	01/01/2032
36213E-FP-6	GOVERNMENT NATIONAL MORT-POOL #551974			4	1	48,267	103.5079	42,005	40,581	45,794		(506)			7.000	3.399	MON	237	2,823	01/01/2013	01/01/2032
36213E-H6-0	GOVERNMENT NATIONAL MORT-POOL # 552181			4	1	9,807	107.2843	10,169	9,479	9,747		(21)			6.000	5.258	MON	47	567	02/03/2003	11/01/2031
36213E-HK-9	GOVERNMENT NATIONAL MORT-POOL #552162			4	1	9,652	107.6929	10,152	9,427	9,584		1			6.500	6.017	MON	51	601	11/13/2001	11/01/2031
36213E-IM-5	GOVERNMENT NATIONAL MORT-POOL #552164			4	1	115,087	107.8852	120,839	112,007	114,661		(238)			6.500	5.818	MON	607	7,252	11/08/2001	11/01/2031
36213E-PS-9	GOVERNMENT NATIONAL MORT-POOL #552244			4	1	3,142	107.6929	3,305	3,069	3,156		(7)			6.500	5.685	MON	17	198	11/13/2001	12/01/2031
36213E-P8-3	GOVERNMENT NATIONAL MORT-POOL #552247			4	1	1,986	107.6929	2,088	1,939	1,970		(2)			6.500	6.049	MON	11	125	11/13/2001	12/01/2031
36213E-PG-5	GOVERNMENT NATIONAL MORT-POOL #552223			4	1	3,141	107.6929	3,303	3,067	3,113		(5)			6.500	6.068	MON	17	198	11/13/2001	11/01/2031
36213E-PU-4	GOVERNMENT NATIONAL MORT-POOL #552235			4	1	236	107.8830	246	228	235					6.000	5.244	MON	1	13	02/03/2003	12/01/2031
36213E-R9-9	GOVERNMENT NATIONAL MORT-POOL #552312			4	1	27,285	108.3356	29,917	27,615	27,340		(26)			6.000	6.268	MON	138	1,610	05/02/2002	01/01/2032
36213E-SF-4	GOVERNMENT NATIONAL MORT-POOL #552318			4	1	2,909	107.2843	3,016	2,811	2,910		18			6.000	5.089	MON	14	166	02/03/2003	01/01/2032
36213E-SK-3	GOVERNMENT NATIONAL MORT-POOL #552322			4	1	15,747	109.6785	14,535	13,253	15,074		(178)			6.500	2.916	MON	72	857	01/01/2013	01/01/2032
36213E-UH-7	GOVERNMENT NATIONAL MORT-POOL #552384			4	1	153	107.2843	158	148	154		2			6.000	4.879	MON	1	8	02/03/2003	02/01/2032
36213E-IV-4	GOVERNMENT NATIONAL MORT-POOL #552460			4	1	1,671	108.3360	1,750	1,615	1,668		(3)			6.000	5.157	MON	8	96	02/03/2003	03/01/2032
36213E-VC-4	GOVERNMENT NATIONAL MORT-POOL #552507			4	1	149	107.2843	155	144	148					6.000	5.282	MON	1	9	02/03/2003	04/01/2032
36213F-D8-3	GOVERNMENT NATIONAL MORT-POOL #552827			4	1	10,329	108.7528	10,856	9,982	10,214		(16)			6.000	5.409	MON	50	597	02/03/2003	10/01/2032
36213F-F6-5	GOVERNMENT NATIONAL MORT-POOL #552889			4	1	981	108.6831	1,031	949	974		(1)			6.000	5.322	MON	5	57	02/03/2003	11/01/2032
36213F-F7-3	GOVERNMENT NATIONAL MORT-POOL # 552890			4	1	11,324	108.8369	11,911	10,944	11,249		4			6.000	5.295	MON	55	648	02/03/2003	11/01/2032
36213F-FU-2	GOVERNMENT NATIONAL MORT-POOL #552879			4	1	52,372	107.6397	56,267	52,274	52,350		3			5.500	5.465	MON	240	2,823	11/22/2002	11/01/2032
36213F-FW-8	GOVERNMENT NATIONAL MORT-POOL #552881			4	1	10,399	106.8963	11,095	10,379	10,398		3			5.500	5.457	MON	48	551	11/22/2002	11/01/2032
36213F-H5-5	GOVERNMENT NATIONAL MORT-POOL #552952			4	1	12,340	107.2843	12,793	11,924	12,371		57			6.000	5.061	MON	60	691	02/03/2003	12/01/2032
36213F-HL-0	GOVERNMENT NATIONAL MORT-POOL #552935			4	1	23,600	106.1800	25,011	23,556	23,585		2			5.500	5.469	MON	108	1,218	11/22/2002	11/01/2032
36213F-JA-2	GOVERNMENT NATIONAL MORT-POOL #552957			4	1	552	107.4696	573	533	551		3			6.000	5.161	MON	3	30	02/03/2003	12/01/2032
36213F-K2-8	GOVERNMENT NATIONAL MORT-POOL #553013			4	1	20,133	108.1661	21,709	20,070	20,121		1			5.500	5.439	MON	92	1,090	11/22/2002	01/01/2033
36213F-K7-7	GOVERNMENT NATIONAL MORT-POOL # 553018			4	1	1,166	108.9563	1,228	1,127	1,159		(2)			6.000	5.288	MON	6	67	02/03/2003	01/01/2033
36213F-KZ-5	GOVERNMENT NATIONAL MORT-POOL #553012			4	1	479,040	108.2032	516,735	477,560	478,769		130			5.500	5.439	MON	2,189	25,586	11/22/2002	01/01/2033
36213F-PU-1	GOVERNMENT NATIONAL MORT-POOL # 553135			4	1	13,232	107.8911	13,798	12,789	13,164		17			6.000	5.267	MON	64	753	02/03/2003	03/01/2033
36213F-RF-2	GOVERNMENT NATIONAL MORT-POOL #553186			4	1	2,716	108.2038	2,863	2,646	2,708					5.500	4.960	MON	12	144	01/16/2004	04/01/2033
36213G-AL-5	GOVERNMENT NATIONAL MORT-POOL #553611			4	1	170,757	108.9980	156,484	143,566	162,112		(2,049)			7.000	3.391	MON	837	9,983	01/01/2013	02/01/2032
36213G-TC-5	GOVERNMENT NATIONAL MORT-POOL #554147			4	1	2,701	107.6929	2,841	2,638	2,680		(3)			6.500	6.040	MON	14	170	11/13/2001	10/01/2031
36213G-Y5-4	GOVERNMENT NATIONAL MORT-POOL #554332			4	1	8,946	107.6929	9,581	8,896	9,925		(3)			6.500	6.402	MON	48	576	03/21/2001	03/01/2031
36213G-ZA-2	GOVERNMENT NATIONAL MORT-POOL #554337			4	1	5,005	107.6929	5,359	4,977	4,997					6.500	6.376	MON	27	318	03/21/2001	03/01/2031
36213H-R4-3	GOVERNMENT NATIONAL MORT-POOL #555007			4	1	39,771	107.2843	41,237	38,437	39,334		(67)			6.000	5.409	MON	192	2,298	02/03/2003	12/01/2032
36213J-E2-7	GOVERNMENT NATIONAL MORT-POOL #555553			4	1	42,829	107.6929	45,047	42,543	42,543		(24)			6.500	6.004	MON	227	2,682	11/13/2001	10/01/2031
36213J-E8-4	GOVERNMENT NATIONAL MORT-POOL #555559			4	1	492	107.6929	518	481	488		(1)			6.500	6.063	MON	3	32	11/13/2001	10/01/2031
36213J-GT-6	GOVERNMENT NATIONAL MORT-POOL #555610			4	1	1,413	107.6929	1,486	1,380	1,403		1			6.500	6.006	MON	7	87	11/13/2001	11/01/2031
36213J-OT-5	GOVERNMENT NATIONAL MORT-POOL #555866			4	1	8,241	107.6929	8,668	8,049	8,206		(13)			6.500	5.932	MON	44	520	11/13/2001	09/01/2031
36213L-LK-4	GOVERNMENT NATIONAL MORT-POOL #557530			4	1	260	107.2843	260	242	253					6.000	4.831	MON	1	15	02/03/2003	07/01/2031
36213N-40-6	GOVERNMENT NATIONAL MORT-POOL #559831			4	1	3,078	107.6929	3,238	3,006	3,065		9			6.500	5.937	MON	16	186	11/13/2001	09/01/2031
36213N-5A-0	GOVERNMENT NATIONAL MORT-POOL #559841			4	1	18,962	107.6929	19,944	18,519	18,932		74			6.500	5.858	MON	100	1,134	11/13/2001	11/01/2031

E10.17

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36213N-KS-4	GOVERNMENT NATIONAL MORT-POOL #559305			4	1	4,631	107.6929	4,871	4,523	4,596		(5)		6.500	6.034	MON	25	291		11/13/2001	10/01/2031
36213N-YA-8	GOVERNMENT NATIONAL MORT-POOL #559705			4	1	1,501	107.6929	1,579	1,466	1,488		(2)		6.500	6.069	MON	8	94		11/13/2001	11/01/2031
362130-UF-4	GOVERNMENT NATIONAL MORT-POOL #561382			4	1	337	107.2843	350	326	353		11		6.000	3.873	MON	2	15		02/03/2003	11/01/2031
362130-YO-6	GOVERNMENT NATIONAL MORT-POOL #561519			4	1	175,106	114.0498	200,083	175,435	175,149		8		6.500	6.549	MON	1,421	11,235		03/18/2002	07/01/2031
36213R-3R-6	GOVERNMENT NATIONAL MORT-POOL #562508			4	1	35,228	106.1800	36,504	34,379	35,215		(14)		5.500	4.949	MON	158	1,882		01/14/2004	02/01/2034
36213R-5C-7	GOVERNMENT NATIONAL MORT-POOL #562543			4	1	1,352	107.6929	1,422	1,320	1,363		20		6.500	5.573	MON	7	63		11/13/2001	12/01/2031
36213R-KE-6	GOVERNMENT NATIONAL MORT-POOL # 561993			4	1	7,052	107.2843	7,312	6,815	6,970		(10)		6.000	5.394	MON	34	406		02/03/2003	07/01/2031
36213R-IM-5	GOVERNMENT NATIONAL MORT-POOL #562352			4	1	7,884	108.3645	8,338	7,694	7,854		(4)		5.500	5.026	MON	4	421		01/14/2004	01/01/2034
36213S-4M-4	GOVERNMENT NATIONAL MORT-POOL #563428			4	1	10,858	107.6929	11,420	10,605	10,765		(16)		6.500	6.063	MON	57	686		11/13/2001	11/01/2031
36213S-4N-2	GOVERNMENT NATIONAL MORT-POOL #563429			4	1	28,631	107.6929	30,114	27,963	28,378		(44)		6.500	6.069	MON	151	1,811		11/13/2001	11/01/2031
36213S-7M-1	GOVERNMENT NATIONAL MORT-POOL #563500			4	1	109,757	107.1454	114,767	107,113	109,052		(94)		5.500	5.086	MON	491	5,871		01/14/2004	01/01/2034
36213S-CV-5	GOVERNMENT NATIONAL MORT-POOL #562684			4	1	7,589	106.1800	8,043	7,575	7,589		(1)		5.500	5.457	MON	35	400		11/22/2002	12/01/2032
36213S-LH-6	GOVERNMENT NATIONAL MORT-POOL #562928			4	1	4,507	107.6929	4,741	4,402	4,467		(7)		6.500	6.068	MON	24	285		11/13/2001	09/01/2031
36213S-YK-5	GOVERNMENT NATIONAL MORT-POOL #563314			4	1	2,139	107.6929	2,250	2,089	2,132		(4)		6.500	5.915	MON	11	136		11/13/2001	11/01/2031
36213T-FB-4	GOVERNMENT NATIONAL MORT-POOL #563662			4	1	767	108.3616	830	766	767				5.500	5.468	MON	4	42		11/22/2002	10/01/2032
36213T-FC-2	GOVERNMENT NATIONAL MORT-POOL #563663			4	1	12,456	108.7550	13,090	12,036	12,376		10		6.000	5.283	MON	60	709		02/03/2003	10/01/2032
36213T-FS-7	GOVERNMENT NATIONAL MORT-POOL # 563677			4	1	3,058	108.8419	3,217	2,956	3,035		(3)		6.000	5.322	MON	15	176		02/03/2003	11/01/2032
36213U-BH-2	GOVERNMENT NATIONAL MORT-POOL #564440			4	1	634	107.2843	658	627	627		(1)		6.000	5.383	MON	3	38		02/03/2003	10/01/2031
36213U-C5-7	GOVERNMENT NATIONAL MORT-POOL #564492			4	1	29,728	107.2843	30,825	28,732	29,473		(49)		6.000	5.322	MON	144	1,715		02/03/2003	11/01/2031
36213U-D3-1	GOVERNMENT NATIONAL MORT-POOL #564522			4	1	3,080	107.2843	3,193	2,976	3,077		(5)		6.000	5.112	MON	15	178		02/03/2003	11/01/2031
36213U-E2-2	GOVERNMENT NATIONAL MORT-POOL #564553			4	1	23,233	107.9026	24,229	22,454	23,014		13		6.000	5.346	MON	112	1,325		02/03/2003	12/01/2031
36213U-FZ-8	GOVERNMENT NATIONAL MORT-POOL #564584			4	1	838	107.6929	881	818	840		(2)		6.500	5.728	MON	4	54		11/13/2001	07/01/2031
36213U-KM-1	GOVERNMENT NATIONAL MORT-POOL #564700			4	1	1,390	107.4054	1,443	1,344	1,387		3		6.000	5.143	MON	7	79		02/03/2003	07/01/2031
36213U-KX-7	GOVERNMENT NATIONAL MORT-POOL #564710			4	1	963	108.0937	1,006	931	956		2		6.000	5.273	MON	5	54		02/03/2003	07/01/2031
36213U-MB-3	GOVERNMENT NATIONAL MORT-POOL #564754			4	1	356,630	110.8103	384,605	347,084	354,465		(66)		6.500	5.881	MON	1,880	22,190		11/08/2001	08/01/2031
36213U-M6-3	GOVERNMENT NATIONAL MORT-POOL #565069			4	1	977	108.7224	1,027	945	972		(2)		6.000	5.255	MON	5	55		02/03/2003	01/01/2032
36213V-67-7	GOVERNMENT NATIONAL MORT-POOL # 565522			4	1	1,397	107.7162	1,454	1,350	1,389		(2)		6.000	5.268	MON	7	80		02/03/2003	11/01/2032
36213V-JJ-3	GOVERNMENT NATIONAL MORT-POOL #565575			4	1	4,586	107.6929	4,823	4,479	4,545		(7)		6.500	6.069	MON	24	290		11/13/2001	09/01/2031
36213V-NK-1	GOVERNMENT NATIONAL MORT-POOL #565662			4	1	3,966	107.6929	4,171	3,873	3,994		28		6.500	5.601	MON	21	232		11/13/2001	10/01/2031
36213V-NL-9	GOVERNMENT NATIONAL MORT-POOL #565663			4	1	1,389	107.6538	1,445	1,342	1,377		1		6.000	5.316	MON	7	78		02/03/2003	11/01/2031
36213V-NV-7	GOVERNMENT NATIONAL MORT-POOL #565672			4	1	43,628	107.6929	45,887	42,609	43,246		(65)		6.500	6.068	MON	231	2,758		11/13/2001	12/01/2031
36213V-OZ-4	GOVERNMENT NATIONAL MORT-POOL #565772			4	1	617	107.6929	649	603	612		(1)		6.500	6.064	MON	3	40		11/13/2001	09/01/2031
36213V-R3-4	GOVERNMENT NATIONAL MORT-POOL #565806			4	1	18,343	107.6929	19,293	17,915	18,181		(28)		6.500	6.070	MON	97	1,160		11/13/2001	11/01/2031
36213V-RK-6	GOVERNMENT NATIONAL MORT-POOL #565790			4	1	11,226	107.6929	11,807	10,964	11,133		(13)		6.500	6.049	MON	59	707		11/13/2001	10/01/2031
36213V-JE-7	GOVERNMENT NATIONAL MORT-POOL #566461			4	1	60,151	107.6929	63,266	58,747	59,625		(89)		6.500	6.067	MON	318	3,802		11/13/2001	11/01/2031
36213V-KW-5	GOVERNMENT NATIONAL MORT-POOL #566509			4	1	41,339	106.1800	42,837	40,343	41,339		25		5.500	4.939	MON	185	2,192		01/14/2004	01/01/2034
36213V-PR-1	GOVERNMENT NATIONAL MORT-POOL #566632			4	1	121	107.6929	127	118	122				6.500	5.476	MON	1	8		11/13/2001	10/01/2031
36213V-QC-3	GOVERNMENT NATIONAL MORT-POOL #566651			4	1	3,763	107.6929	3,958	3,675	3,730		(6)		6.500	6.068	MON	20	238		11/13/2001	11/01/2031
36213V-SE-7	GOVERNMENT NATIONAL MORT-POOL # 566717			4	1	42,659	107.2843	44,232	41,228	42,182		(59)		6.000	5.383	MON	206	2,458		02/03/2003	08/01/2031
36213V-TE-6	GOVERNMENT NATIONAL MORT-POOL #566749			4	1	4,014	107.6929	4,222	3,921	3,979		(6)		6.500	6.069	MON	21	254		11/13/2001	11/01/2031
36213X-3W-2	GOVERNMENT NATIONAL MORT-POOL #567913			4	1	137,851	107.7103	143,480	133,209	137,019		109		6.000	5.277	MON	666	7,862		02/03/2003	11/01/2032
36213X-6E-9	GOVERNMENT NATIONAL MORT-POOL #567969			4	1	344	106.1800	364	343	344				5.500	5.401	MON	2	20		11/22/2002	01/01/2033
36213X-DR-2	GOVERNMENT NATIONAL MORT-POOL #567212			4	1	1,023	107.6929	1,076	999	1,014		(1)		6.500	6.067	MON	5	65		11/13/2001	10/01/2031
36213X-E7-5	GOVERNMENT NATIONAL MORT-POOL #567258			4	1	1,264	107.6929	1,330	1,235	1,258				6.500	5.957	MON	7	78		11/13/2001	10/01/2031
36213X-FH-2	GOVERNMENT NATIONAL MORT-POOL #567268			4	1	2,792	107.6929	2,936	2,726	2,768		(4)		6.500	6.057	MON	15	176		11/13/2001	10/01/2031
36213X-FR-0	GOVERNMENT NATIONAL MORT-POOL #567276			4	1	1,167	107.6929	1,227	1,140	1,183		(4)		6.500	5.417	MON	15	74		11/13/2001	11/01/2031
36213Y-3V-2	GOVERNMENT NATIONAL MORT-POOL #568812			4	1	6,381	107.6929	6,712	6,232	6,324		(10)		6.500	6.070	MON	34	404		11/13/2001	10/01/2031
36213Y-6B-3	GOVERNMENT NATIONAL MORT-POOL #568866			4	1	1,918	107.2843	1,988	1,904	1,904		(1)		6.000	5.283	MON	9	110		02/03/2003	12/01/2031
36213Y-DZ-2	GOVERNMENT NATIONAL MORT-POOL # 568120			4	1	41,125	107.2843	42,642	39,747	40,660		(59)		6.000	5.391	MON	199	2,371		02/03/2003	10/01/2031
36213Y-PR-7	GOVERNMENT NATIONAL MORT-POOL #568432			4	1	203	100.2746	199	199	203		1		6.500	5.817	MON	1	12		11/13/2001	11/01/2031
362165-NG-3	GOVERNMENT NATIONAL MORT-POOL #184091			4	1	328	107.6929	350	325	327				6.500	6.240	MON	2	21		02/03/1999	10/01/2023
36216D-5C-5	GOVERNMENT NATIONAL MORT-POOL #162043			4	1	124	100.0873	122	122	123				7.500	6.860	MON	1	5		10/24/1995	04/01/2024
36216X-3O-2	GOVERNMENT NATIONAL MORT-POOL #178207			4	1	303	107.6929	287	285	285		(4)		6.500	2.992	MON	1	17		01/01/2013	02/01/2024
36217A-CP-3	GOVERNMENT NATIONAL MORT-POOL #187378			4	1	9,487	100.1214	9,274	9,263	9,331		(20)		7.500	6.982	MON	58	682		02/14/2001	10/01/2022
36218D-YJ-6	GOVERNMENT NATIONAL MORT-POOL #219513			4	1	5,757	107.6929	6,143	5,704	5,727		(4)		6.500	6.282	MON	31	365		02/03/1999	11/01/2023
362194-HM-1	GOVERNMENT NATIONAL MORT-POOL #266864			4	1	329	100.1143	325	324	326				7.500	7.180	MON	2	23		10/25/1995	06/01/2023
362195-SW-0	GOVERNMENT NATIONAL MORT-POOL #267933			4	1	2,793	105.9510	2,873	2,712	2,756		(6)		7.000	6.391	MON	16	188		09/30/1998	02/01/2028

E10.18

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
362197-HG-3	GOVERNMENT NATIONAL MORT-POOL #269431			4	1	2,310	104.9321	2,392	2,280	2,291		(2)		7.500	7.241	MON	14	169	10/24/1995	07/01/2024	
362198-6N-8	GOVERNMENT NATIONAL MORT-POOL #270977			4	1	2,212	100.0961	2,180	2,178	2,179		(3)		8.250	7.959	MON	15	152	03/09/2000	08/01/2019	
36220E-DK-0	GOVERNMENT NATIONAL MORT-POOL #275606			4	1	2,250	100.1032	2,196	2,193	2,196		(5)		10.000	9.478	MON	18	172	08/03/1989	07/01/2019	
36220J-QK-5	GOVERNMENT NATIONAL MORT-POOL #279558			4	1	171	100.1086	173	173	173				8.500	9.057	MON	1	13	02/05/1991	11/01/2019	
36220J-R5-7	GOVERNMENT NATIONAL MORT-POOL #279608			4	1	2,240	100.1138	2,292	2,290	2,281		5		9.000	9.864	MON	17	94	01/23/1990	01/01/2020	
36223E-CE-2	GOVERNMENT NATIONAL MORT-POOL #305269			4	1	11,148	100.2164	11,228	11,204	11,180		8		7.730	7.909	MON	72	845	07/26/2000	01/01/2022	
36223E-P7-3	GOVERNMENT NATIONAL MORT-POOL #305646			4	1	7,495	100.1127	7,456	7,447	7,455		3		7.450	7.348	MON	46	538	10/26/2000	06/01/2021	
36223G-QD-4	GOVERNMENT NATIONAL MORT-POOL #307452			4	1	2,989	100.9119	2,921	2,894	2,928		(10)		9.000	7.933	MON	22	249	10/17/1991	10/01/2021	
36223L-WW-4	GOVERNMENT NATIONAL MORT-POOL #311261			4	1	19,698	100.6169	19,693	19,572	19,593		(8)		7.450	7.347	MON	122	1,414	10/26/2000	07/01/2021	
36223N-W9-1	GOVERNMENT NATIONAL MORT-POOL #313072			4	1	340	99.9006	335	336	337				7.500	7.176	MON	2	22	10/25/1995	08/01/2022	
36223O-J6-5	GOVERNMENT NATIONAL MORT-POOL #314485			4	1	8,609	100.0859	8,600	8,593	8,589		1		7.930	7.971	MON	57	636	04/19/2000	12/01/2021	
36223R-J2-2	GOVERNMENT NATIONAL MORT-POOL #315381			4	1	12,089	100.5448	12,078	12,012	12,028		(5)		7.450	7.337	MON	75	871	10/26/2000	02/01/2022	
36223S-CV-3	GOVERNMENT NATIONAL MORT-POOL #316084			4	1	42	100.6854	41	41	41				7.500	6.971	MON		4	10/24/1995	02/01/2022	
36223S-F8-1	GOVERNMENT NATIONAL MORT-POOL #316191			4	1	26	100.1532	26	26	26				8.000	8.000	MON		2	03/31/1997	04/01/2022	
36223V-NA-0	GOVERNMENT NATIONAL MORT-POOL #319085			4	1	2,045	100.6288	2,034	2,021	2,027		(2)		7.500	7.261	MON	13	146	10/24/1995	02/01/2022	
36223W-AD-6	GOVERNMENT NATIONAL MORT-POOL #319604			4	1	72	107.6929	77	77	72				6.500	6.229	MON		4	02/03/1999	10/01/2023	
36223W-P8-1	GOVERNMENT NATIONAL MORT-POOL #320047			4	1	414	100.6968	411	408	410				7.500	7.200	MON		3	10/25/1995	02/01/2023	
36223W-PU-2	GOVERNMENT NATIONAL MORT-POOL #320035			4	1	644	100.1199	566	569	599		(9)		7.500	3.598	MON		4	01/01/2013	01/01/2023	
36223W-TO-7	GOVERNMENT NATIONAL MORT-POOL #320159			4	1	11,427	100.5434	11,416	11,354	11,368				7.450	7.334	MON	70	810	10/26/2000	09/01/2021	
36223X-RY-0	GOVERNMENT NATIONAL MORT-POOL #321003			4	1	1,846	100.1216	1,721	1,718	1,791		3		7.500	4.775	MON	11	127	01/01/2013	01/01/2023	
36223Y-3H-1	GOVERNMENT NATIONAL MORT-POOL #322200			4	1	22,401	107.6929	23,904	22,196	22,264		(15)		6.500	6.322	MON	120	1,420	02/03/1999	07/01/2023	
36223Y-TX-8	GOVERNMENT NATIONAL MORT-POOL #321966			4	1	200	100.1216	172	172	193		(5)		7.500	0.316	MON	1	12	01/01/2013	05/01/2023	
36224B-LV-9	GOVERNMENT NATIONAL MORT-POOL #323540			4	1	147	100.1214	141	141	144				7.500	5.869	MON	1	10	01/01/2013	11/01/2022	
36224E-TU-7	GOVERNMENT NATIONAL MORT-POOL #326463			4	1	277	107.6929	259	241	276		(7)		6.500	(0.785)	MON		15	01/01/2013	11/01/2023	
36224F-DV-9	GOVERNMENT NATIONAL MORT-POOL #326916			4	1	687	100.7380	591	586	632		(13)		7.500	2.539	MON	4	43	01/01/2013	01/01/2023	
36224F-FS-4	GOVERNMENT NATIONAL MORT-POOL #326977			4	1	233	104.0727	240	231	232				7.500	7.219	MON	1	17	10/24/1995	05/01/2023	
36224F-HK-5	GOVERNMENT NATIONAL MORT-POOL #327098			4	1	1,507	100.1207	1,491	1,490	1,501		(3)		7.500	6.936	MON	9	109	10/24/1995	07/01/2022	
36224J-F5-6	GOVERNMENT NATIONAL MORT-POOL #329688			4	1	778	100.1207	774	773	775				7.500	7.342	MON	5	57	01/01/2013	10/01/2022	
36224K-JZ-3	GOVERNMENT NATIONAL MORT-POOL #330680			4	1	1,137	104.0419	1,162	1,117	1,124		(1)		7.500	7.110	MON	7	80	11/02/1995	01/01/2023	
36224K-X5-3	GOVERNMENT NATIONAL MORT-POOL #331100			4	1	5,262	100.6941	4,566	4,534	4,854		(80)		7.500	3.017	MON	28	331	01/01/2013	01/01/2023	
36224N-IP-5	GOVERNMENT NATIONAL MORT-POOL #333466			4	1	9,878	100.1207	9,794	9,782	9,824		(10)		7.500	7.227	MON	61	719	01/01/2013	03/01/2023	
36224P-6G-8	GOVERNMENT NATIONAL MORT-POOL #334871			4	1	4,959	100.1218	4,830	4,824	4,881		(16)		7.500	6.714	MON	30	355	01/01/2013	01/01/2023	
36224P-YD-5	GOVERNMENT NATIONAL MORT-POOL #334676			4	1	773	100.1112	763	763	767		(1)		7.500	7.153	MON	5	55	10/25/1995	07/01/2023	
36224P-ZJ-0	GOVERNMENT NATIONAL MORT-POOL #334745			4	1	5,952	100.1222	5,878	5,871	5,895		(6)		7.500	7.235	MON	37	433	10/25/1995	02/01/2023	
36224Q-CC-8	GOVERNMENT NATIONAL MORT-POOL #334967			4	1	286	100.1174	281	281	283				7.500	7.109	MON	2	20	11/02/1995	09/01/2022	
36224Q-FC-5	GOVERNMENT NATIONAL MORT-POOL #335063			4	1	8,937	107.6929	9,537	8,855	8,884		(6)		6.500	6.325	MON	48	568	02/03/1999	01/01/2024	
36224Q-L5-3	GOVERNMENT NATIONAL MORT-POOL #335248			4	1	1,223	101.5207	1,219	1,201	1,209		(2)		7.500	7.138	MON	8	89	11/02/1995	01/01/2024	
36224R-WB-6	GOVERNMENT NATIONAL MORT-POOL #336442			4	1	478	100.1218	477	477	477				7.500	7.433	MON	3	35	01/01/2013	02/01/2023	
36224S-BC-5	GOVERNMENT NATIONAL MORT-POOL #336735			4	1	3,914	100.1222	3,907	3,902	3,906		(1)		7.500	7.434	MON	24	288	01/01/2013	01/01/2023	
36224S-TX-0	GOVERNMENT NATIONAL MORT-POOL #337266			4	1	7,024	101.0182	6,746	6,678	6,827		(40)		7.500	6.049	MON	42	492	01/01/2013	02/01/2023	
36224S-V8-2	GOVERNMENT NATIONAL MORT-POOL #337339			4	1	4,103	100.0877	4,080	4,077	4,084		(2)		7.000	6.889	MON	24	281	11/26/1997	07/01/2023	
36224S-YB-2	GOVERNMENT NATIONAL MORT-POOL #337406			4	1	225	100.7385	224	222	223				7.500	7.217	MON	1	16	10/25/1995	05/01/2023	
36224T-VN-7	GOVERNMENT NATIONAL MORT-POOL #338221			4	1	8	100.1019	6	6	7				7.500	1.355	MON		1	01/01/2013	11/01/2022	
36224T-WQ-9	GOVERNMENT NATIONAL MORT-POOL #338255			4	1	1,789	100.7368	1,770	1,757	1,768		(1)		7.500	7.077	MON	11	123	11/02/1995	11/01/2022	
36224T-Z6-0	GOVERNMENT NATIONAL MORT-POOL #338365			4	1	4,173	100.8239	4,163	4,129	4,144		(4)		8.000	7.750	MON	28	323	11/30/1992	12/01/2022	
36224U-AX-5	GOVERNMENT NATIONAL MORT-POOL #338522			4	1	328	103.9722	293	282	304		(5)		7.500	2.398	MON	2	21	01/01/2013	12/01/2022	
36224U-FW-2	GOVERNMENT NATIONAL MORT-POOL #338681			4	1	5,043	100.1081	4,683	4,678	4,876		(25)		7.500	4.753	MON	29	332	01/01/2013	01/01/2023	
36224U-T6-4	GOVERNMENT NATIONAL MORT-POOL #339073			4	1	1,068	100.1136	1,061	1,060	1,063		(1)		7.500	7.261	MON	7	77	01/01/2013	11/01/2022	
36224U-ZX-8	GOVERNMENT NATIONAL MORT-POOL #339258			4	1	96	99.8393	94	96	96				7.500	6.558	MON	1	(7)	10/25/1995	06/01/2023	
36224V-C8-6	GOVERNMENT NATIONAL MORT-POOL #339495			4	1	2,739	104.2848	2,433	2,333	2,567		(20)		7.500	1.624	MON	15	164	01/01/2013	05/01/2023	
36224V-DA-0	GOVERNMENT NATIONAL MORT-POOL #339497			4	1	5,175	104.1610	4,598	4,414	4,760		(90)		7.500	2.844	MON	28	325	01/01/2013	05/01/2023	
36224W-AC-7	GOVERNMENT NATIONAL MORT-POOL #340303			4	1	2,657	100.1179	2,624	2,621	2,632		(3)		7.500	7.210	MON	16	191	10/25/1995	02/01/2023	
36224W-DK-6	GOVERNMENT NATIONAL MORT-POOL #340406			4	1	1,220	100.4124	1,203	1,198	1,206		(2)		7.500	7.156	MON	7	88	11/02/1995	08/01/2024	
36224W-FM-7	GOVERNMENT NATIONAL MORT-POOL #340792			4	1	7,621	100.9095	6,555	6,496	7,256		(84)		7.500	0.745	MON	41	460	01/01/2013	05/01/2023	
36224W-SJ-3	GOVERNMENT NATIONAL MORT-POOL #340821			4	1	1,033	102.3545	1,039	1,015	1,022				7.500	7.049	MON	6	71	11/02/1995	06/01/2023	
36224W-V4-2	GOVERNMENT NATIONAL MORT-POOL #340935			4	1	24	100.0487	23	24	24				7.000	6.133	MON	3	3	09/24/1998	05/01/2023	
36224X-4A-6	GOVERNMENT NATIONAL MORT-POOL #342017			4	1	2,088	100.1160	1,846	1,844	1,963		(24)		7.500	3.581	MON	12	134	01/01/2013	04/01/2023	

E10.19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36224X-RL-7	GOVERNMENT NATIONAL MORT-POOL #341691		4		1	10,486	100.5718	10,392	10,333	10,412		9			7.000	6.502	MON	60	700	02/24/1993	02/01/2023
36224X-VF-5	GOVERNMENT NATIONAL MORT-POOL #341814		4		1	7,961	107.6929	8,496	7,889	7,915		(5)			6.500	6.318	MON	43	504	02/03/1999	11/01/2023
36224X-ZT-1	GOVERNMENT NATIONAL MORT-POOL #341954		4		1	643	100.1121	627	627	636		(1)			7.500	6.559	MON	4	44	01/01/2013	02/01/2023
36224Y-56-0	GOVERNMENT NATIONAL MORT-POOL #342947		4		1	2,964	100.1222	2,959	2,955	2,958		(1)			7.500	7.434	MON	18	218	01/01/2013	01/01/2023
36224Y-JN-0	GOVERNMENT NATIONAL MORT-POOL #342369		4		1	843	100.8413	800	793	816		(5)			7.500	5.641	MON	5	58	01/01/2013	01/01/2023
36224Y-H4-8	GOVERNMENT NATIONAL MORT-POOL #342479		4		1	77	100.1214	76	76	76					7.500	7.152	MON	6	6	11/02/1995	11/01/2022
36224Y-QD-4	GOVERNMENT NATIONAL MORT-POOL #342552		4		1	57	103.7589	51	49	53		(1)			7.500	2.653	MON	4	4	01/01/2013	03/01/2023
36225A-2B-5	GOVERNMENT NATIONAL MORT-POOL #780770		4		1	1,113	108.8443	1,171	1,075	1,104					6.000	5.156	MON	5	63	02/03/2003	04/01/2028
36225A-2C-3	GOVERNMENT NATIONAL MORT-POOL #780771		4		1	44,726	107.2843	49,246	45,903	45,267		69			6.000	6.831	MON	230	2,668	05/28/1998	05/01/2024
36225A-2E-9	GOVERNMENT NATIONAL MORT-POOL #780773		4		1	19,268	109.7474	20,826	18,977	19,157		(11)			7.000	6.649	MON	111	1,305	05/18/2001	04/01/2028
36225A-2J-8	GOVERNMENT NATIONAL MORT-POOL #780777		4		1	7,093	111.4480	7,709	6,917	7,031		(7)			7.000	6.399	MON	40	476	09/24/1998	04/01/2028
36225A-5B-2	GOVERNMENT NATIONAL MORT-POOL #780842		4		1	15,068	102.7697	15,043	14,638	14,877		(33)			8.500	7.879	MON	104	1,234	12/19/2000	08/01/2028
36225A-5S-5	GOVERNMENT NATIONAL MORT-POOL #780857		4		1	780	100.0956	744	744	749		(3)			8.300	6.517	MON	5	44	04/26/1999	04/01/2020
36225A-6N-5	GOVERNMENT NATIONAL MORT-POOL #780877		4		1	252,202	113.9624	281,048	246,615	250,322		(288)			7.500	6.947	MON	1,541	18,173	01/17/2001	10/01/2028
36225A-7D-6	GOVERNMENT NATIONAL MORT-POOL #780892		4		1	33,581	109.9550	36,580	33,269	33,463		(6)			6.500	6.303	MON	180	2,128	10/22/1998	11/01/2028
36225A-8A-7	GOVERNMENT NATIONAL MORT-POOL #780033		4		1	2,936	107.6929	3,133	2,909	2,922		(1)			6.500	6.277	MON	16	183	02/03/1999	07/01/2024
36225A-C6-5	GOVERNMENT NATIONAL MORT-POOL #780093		4		1	640	107.6929	716	665	651		1			6.500	7.621	MON	4	41	09/22/1999	07/01/2024
36225A-DG-2	GOVERNMENT NATIONAL MORT-POOL #780103		4		1	29	100.0852	27	27	31		1			11.000	4.226	MON	4	1	06/08/2000	02/01/2025
36225A-DS-6	GOVERNMENT NATIONAL MORT-POOL #780113		4		1	5,791	107.7990	6,172	5,726	5,758		(3)			7.000	6.716	MON	33	389	05/18/2001	10/01/2024
36225A-EA-4	GOVERNMENT NATIONAL MORT-POOL #780129		4		1	5,408	106.4991	5,694	5,347	5,378		(3)			7.000	6.712	MON	31	363	05/18/2001	11/01/2024
36225A-FF-2	GOVERNMENT NATIONAL MORT-POOL #780166		4		1	234	106.4889	248	233	233					7.500	7.452	MON	1	17	11/18/1999	06/01/2025
36225A-GN-4	GOVERNMENT NATIONAL MORT-POOL #780205		4		1	10,244	100.1846	9,930	9,912	10,026		(36)			8.500	7.614	MON	70	822	10/23/2000	04/01/2023
36225A-KZ-2	GOVERNMENT NATIONAL MORT-POOL #780312		4		1	8,202	107.2843	9,470	8,827	8,408		15			6.000	7.966	MON	44	516	10/18/1999	01/01/2026
36225A-HX-5	GOVERNMENT NATIONAL MORT-POOL #780374		4		1	1,349	105.8477	1,396	1,318	1,332		(3)			7.500	6.875	MON	8	96	01/29/2001	12/01/2023
36225A-NF-3	GOVERNMENT NATIONAL MORT-POOL #780390		4		1	5,670	100.1846	5,549	5,539	5,576		(17)			8.500	7.751	MON	39	451	07/25/2000	12/01/2022
36225A-S6-8	GOVERNMENT NATIONAL MORT-POOL #780541		4		1	15,212	107.2843	16,384	15,271	15,226		3			6.000	6.112	MON	76	901	05/02/2002	07/01/2026
36225A-TR-1	GOVERNMENT NATIONAL MORT-POOL #780560		4		1	7,988	107.6929	8,942	8,303	8,137		21			6.500	7.656	MON	45	524	09/22/1999	05/01/2024
36225A-TT-7	GOVERNMENT NATIONAL MORT-POOL #780562		4		1	19,560	108.9225	20,663	18,970	19,315		(51)			8.500	7.757	MON	134	1,597	12/08/2000	05/01/2027
36225A-TV-2	GOVERNMENT NATIONAL MORT-POOL #780564		4		1	2,970	109.7536	3,162	2,881	2,931		(6)			8.500	7.783	MON	20	242	12/08/2000	05/01/2027
36225A-UH-1	GOVERNMENT NATIONAL MORT-POOL #780584		4		1	5,338	110.3008	5,804	5,262	5,308		(3)			7.000	6.657	MON	31	361	02/02/2001	06/01/2027
36225A-IL-0	GOVERNMENT NATIONAL MORT-POOL #780651		4		1	124	112.0021	134	120	123					7.000	6.124	MON	1	9	11/17/2008	10/01/2027
36225A-IN-6	GOVERNMENT NATIONAL MORT-POOL #780653		4		1	307	109.2757	332	304	306					6.500	6.268	MON	2	19	09/22/1998	10/01/2027
36225A-Y5-3	GOVERNMENT NATIONAL MORT-POOL #780732		4		1	4,723	111.2124	5,136	4,618	4,684		(5)			7.000	6.468	MON	27	318	09/23/1998	03/01/2028
36225A-YN-4	GOVERNMENT NATIONAL MORT-POOL #780717		4		1	8,834	111.9285	9,777	8,735	8,795		(6)			7.000	6.745	MON	51	604	05/18/2001	02/01/2028
36225A-ZA-1	GOVERNMENT NATIONAL MORT-POOL #780737		4		1	17,168	109.2262	18,855	17,262	17,192		2			7.500	7.657	MON	108	1,262	04/13/2000	03/01/2028
36225B-B3-1	GOVERNMENT NATIONAL MORT-POOL #780958		4		1	30,789	108.6959	32,345	29,757	30,486		13			6.000	5.252	MON	149	1,744	02/03/2003	01/01/2029
36225B-BR-8	GOVERNMENT NATIONAL MORT-POOL #780948		4		1	210,091	107.6929	226,997	210,782	210,428		91			6.500	6.643	MON	1,142	13,260	01/23/2001	12/01/2023
36225B-CJ-5	GOVERNMENT NATIONAL MORT-POOL #780973		4		1	129	100.0931	126	125	126					8.250	7.059	MON	1	6	09/16/1999	05/01/2020
36225B-CN-6	GOVERNMENT NATIONAL MORT-POOL #780977		4		1	93,309	113.2740	103,243	91,144	92,602		(75)			7.500	6.918	MON	570	6,703	01/29/2001	12/01/2028
36225B-DJ-4	GOVERNMENT NATIONAL MORT-POOL #781005		4		1	8	100.2254	8	8	8					10.000	6.378	MON		(14)	07/17/2000	03/01/2025
36225B-EU-8	GOVERNMENT NATIONAL MORT-POOL #781047		4		1	6,314	108.6567	6,631	6,103	6,260		2			6.000	5.235	MON	31	358	02/03/2003	06/01/2029
36225B-HZ-4	GOVERNMENT NATIONAL MORT-POOL #781148		4		1	11,310	108.7911	11,891	10,931	11,223		2			6.000	5.208	MON	55	643	02/03/2003	07/01/2029
36225B-KD-9	GOVERNMENT NATIONAL MORT-POOL #781192		4		1	77,394	102.6037	79,253	77,242	77,236		2			7.730	7.739	MON	672	5,690	07/21/2000	02/01/2022
36225B-KY-5	GOVERNMENT NATIONAL MORT-POOL #781210		4		1	2,326	109.9276	2,497	2,272	2,312		(1)			6.500	5.933	MON	12	145	11/13/2001	09/01/2029
36225B-NC-8	GOVERNMENT NATIONAL MORT-POOL #781287		4		1	141,321	113.4322	133,520	117,709	135,958		(943)			7.000	2.635	MON	687	8,122	01/01/2013	05/01/2031
36225B-P6-9	GOVERNMENT NATIONAL MORT-POOL #781345		4		1	1,900	108.4675	1,991	1,888	1,888		2			6.000	5.254	MON	9	107	02/03/2003	10/01/2031
36225B-PM-4	GOVERNMENT NATIONAL MORT-POOL #781328		4		1	87,014	115.1003	83,459	72,510	83,972		(548)			7.000	2.616	MON	423	5,000	01/01/2013	09/01/2031
36225B-PP-7	GOVERNMENT NATIONAL MORT-POOL #781330		4		1	8,798	108.6719	9,240	8,503	8,753		13			6.000	5.223	MON	43	500	02/03/2003	09/01/2031
36225B-PV-4	GOVERNMENT NATIONAL MORT-POOL #781336		4		1	1,122	108.2436	1,174	1,084	1,117		2			6.000	5.213	MON	5	63	02/03/2003	10/01/2031
36225B-Q6-8	GOVERNMENT NATIONAL MORT-POOL #781377		4		1	9,534	108.7490	10,021	9,214	9,474		7			6.000	5.171	MON	46	542	02/03/2003	09/01/2029
36225B-TW-8	GOVERNMENT NATIONAL MORT-POOL #781465		4		1	6,534	108.5232	6,852	6,313	6,508		13			6.000	5.214	MON	32	368	02/03/2003	07/01/2032
36225B-UN-6	GOVERNMENT NATIONAL MORT-POOL #781489		4		1	8,425	108.8086	8,857	8,140	8,369					6.000	5.283	MON	41	482	02/03/2003	08/01/2032
36225B-VU-9	GOVERNMENT NATIONAL MORT-POOL #781527		4		1	481	108.8284	506	465	478					6.000	5.280	MON	2	28	02/03/2003	11/01/2032
36225C-A7-1	GOVERNMENT NATIONAL MORT-POOL #80029 ARM		4		1	14,937	102.7686	15,421	15,006	14,505		293			3.375	4.879	MON	42	462	02/26/1997	01/01/2027
36225C-A8-9	GOVERNMENT NATIONAL MORT-POOL #80030 ARM		4		1	194,786	102.7735	200,288	194,883	188,984		3,457			3.375	4.737	MON	758	5,990	03/24/1997	01/01/2027
36225C-AM-8	GOVERNMENT NATIONAL MORT-POOL #80011 ARM		4		1	41,877	102.9388	42,894	41,669	40,591		646			3.125	4.408	MON	109	1,287	11/19/1996	11/01/2026
36225C-AY-2	GOVERNMENT NATIONAL MORT-POOL #80022 ARM		4		1	93,057	102.9670	95,341	92,594	90,185		1,429			3.125	4.392	MON	241	2,860	11/19/1996	12/01/2026

E10.20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36225C-BN-5	GOVERNMENT NATIONAL MORT-POOL #80044 ARM			4	1	26,881	102.7958	27,757	27,003	26,122		514			3.375	4.836	MON	76	836	02/24/1997	02/01/2027
36225C-BP-0	GOVERNMENT NATIONAL MORT-POOL #80045 ARM			4	1	66,497	102.7974	68,209	66,353	64,275		1,211			3.375	4.776	MON	187	2,043	03/12/1997	02/01/2027
36225C-BW-5	GOVERNMENT NATIONAL MORT-POOL #80052 ARM			4	1	66,673	102.8215	68,964	67,072	64,769		1,333			3.375	4.906	MON	189	2,066	02/26/1997	03/01/2027
36225C-BX-3	GOVERNMENT NATIONAL MORT-POOL #80053 ARM			4	1	89,793	102.8052	92,215	89,698	86,855		1,648			3.375	4.785	MON	252	2,772	03/24/1997	03/01/2027
36225C-D4-5	GOVERNMENT NATIONAL MORT-POOL #80122 ARM			4	1	138,703	103.1358	141,988	137,671	133,914		2,088			3.125	4.382	MON	677	4,251	11/18/1997	10/01/2027
36225C-DL-7	GOVERNMENT NATIONAL MORT-POOL #80106 ARM			4	1	208,653	103.1689	214,002	207,429	201,592		3,691			3.750	5.306	MON	1,589	8,346	07/15/1997	08/01/2027
36225C-ER-3	GOVERNMENT NATIONAL MORT-POOL #80143 ARM			4	1	67,159	103.1728	68,838	66,721	64,900		1,043			3.125	4.445	MON	174	2,064	11/20/1997	12/01/2027
36225E-WY-4	GOVERNMENT NATIONAL MORT-POOL #82462			4	1	73,162	103.5264	71,895	69,446	71,041		(721)			3.375	2.464	MON	195	2,135	12/02/2013	01/01/2040
36225E-XS-6	GOVERNMENT NATIONAL MORT-POOL #82488			4	1	82,568	103.5099	82,768	79,962	81,081		(499)			3.375	2.830	MON	225	2,448	12/02/2013	03/01/2040
36290Q-AA-3	GOVERNMENT NATIONAL MORT-POOL #613901			4	1	37,195	109.5584	39,707	36,243	36,909		(30)			5.500	5.077	MON	166	1,985	01/16/2004	10/01/2033
36290R-RD-7	GOVERNMENT NATIONAL MORT-POOL #615284			4	1	15,733	108.1780	16,610	15,354	15,682		16			5.500	5.005	MON	70	828	01/14/2004	07/01/2033
36290R-UA-9	GOVERNMENT NATIONAL MORT-POOL #615377			4	1	141,031	108.9803	149,765	137,424	140,607		4			5.500	4.964	MON	630	7,487	01/16/2004	07/01/2033
36290R-ZT-3	GOVERNMENT NATIONAL MORT-POOL #615554			4	1	3,224	107.6423	3,381	3,141	3,210		3			5.500	4.998	MON	14	169	01/16/2004	09/01/2033
36290X-KD-1	GOVERNMENT NATIONAL MORT-POOL #620492			4	1	8,035	107.4662	8,427	7,841	7,979		(5)			5.500	5.090	MON	36	429	01/14/2004	06/01/2033
36290Y-ZF-4	GOVERNMENT NATIONAL MORT-POOL #621874			4	1	44,010	106.4389	45,715	42,949	43,695		(37)			5.500	5.104	MON	197	2,355	01/14/2004	02/01/2034
36290Y-J9-0	GOVERNMENT NATIONAL MORT-POOL #621388			4	1	109,829	108.1812	115,952	107,183	109,241		8			5.500	5.062	MON	491	5,837	01/14/2004	01/01/2034
36290Y-KE-7	GOVERNMENT NATIONAL MORT-POOL #621393			4	1	114,230	106.4270	118,642	111,478	114,394		(74)			5.500	4.908	MON	511	6,103	01/14/2004	02/01/2034
36290Y-WU-8	GOVERNMENT NATIONAL MORT-POOL #621759			4	1	20,093	108.1971	21,216	19,609	20,063		9			5.500	4.972	MON	90	1,066	01/14/2004	12/01/2033
36290Y-YP-8	GOVERNMENT NATIONAL MORT-POOL #621786			4	1	456,687	108.1294	481,182	445,005	455,151		(75)			5.500	4.978	MON	2,040	24,276	01/16/2004	11/01/2033
36290Y-YJ-1	GOVERNMENT NATIONAL MORT-POOL #621813			4	1	3,094	106.1800	3,206	3,019	3,102		28			5.500	4.875	MON	14	152	01/14/2004	11/01/2033
36291A-PC-7	GOVERNMENT NATIONAL MORT-POOL #622419			4	1	144,059	106.4392	149,641	140,588	143,683		(94)			5.500	5.000	MON	644	7,697	01/14/2004	02/01/2034
36291B-C2-1	GOVERNMENT NATIONAL MORT-POOL #622989			4	1	2,249	108.0561	2,372	2,195	2,240		2			5.500	5.033	MON	10	119	01/14/2004	11/01/2033
36291B-D5-3	GOVERNMENT NATIONAL MORT-POOL #623024			4	1	14,461	106.9876	15,099	14,113	14,386		16			5.500	5.059	MON	65	763	01/14/2004	01/01/2034
36291B-DV-6	GOVERNMENT NATIONAL MORT-POOL #623016			4	1	48,476	106.6593	51,405	47,308	48,211		8			5.500	5.064	MON	217	2,590	01/14/2004	01/01/2034
36291B-RH-2	GOVERNMENT NATIONAL MORT-POOL #623388			4	1	268,478	107.5617	281,822	262,009	268,338		707			5.500	4.952	MON	1,201	14,027	01/14/2004	02/01/2034
36291D-NL-3	GOVERNMENT NATIONAL MORT-POOL #625095			4	1	110,633	106.9818	115,506	107,968	110,196		(86)			5.500	5.031	MON	495	5,913	01/14/2004	02/01/2034
36291E-6N-6	GOVERNMENT NATIONAL MORT-POOL #626477			4	1	249,611	108.1356	263,415	243,597	248,763		253			5.500	5.018	MON	1,116	13,174	01/14/2004	02/01/2034
36291E-B3-4	GOVERNMENT NATIONAL MORT-POOL #625658			4	1	8,386	108.0542	8,843	8,184	8,340		(6)			5.500	5.065	MON	38	448	01/14/2004	01/01/2034
36291E-CM-1	GOVERNMENT NATIONAL MORT-POOL #625676			4	1	24,285	107.0031	25,359	23,700	24,172		(17)			5.500	5.045	MON	109	1,297	01/14/2004	01/01/2034
36291E-K8-3	GOVERNMENT NATIONAL MORT-POOL #625919			4	1	9,969	106.1800	10,330	9,728	9,902		(6)			5.500	5.094	MON	45	532	01/14/2004	02/01/2034
36291E-MF-5	GOVERNMENT NATIONAL MORT-POOL #625958			4	1	72,584	106.4551	75,408	70,835	72,241		105			5.500	5.047	MON	325	3,818	01/14/2004	01/01/2034
36291E-MG-3	GOVERNMENT NATIONAL MORT-POOL #625959			4	1	4,646	106.1800	4,814	4,534	4,707		(2)			5.500	4.642	MON	21	249	01/14/2004	01/01/2034
36291E-NL-2	GOVERNMENT NATIONAL MORT-POOL #625963			4	1	46,486	106.1800	48,170	45,366	46,271		(39)			5.500	5.045	MON	208	2,486	01/14/2004	01/01/2034
36291F-EZ-7	GOVERNMENT NATIONAL MORT-POOL #626652			4	1	71,737	106.5045	74,562	70,008	71,396		114			5.500	5.048	MON	321	3,770	01/14/2004	01/01/2034
36291F-IA-3	GOVERNMENT NATIONAL MORT-POOL #626853			4	1	42,080	106.1800	43,604	41,066	41,785		(34)			5.500	5.100	MON	188	2,250	01/14/2004	01/01/2034
36291F-MD-7	GOVERNMENT NATIONAL MORT-POOL #626856			4	1	124,335	106.2281	128,897	121,340	124,359		270			5.500	4.936	MON	556	6,515	01/14/2004	02/01/2034
36291G-MC-7	GOVERNMENT NATIONAL MORT-POOL #627755			4	1	65,104	106.1800	67,462	64,655	64,655		(41)			5.500	5.098	MON	291	3,478	01/14/2004	02/01/2034
36291G-PK-4	GOVERNMENT NATIONAL MORT-POOL #627890			4	1	48,954	107.0227	51,130	47,775	48,744		92			5.500	5.037	MON	219	2,570	01/14/2004	01/01/2034
36292F-T6-4	GOVERNMENT NATIONAL MORT-POOL #647773			4	1	702,941	105.9878	750,189	707,807	703,436		(602)			5.000	5.138	MON	2,949	34,526	02/09/2006	09/01/2035
36295G-N2-4	GOVERNMENT NATIONAL MORT-POOL #670109			4	1	18,724	107.2843	20,069	18,707	18,720		2			6.000	5.981	MON	94	1,084	08/29/2011	07/01/2037
36295H-5N-6	GOVERNMENT NATIONAL MORT-POOL #671453			4	1	3,778	107.2843	4,049	3,776	3,776					6.000	5.984	MON	19	225	08/29/2011	07/01/2037
36295N-K3-0	GOVERNMENT NATIONAL MORT-POOL #675414			4	1	281,793	105.2837	285,700	271,362	285,278		3,222			5.000	3.974	MON	1,131	12,930	04/28/2009	09/01/2035
38373R-C9-8	GOVERNMENT NATIONAL MORT-SERIES 2001-49			4	1	133,847	113.0916	143,992	126,528	129,389		(205)			7.000	6.249	MON	1,549	8,812	01/28/2003	10/01/2031
38373V-SR-7	GOVERNMENT NATIONAL MORT-SERIES 2002-76C			6	1	2,480	0.2179	46	20,925	1,796				5.245	1.064	MON	551	8,510	08/29/2011	12/16/2026	
38373W-4S-4	GOVERNMENT NATIONAL MORT-SERIES 2002-33			4	1	503,832	111.5224	518,560	464,983	482,173		(479)			6.500	5.392	MON	4,430	30,433	05/20/2003	05/01/2032
38373W-C6-3	GOVERNMENT NATIONAL MORT-SERIES 2002-29			4	1	377,039	111.9275	390,557	348,937	362,161		22			6.500	5.357	MON	6,174	22,718	05/20/2003	05/01/2032
38373X-VS-2	GOVERNMENT NATIONAL MORT-SERIES 2002-49			4	1	1,379,547	106.7207	1,371,174	1,284,824	1,317,833		(1,607)			6.500	5.729	MON	12,483	83,760	05/20/2003	07/01/2032
38373Y-GR-9	GOVERNMENT NATIONAL MORT-SERIES 2002-78			6	1	12,149	7.1844	7,300	101,611	10,519					5.195	8.285	MON	1,815	556	08/29/2011	11/16/2032
38374L-G8-8	GOVERNMENT NATIONAL MORT-SERIES 2005-63			4	1	2,409,134	109.5224	2,732,026	2,494,492	2,463,854		(2,078)			5.000	5.268	MON	45,535	126,562	09/09/2005	08/01/2035
38374N-LX-3	GOVERNMENT NATIONAL MORT-SERIES 2006-47			6	1	56,564	15.3695	97,528	634,553	51,683											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22	
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date	
0299999. Subtotal - Bonds - U.S. Governments - Residential Mortgage-Backed Securities						88,178,986	XXX	87,454,741	83,511,428	87,664,535		(369,780)			XXX	XXX	XXX		361,286	4,211,084	XXX	XXX
38378B-4C-0	GOVERNMENT NATIONAL MORT-SERIES 2013-2 C			4,5	1	401,175	98.8091	390,780	395,490	400,555		(451)			2.678	2.530	MON	883	10,484	06/25/2014	05/01/2050	
38378B-4G-1	GOVERNMENT NATIONAL MORT-SERIES 2013-7 C			4,5	1	456,716	95.9799	435,971	454,232	456,316		(119)			2.226	2.242	MON	843	10,003	06/25/2014	03/01/2047	
38378B-G3-7	GOVERNMENT NATIONAL MORT-SERIES 2012-109			4,5	1	273,513	99.0298	261,739	264,304	272,432		(718)			2.915	2.590	MON	642	7,578	06/25/2014	09/01/2044	
38378B-SU-4	GOVERNMENT NATIONAL MORT-GNR 2012-46 C			4,5	1	779,553	98.8481	756,188	765,000	784,199		(758)			3.176	3.000	MON	2,025	24,296	02/10/2017	05/01/2050	
38378K-5X-3	GOVERNMENT NATIONAL MORT-GNR 2013-161 B			4,5	1	550,184	96.5148	506,703	525,000	545,433		(2,209)			3.145	2.678	MON	1,376	16,515	10/19/2016	11/01/2054	
38378K-HC-6	GNMA-REMIC SER 2013-55 CL A			4	1	272,912	98.0800	267,171	272,402	272,764		(89)			1.317	1.282	MON	299	3,549	06/25/2014	05/01/2034	
38378N-2R-3	GOVERNMENT NATIONAL MORT-SERIES 2014-67			4	1	284,528	97.7185	277,041	283,509	284,763		(142)			2.150	2.090	MON	508	6,062	04/19/2016	05/01/2039	
38378N-HS-5	Government National Mort-SERIES 13-175 C			4,5	1	477,656	98.1380	471,062	480,000	477,846		190			3.455	3.508	MON	1,382	13,812	02/07/2018	06/01/2050	
38378N-TZ-6	GNMA-REMIC SER 2014-14 CL AE			4	1	264,959	99.1927	256,909	259,000	264,705		(549)			2.750	2.480	MON	594	7,007	06/25/2014	12/01/2040	
38379K-GL-6	GOVERNMENT NATIONAL MORT-GNR 2015-32 HG			4,5	1	651,166	91.6046	587,185	641,000	648,958		(972)			3.000	2.811	MON	1,603	19,230	07/19/2016	09/01/2049	
38379K-LY-2	Government National Mort-SERIES 15-73 CL			4,5	1	615,367	91.4796	594,617	650,000	618,189		2,821			2.700	3.338	MON	1,463	16,087	01/23/2018	10/01/2055	
38379R-AN-3	GOVERNMENT NATIONAL MORTGAGE ASSOC REMIC			4	1	553,617	98.1781	539,010	549,013	559,518		(667)			2.600	2.430	MON	1,795	14,075	08/09/2017	12/16/2049	
0399999. Subtotal - Bonds - U.S. Governments - Commercial Mortgage-Backed Securities						5,581,346	XXX	5,344,376	5,538,950	5,585,678		(3,663)			XXX	XXX	XXX		13,413	148,698	XXX	XXX
83162C-PR-8	SMALL BUSINESS ADMIN SER 2005-20G PARTN			4	1	244,786	102.9835	233,483	226,719	236,270		(3,355)			4.750	3.105	JJ	5,385	9,138	06/27/2014	07/01/2025	
83162C-SX-2	SMALL BUSINESS ADMIN SER 2009-20K PARTN			4	1	435,588	104.3298	421,151	403,672	426,478		(4,033)			4.090	2.905	MON	21,747	19,117	06/25/2014	11/01/2029	
83162C-TE-3	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20D			4	1	1,226,087	105.4640	1,160,632	1,100,500	1,197,486		(10,539)			4.360	0.967	AO	41,757	47,617	01/01/2013	04/01/2030	
83162C-TG-8	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20E			4	1	3,143,554	104.7344	2,986,353	2,851,359	3,097,840		(35,044)			4.110	0.886	MON	88,037	127,854	01/01/2013	05/01/2030	
83162C-TH-6	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20F			4	1	3,539,806	103.7169	3,367,111	3,246,446	3,446,301		(32,497)			3.880	1.195	JD	10,497	197,930	01/01/2013	06/01/2030	
83162C-TK-9	SMALL BUSINESS ADMIN SER 2010-20G PARTN			4	1	256,579	103.5541	250,954	242,341	252,004		(1,644)			3.800	2.987	JJ	4,604	8,793	06/25/2014	07/01/2030	
83162C-TL-7	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20H			4	1	2,382,454	102.9041	2,265,010	2,201,088	2,332,044		(16,043)			3.520	1.102	FA	32,283	74,393	01/01/2013	08/01/2030	
83162C-TN-3	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20I			4	1	7,166,525	101.6516	6,757,452	6,647,661	6,937,566		(104,356)			3.210	1.112	MS	71,130	209,232	01/01/2013	09/01/2030	
83162C-UA-9	SMALL BUSINESS ADMINISTRATION-SERIES 2011-20E			4	1	595,709	103.6538	555,750	536,159	595,083		(5,750)			3.790	0.545	MON	26,861	25,702	01/01/2013	05/01/2031	
83162C-UD-3	SMALL BUSINESS ADMINISTRATION-SERIES 2011-20G			4	1	2,212,978	103.4115	2,079,263	2,010,669	2,156,184		(18,839)			3.740	0.851	JJ	37,600	69,219	01/01/2013	07/01/2031	
83162C-UE-1	SMALL BUSINESS ADMIN SER 2011-20H PARTN			4	1	328,337	102.4900	328,138	320,166	326,595		(944)			3.290	2.922	FA	4,389	10,272	03/07/2018	08/01/2031	
83162C-UK-7	SMALL BUSINESS ADMIN SER 2011-20K PARTN			4	1	451,914	101.1613	450,336	445,167	450,270		(762)			2.870	2.665	MON	16,514	14,724	07/18/2014	11/01/2031	
83162C-US-0	SMALL BUSINESS ADMIN SER 2012-20D PARTN			4	1	2,774,602	100.3074	2,676,003	2,667,803	2,742,745		(6,053)			2.670	1.693	AO	54,781	74,260	06/25/2014	04/01/2032	
83162C-UV-3	SBA PARTN CTF SER 2012-20F			4	1	288,779	98.3913	288,531	293,249	299,955		488			2.420	2.619	JD	591	7,428	01/25/2016	06/01/2032	
83162C-VN-0	SMALL BUSINESS ADMINISTRATION-SERIES 201			4	1	499,041	97.3203	507,888	521,873	503,943		2,399			2.070	2.629	MON	14,132	12,803	07/01/2014	05/01/2033	
83162C-VP-5	SMALL BUSINESS ADMIN PARTN CTF SER 2013-			4	1	580,498	99.2238	583,691	588,258	582,263		1,086			2.450	2.616	JD	29,925	18,923	07/21/2017	06/01/2033	
83162C-VR-1	SMALL BUSINESS ADMIN 2013-20G PARTN CTF			4	1	601,962	102.1903	599,869	587,011	598,079		(1,435)			3.150	2.847	JJ	9,245	18,625	06/27/2014	07/01/2033	
83162C-VS-9	SMALL BUSINESS ADMIN-PARTN CTF SER 2013-			4	1	677,261	102.2009	675,548	661,000	673,509		(1,601)			3.160	2.858	FA	8,703	21,307	07/13/2017	08/01/2033	
83162C-VU-4	SMALL BUSINESS ADMINISTRATION-SERIES 201			4	1	637,605	103.2787	625,477	605,621	630,080		(3,032)			3.620	2.987	MS	7,308	22,768	06/24/2014	09/01/2033	
83162C-VX-8	SMALL BUSINESS ADMINISTRATION-SBAP 2013-20K 1			4	1	337,723	102.0761	332,056	325,303	335,320		(1,223)			3.380	2.906	MON	14,000	12,823	03/06/2015	11/01/2033	
83162C-WA-7	SMALL BUSINESS ADMIN PARTN CTF SER 2014-			4	1	860,689	102.0606	843,800	826,764	852,616		(3,166)			3.460	2.975	JJ	14,303	28,946	01/04/2017	01/01/2034	
83162C-WD-1	SMALL BUSINESS ADMINISTRATION-SERIES 2014-20C			4	1	557,283	101.1330	548,784	542,636	553,877		(1,358)			3.210	2.894	MS	5,806	18,064	02/07/2017	03/01/2034	
83162C-WK-5	SMALL BUSINESS ADMIN PARTN CTF SER 2014-			4	1	649,691	99.4706	646,251	649,691	649,691					2.870	2.870	JJ	9,323	19,264	07/10/2014	07/01/2034	
83162C-XN-8	SMALL BUSINESS ADMINISTRATION-SERIES 2016-20A			4	1	687,807	97.7822	664,771	679,849	686,574		(727)			2.780	2.645	JJ	9,450	19,817	06/13/2017	01/01/2036	
83162C-XP-3	SBA SER 2016-20B PARTN CTF			4	1	438,114	95.3155	417,590	438,114	438,114					2.270	2.270	FA	4,144	10,097	02/11/2016	02/01/2036	
83162C-YH-0	SMALL BUSINESS ADMINISTRATION-SERIES 2017-20B			4	1	506,215	97.8139	495,148	506,215	506,215					2.820	2.832	FA	5,948	14,030	02/09/2017	02/01/2037	
83162C-ZC-0	Small Business Admin GTD Dev Partn CTF			4	1	385,499	98.0851	378,887	386,284	385,663		163			2.920	2.972	JJ	5,640	5,138	01/23/2018	01/01/2038	
83162C-ZH-9	SMALL BUSINESS ADMINISTRATION-SBAP 2018-20C 1			4	1	593,254	99.8556	593,799	594,658	593,361		106			3.200	3.256	MS	6,343	8,935	06/11/2018	03/01/2038	
83162C-ZJ-9	United States Small Busi-SBAP 2018-25A 1			4	1	658,000	101.8499	670,172	658,000	658,000					3.680	3.694	JJ	11,435		07/05/2018	07/01/2043	
83162C-ZV-8	United States Small Busi-SERIES 2018-25C			4	1	498,000	102.5749	510,823	498,000	498,000					3.650	3.666	MS	5,504		09/06/2018	09/01/2043	
0499999. Subtotal - Bonds - U.S. Governments - Other Loan-Backed and Structured Securities						34,216,340	XXX	32,914,721	32,262,276	33,622,126		(248,159)			XXX	XXX	XXX		577,385	1,127,219	XXX	XXX
0599999. Total - U.S. Government Bonds						5,315,447,402	XXX	6,193,428,881	6,348,360,553	5,854,233,643	197,917	58,274,827			XXX	XXX	XXX		66,916,498	142,604,274	XXX	XXX
110709-EC-2	BRITISH COLUMBIA PROV OF UNSECURED	A			1FE	329,445	150.4606	300,921	200,000	317,610		(5,008)			7.250	2.963	MS	4,833	14,500	08/02/2016	09/01/2036	
125094-AD-4	COP FINANCIAL SENIOR UNSECURED NOTE	A	1		1FE	16,626,647	101.4323	14,656,970	14,450,000	14,751,336		(328,684)			4.400	2.048	MON	63,580	635,800	01/01/2013	11/25/2019	
448814-CP-6	HYDRO-QUEBEC-DEBENTURE	A			1FE																	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
448814-DF-7	HYDRO-QUEBEC-DEBENTURE	A			1FE	5,775,971	153.7570	8,349,003	5,430,000	5,714,610	(20,039)				9.375	8.546	AO	107,469	509,063	08/02/2016	04/15/2030
448814-DX-8	HYDRO-QUEBEC-DEBENTURE	A			1FE	10,126,100	115.1405	11,514,051	10,000,000	10,029,720	(8,454)				8.400	8.285	JJ	387,333	840,000	07/08/1992	01/15/2022
448814-EJ-8	HYDRO-QUEBEC-NOTE	A			1FE	29,827,167	124.2132	31,053,312	25,000,000	27,940,341	(444,413)				8.050	5.546	JJ	972,708	2,012,500	04/22/2014	07/07/2024
651333-DM-5	PROVINCE OF NEWFOUNDLAND-DEBENTURE	A			1FE	5,088,500	109.1050	5,455,249	5,000,000	5,011,042	(7,457)				9.875	9.692	JD	41,146	493,750	06/07/1990	06/01/2020
669827-DF-1	NOVA SCOTIA PROVINCE-DEBENTURE	A			1FE	4,995,050	100.5188	5,025,939	5,000,000	4,999,189		464			9.500	9.510	FA	197,917	475,000	01/18/1989	02/01/2019
748148-PD-9	PROVINCE OF QUEBEC CANADA-DEBENTURE	A			1FE	469,681	119.0240	476,096	400,000	428,187	(4,666)				7.125	5.520	FA	11,242	28,500	04/16/2007	02/09/2024
748148-OR-7	PROVINCE OF QUEBEC-DEBENTURE	A			1FE	2,026,069	138.7557	1,900,953	1,370,000	1,925,686	(38,418)				7.500	3.028	MS	30,254	86,016	10/04/2018	09/15/2029
74815H-BZ-4	PROVINCE OF QUEBEC-UNSECURED	A			1FE	729,309	118.4360	651,398	550,000	687,634	(17,580)				6.350	2.475	JJ	14,649	34,925	08/02/2016	01/30/2026
74815H-CA-8	PROVINCE OF QUEBEC-UNSECURED	A	5		1FE	105,540	125.8012	94,351	75,000	101,490	(18)				7.485	2.143	MS	1,856	5,614	08/02/2016	03/02/2026
042207-AB-6	REPUBLIC OF ARMENIA-SENIOR UNSECURED	D			4FE	7,445,000	104.8280	7,337,960	7,000,000	7,367,111	(42,533)				7.150	6.123	MS	132,076	466,736	04/23/2018	03/26/2025
085209-AA-1	BERMUDA GOVT USD SR NT	D			1	25,000,000	106.9516	26,737,900	25,000,000	25,000,000					5.730	5.728	JD	107,438	1,432,500	12/04/2007	12/04/2022
085209-AD-6	GOVT OF BERMUDA-SENIOR UNSECURED	D	1		1FE	9,748,635	95.1170	9,273,908	9,750,000	9,749,782		3			3.717	3.717	JJ	157,043	362,408	10/11/2016	01/25/2027
085209-AF-1	Bermuda Government Inter-SENIOR UNSECURE	D	1		1FE	29,478,735	101.4843	30,140,837	29,700,000	29,479,196		461			4.750	4.844	FA	160,669		11/15/2018	02/15/2029
168863-BP-2	REPUBLIC OF CHILE-SR UNSECURED	D			1FE	387,368	91.5760	376,377	411,000	389,368		537			3.625	3.968	AO	2,525	14,899	01/20/2015	10/30/2042
168863-CA-4	REPUBLIC OF CHILE SR NT	D			1FE	5,042,435	96.5590	4,987,272	5,165,000	5,074,262		11,190			3.125	3.407	JJ	71,736	161,406	01/13/2016	01/21/2026
168863-CE-6	REPUBLIC OF CHILE-SENIOR UNSECURED	D			1FE	6,183,153	93.2500	5,774,973	6,193,000	6,183,368		182			3.860	3.860	JD	6,640	239,050	06/14/2017	06/21/2047
195325-BD-6	REPUBLIC OF COLOMBIA-SENIOR UNSECURED	D			2FE	3,020,000	116.5000	2,912,500	2,500,000	2,857,537	(56,432)				8.125	5.058	MN	124,132	203,125	12/17/2015	05/21/2024
195325-BM-6	REPUBLIC OF COLOMBIA-SENIOR UNSECURED BO	D	1		2FE	893,395	108.0000	783,000	725,000	782,959	(3,883)				6.125	4.601	JJ	20,106	39,625	10/04/2018	01/18/2041
195325-BN-4	REPUBLIC OF COLOMBIA-SENIOR UNSECURED NO	D	1		2FE	1,155,924	101.5000	1,020,075	1,005,000	1,053,378	(18,329)				4.375	2.403	JJ	20,641	43,969	04/17/2013	07/12/2021
195325-BR-5	REPUBLIC OF COLOMBIA-SENIOR UNSECURED NO	D	1		2FE	3,640,000	103.1000	4,124,000	4,000,000	3,655,667	(5,492)				5.625	6.312	FA	185,637	901,198	12/16/2015	02/26/2044
195325-BR-5	REPUBLIC OF COLOMBIA-SENIOR UNSECURED NO	D	1		2FE	27,373,623	103.1000	25,525,498	24,758,000	27,189,856	(48,629)				5.625	4.931	FA	1,149,002	660,459	10/04/2018	02/26/2044
195325-CU-7	REPUBLIC OF COLOMBIA-SR UNSECURED	D	1		2FE	5,000,000	95.2000	4,760,000	5,000,000	5,000,000					5.000	5.000	JD	11,111	235,930	03/06/2015	06/15/2045
195325-CU-7	REPUBLIC OF COLOMBIA-SR UNSECURED	D	1		2FE	30,119,771	95.2000	29,229,256	30,703,000	30,139,487		9,687			5.000	5.127	JD	68,229	1,510,075	10/04/2018	06/15/2045
219870-AC-8	CORPORACION FINANCIERA DE DESARROLLO SA	D	1		2FE	748,388	99.6250	747,188	750,000	749,806		338			3.250	3.297	JJ	11,240	24,375	07/08/2014	07/15/2019
219870-AD-6	CORP FINANCIERA DE DESAR-SENIOR UNSECURE	D	1		2FE	4,951,400	99.2500	4,962,500	5,000,000	4,965,546		4,364			4.750	4.874	JJ	109,514	237,500	07/07/2015	07/15/2025
25714P-AJ-7	DOMINICAN REPUBLIC-SENIOR UNSECURED	D	2		3FE	1,716,750	114.3750	1,601,250	1,400,000	1,654,551	(27,691)				8.625	5.554	AO	23,815	120,750	08/24/2016	04/20/2027
25714P-CV-8	DOMINICAN REPUBLIC-SR UNSECURED	D			3FE	4,000,000	99.1250	3,965,000	4,000,000	4,000,000					5.500	5.499	JJ	94,111	220,000	01/20/2015	01/27/2025
25714P-DJ-4	DOMINICAN REPUBLIC BOND	D			3FE	5,700,000	104.8750	5,977,875	5,700,000	5,700,000					6.875	6.873	JJ	165,458	391,875	01/22/2016	01/29/2026
283875-AH-5	EL SALVADOR GOVERNMENT I-SENIOR UNSECURE	D			4FE	2,897,050	101.2500	2,865,375	2,830,000	2,893,400	(2,639)				8.250	7.971	AO	52,532	233,475	08/22/2017	04/10/2032
283875-AK-8	REPUBLIC OF EL SALVADOR-SR UNSECURED	D			4FE	3,282,000	102.8750	3,086,250	3,000,000	3,167,437	(35,279)				7.750	6.174	JJ	217,646	232,500	06/29/2015	01/24/2023
283875-AS-1	REPUBLIC OF EL SALVADOR-UNSECURED NOTE	D			4FE	11,862,500	91.6000	10,992,000	12,000,000	11,893,533	(9,713)				6.375	6.517	JJ	346,375	765,000	07/14/2015	01/18/2027
283875-BW-1	EL SALVADOR GOVERNMENT I-SENIOR UNSECURE	D			4FE	1,866,150	104.3750	1,816,125	1,740,000	1,856,102	(7,354)				8.625	7.665	FA	51,276	150,075	08/23/2017	02/28/2029
28135L-AB-6	ABU DHABI GOVERNMENT INT-SENIOR UNSECURE	D			1FE	6,442,475	95.7500	6,223,750	6,500,000	6,443,347		998			4.125	4.177	AO	59,583	268,125	10/03/2017	10/11/2047
302154-BN-8	EXPORT-IMPORT BANK KOREA-SENIOR UNSECURE	D			1FE	218,443	96.6613	193,323	200,000	214,370	(1,715)				3.250	2.219	FA	2,510	6,500	08/02/2016	08/12/2026
302154-BT-5	EXPORT IMPORT BK KOREA-SR UNSECURED	D			1FE	9,538,785	95.3781	9,060,920	9,500,000	9,530,418	(4,644)				2.875	2.816	JJ	121,389	273,125	04/28/2016	01/21/2025
30216J-AC-9	Export-Import Bank of In-SENIOR UNSECURE	D			2FE	1,100,687	93.9825	1,104,294	1,175,000	1,102,119		1,432			3.875	4.722	FA	18,971		10/04/2018	02/01/2028
344593-AA-6	FONDO MIVIVIENDA SA-SENIOR UNSECURED	D	1		2FE	2,660,625	96.1510	2,644,153	2,750,000	2,693,502	12,477				3.500	4.051	JJ	40,372	96,250	04/06/2016	01/31/2023
37311P-AA-8	REPUBLIC OF GEORGIA-UNSECURED	D			3FE	3,221,250	104.8100	3,144,300	3,000,000	3,096,120	(38,762)				6.875	5.359	AO	45,260	176,077	07/20/2015	04/12/2021
421790-AC-0	HAZINE MUSTESARIL VARL SR UNSECURED 144A	D			3FE	3,000,000	90.6248	2,718,744	3,000,000	3,000,000					4.489	4.488	MN	13,467	134,670	11/18/2014	11/25/2024
421790-AD-8	HAZINE MUSTESARILGI VARL-SENIOR UNSECURE	D			3FE	10,000,000	96.5512	9,655,120	10,000,000	10,000,000					4.251	4.250	JD	27,159	425,100	06/01/2016	06/08/2021
438180-AF-8	HONDURAS GOVERNMENT-SR UNSECURED	D	2,5		3FE	1,899,000	104.9110	1,888,398	1,800,000	1,861,238	(12,401)				7.500	6.553	MS	39,750	135,000	09/28/2015	03/15/2024
445545-AD-8	HUNGARY-SENIOR UNSECURED NOTE	D			2FE	424,944	102.7574	395,616	385,000	391,912	(6,138)				6.250	4.520	JJ	10,160	24,063	01/01/2013	01/29/2020
445545-AF-3	HUNGARY-SR UNSECURED	D			2FE	7,632,519	139.9824	7,407,869	5,292,000	7,449,087	(52,175)				7.625	4.661	MS	103,121	386,136	10/04/2018	03/29/2041
445545-AJ-5	HUNGARY-SENIOR UNSECURED	D			2FE	42,156,000	108.0462	42,138,018	39,000,000	41,932,226	(223,774)				5.750	4.039	MN	242,938	948,750	12/13/2018	11/22/2023
445545-AL-0	HUNGARY-SENIOR UNSECURED NOTE	D			2FE	21,455,000	107.3000	21,406,000	20,000,000	21,326,857	(128,143)				5.375	3.957	MS	286,667	537,500	06/28/2018	03/25/2024
455780-AX-4	REPUBLIC OF INDONESIA-SENIOR UNSECURED B	D			2FE	5,537,500	115.7477	5,787,385	5,000,000	5,476,261	(18,609)				6.625	5.770	FA	123,299	331,250	05/05/2014	02/17/2037
455780-BK-1	REPUBLIC OF INDONESIA-UNSECURED NOTE	D			2FE	1,268,838	98.9927	1,178,013	1,190,000	1,220,521	(8,650)				3.750						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
46513Y-JJ-8	Israel Government Intern-SENIOR UNSECURE	D			1FE	7,927,840	97.6380	7,811,040	8,000,000	7,928,885		1,045			4.125	4.178	JJ	150,333	165,000	01/10/2018	01/17/2048
491798-AF-1	REPUBLIC OF KENYA-SENIOR UNSECURED	D			4FE	2,070,480	100.0680	2,000,360	2,000,000	2,000,182	(16,470)				5.875	5.000	JD	61,035	117,500	11/25/2014	06/24/2019
50064F-AL-8	Republic of Korea-SENIOR UNSECURED BOND	D			1FE	270,640	105.2011	210,402	200,000	266,198	(1,874)				4.125	2.383	JD	481	8,250	08/02/2016	06/10/2044
55927W-ZB-7	MAGYAR EXPORT-IMPORT BAN-SENIOR UNSECURE	D			2FE	5,507,790	100.1214	5,506,677	5,500,000	5,503,986	(3,716)				4.000	3.928	JJ	92,278	220,000	03/23/2016	01/30/2020
56108L-AA-4	MALAYSIA SOVEREIGN SUKUK-TRUST CTF 144A	D			1FE	5,000,000	97.6110	4,880,550	5,000,000	5,000,000					3.043	3.043	AO	29,162	152,150	04/15/2015	04/22/2025
56109A-AA-7	MALAYSIA SUKUK GLOBAL-TR CTF SER 1 144A	D			1FE	15,000,000	96.8003	14,520,045	15,000,000	15,000,000					3.179	3.179	AO	84,773	476,850	04/20/2016	04/27/2026
629598-AS-2	NACIONAL FINANCIERA SNC-SR UNSECURED	D	1		2FE	9,982,200	98.8750	9,887,500	10,000,000	9,982,775		3.575			3.375	3.414	MN	52,500	337,500	10/29/2015	11/05/2020
695847-AL-7	ISLAMIC REP OF PAKISTAN-UNSECURED NOTE	D			4FE	3,000,000	99.7700	2,993,100	3,000,000	3,000,000					7.250	7.248	AO	45,917	217,500	04/08/2014	04/15/2019
698299-AD-6	REPUBLIC OF PANAMA-NOTE	D			2FE	11,605,835	132.5000	10,851,750	8,190,000	10,901,951	(246,138)				8.875	4.292	MS	183,735	713,700	10/04/2018	09/30/2027
698299-AK-0	REPUBLIC OF PANAMA-SR UNSECURED	D			2FE	31,326,297	139.5000	30,994,110	22,218,000	30,965,233	(361,064)				9.375	4.529	AO	520,734	1,030,626	10/04/2018	04/01/2029
698299-AV-6	REPUBLIC OF PANAMA-SENIOR UNSECURED BOND	D			2FE	1,162,350	118.1810	969,084	820,000	1,022,721	(25,153)				7.125	3.194	JJ	24,668	58,425	01/01/2013	01/29/2026
698299-AW-4	REPUBLIC OF PANAMA-SENIOR UNSECURED BOND	D	2		2FE	4,393,893	122.0000	4,184,600	3,430,000	4,285,134	(35,773)				6.700	4.500	JJ	98,946	229,810	05/26/2016	01/26/2036
698299-BD-5	REPUBLIC OF PANAMA-SENIOR UNSECURED	D	1		2FE	10,087,500	100.8510	10,085,100	10,000,000	10,057,794	(9,303)				4.000	3.882	MS	110,000	400,000	09/23/2015	09/22/2024
698299-BD-5	REPUBLIC OF PANAMA-SENIOR UNSECURED	D	1		2FE	5,006,250	100.8510	5,042,550	5,000,000	5,003,938	(638)				4.000	3.984	MS	200,000	200,000	09/25/2015	09/22/2024
698299-BE-3	REPUBLIC OF PANAMA-SENIOR UNSECURED	D	1		2FE	230,000	99.0510	222,865	225,000	228,609	(537)				3.750	3.450	MS	2,461	6,250	04/26/2016	03/16/2025
698299-BG-8	REPUBLIC OF PANAMA-SENIOR UNSECURED	D	1		2FE	3,990,360	97.1250	3,885,000	4,000,000	3,990,444	(171)				4.500	4.515	MN	23,000	180,000	05/04/2017	05/15/2047
698299-BH-6	Panama Government Intern-SENIOR UNSECURE	D	1		2FE	10,010,000	95.7500	9,804,800	10,240,000	10,010,252	252				4.500	4.637	AO	96,000	157,620	10/18/2018	04/16/2050
699149-AB-6	Republic of Paraguay-SENIOR UNSECURED NO	D			3FE	15,138,750	103.1250	15,468,750	15,000,000	15,134,396	(2,220)				6.100	6.030	FA	355,833	915,000	01/19/2017	08/11/2044
715638-AP-7	REPUBLIC OF PERU-SENIOR UNSECURED BOND	D			2FE	13,153,065	147.2500	12,419,065	8,434,000	12,851,600	(210,656)				8.750	4.035	MN	81,997	728,823	10/04/2018	11/21/2033
715638-AU-6	REPUBLIC OF PERU-SENIOR UNSECURED	D	2		2FE	2,008,763	126.2500	1,944,250	1,540,000	1,952,166	(16,118)				6.550	4.315	MS	29,981	100,870	04/27/2015	03/14/2037
715638-BM-3	REPUBLIC OF PERU-SENIOR UNSECURED BOND	D			2FE	12,099,970	117.4000	11,876,184	10,116,000	12,016,024	(25,595)				5.625	4.500	MN	67,967	543,472	10/04/2018	11/18/2050
715638-BU-5	Peruvian Government Inte-SENIOR UNSECURE	D			2FE	291,068	103.2500	292,198	283,000	290,898	(170)				4.125	3.744	FA	4,086		10/04/2018	08/25/2027
71567P-AC-4	PERUSAHAAN PENERBIT SBSN-UNSECURED NOTE	D			2FE	4,000,000	99.2500	3,970,000	4,000,000	4,000,000					4.350	4.350	MS	53,650	174,000	09/02/2014	09/10/2024
71567P-AF-7	PERUSAHAAN PENERBIT SBSN-UNSECURED	D			2FE	10,000,000	99.1500	9,915,000	10,000,000	10,000,000					4.550	4.550	MS	116,278	455,000	03/21/2016	03/29/2026
718286-AY-3	REPUBLIC OF PHILIPPINES-SENIOR UNSECURED	D			2FE	607,987	147.0653	514,729	350,000	568,859	(16,549)				9.500	2.873	FA	13,762	33,250	08/02/2016	02/02/2030
718286-BB-2	REPUBLIC OF PHILIPPINES-SENIOR UNSECURED	D			2FE	228,375	134.8135	235,924	175,000	216,755	(2,465)				7.750	5.076	JJ	6,291	13,563	10/02/2013	01/14/2031
718286-BD-8	REPUBLIC OF PHILIPPINES-SENIOR UNSECURED	D			2FE	794,600	122.9725	713,241	580,000	742,149	(9,553)				6.375	3.659	JJ	17,050	36,975	01/01/2013	01/15/2032
718286-BG-1	REPUBLIC OF PHILIPPINES-SR UNSECURED	D			2FE	903,780	125.3799	909,004	725,000	901,746	(2,034)				6.375	4.242	AO	8,730	5,153	10/04/2018	10/23/2034
718286-BN-6	REPUBLIC OF PHILIPPINES-SENIOR UNSECURED	D			2FE	2,129,177	110.9960	1,864,733	1,680,000	1,957,707	(33,954)				5.500	2.947	MS	23,357	92,400	08/02/2016	03/30/2026
731011-AU-6	REPUBLIC OF POLAND-SR UNSECURED	D			1FE	7,741,422	97.9012	7,636,294	7,800,000	7,755,312	5,321				3.250	3.339	AO	59,854	253,500	03/30/2016	04/06/2026
74408D-AC-8	PROVINCIA DE CORDOBA ARGENTINA-SR UNSECUR	D	1		4FE	6,000,000	88.0000	5,280,000	6,000,000	6,000,000					7.125	7.121	JD	24,938	427,500	06/03/2016	06/10/2021
74408D-AE-4	PROVINCIA DE CORDOBA ARGENTIN UNSECURED	D	1		4FE	3,207,150	71.2700	3,207,150	4,500,000	3,207,150		510	1,292,850		7.125	7.125	FA	133,594	320,625	06/29/2017	08/01/2027
74409A-AA-7	PROVINCE OF SANTA FE-SENIOR UNSECURED	D	1		4FE	6,592,500	73.7500	6,637,500	9,000,000	6,592,500					6.900	6.900	MN	103,500	621,000	10/25/2016	11/01/2027
74727P-AX-9	Qatar Government Interna-SENIOR UNSECURE	D	1		1FE	6,977,110	104.3750	7,306,250	7,000,000	6,977,964		854			4.500	4.541	AO	59,500	157,500	04/12/2018	04/23/2028
760942-AZ-5	REPUBLICA ORIENT URUGUAY-SENIOR UNSECURE	D	2		2FE	236,907	101.7350	223,817	220,000	231,123	(2,201)				4.500	3.307	FA	3,768	9,900	04/13/2016	08/14/2024
760942-BA-9	REPUBLICA ORIENT URUGUAY-UNSECURED BOND	D	2		2FE	31,468,528	98.1500	30,639,976	31,217,500	31,458,747	(3,376)				5.100	5.049	JD	57,492	1,555,895	10/04/2018	06/18/2050
760942-BB-7	REPUBLICA ORIENT URUGUAY-SR UNSECURED	D	2		2FE	11,195,095	100.0360	10,703,852	10,700,000	11,095,644	(42,617)				4.375	3.817	AO	83,222	444,220	10/04/2018	10/27/2027
760942-BD-3	Uruguay Government Inter-SENIOR UNSECURE	D			2FE	118,920	95.1010	114,121	120,000	118,915	(5)				4.975	5.030	AO	1,177	133	10/04/2018	04/20/2055
77586R-AC-4	ROMANIA-SENIOR UNSECURED	D			2FE	6,110,000	110.8116	5,540,580	5,000,000	6,038,065	(21,376)				6.125	4.705	JJ	135,260	306,250	05/29/2015	01/22/2044
817477-AD-4	REPUBLIC OF SERBIA-SENIOR UNSECURED	D			3FE	3,046,500	100.8548	3,025,644	3,000,000	3,014,409	(12,092)				4.875	4.437	FA	51,188	146,250	03/24/2016	02/25/2020
831594-AG-1	REPUBLIC OF SLOVENIA-UNSECURED NOTE	D			1FE	4,912,350	107.4870	5,374,350	5,000,000	4,948,818	(8,370)				5.250	5.480	FA	96,979	262,500	02/10/2014	02/18/2024
85227S-AM-8	REPUBLIC OF SRI LANKA-SENIOR UNSECURED N	D			4FE	6,018,000	99.0000	5,940,000	6,000,000	6,000,887	(3,909)				5.125	5.056	AO	145,208	307,500	04/08/2014	04/11/2019
857524-AA-0	REPUBLIC OF POLAND-SENIOR UNSECURED NOTE	D			1FE	2,419,440	104.2634	2,126,973	2,040,000	2,153,617	(47,234)				5.125	2.618	AO	20,329	104,550	01/01/2013	04/21/2021
857524-AB-8	REPUBLIC OF POLAND-SENIOR UNSECURED NOTE	D			1FE	348,395	105.1690	310,249	295,000	315,225	(5,915)				5.000	2.764	MS	4,015	12,368	01/01/2013	03/23/2022
900123-AT-7	REPUBLIC OF TURKEY-SENIOR UNSECURED NOTE	D			3FE	2,322,500	104.1630	2,083,260	2,000,000	2,277,871	(10,533)				8.000	6.538	FA	60,889	160,000	03/21/2014	02/14/2034
900123-AW-0	REPUBLIC OF TURKEY-SENIOR UNSECURED NOTE	D			3FE	2,224,600	103.0300	2,060,600	2,000,000	2,143,281	(19,016)				7.375	5.958	FA	59,819	147,500	03/21/2014	02/05/2025
900123-AY-6	REPUBLIC OF TURKEY-SENIOR UNSECURED NOTE	D			3FE	2,075,000	93.6170	1,872,340	2,000,000	2,066,134	(2,040)				6.						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22	
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date	
910860-AS-7	UNITED MEXICAN STATES-SENIOR UNSECURED	D			2FE	407,943		113,9100	345,000	404,111		(1,138)			6.750	5.145	MS	6,081	12,750	10/04/2018	09/27/2034	
910860-AV-0	UNITED MEXICAN STATES-SENIOR UNSECURED B	D	1		2FE	3,153,942		105,8500	2,844,190	3,123,577		(8,933)			6.050	4.806	JJ	76,766		10/04/2018	01/11/2040	
910860-AZ-1	UNITED MEXICAN STATES-SENIOR UNSECURED B	D	1		2FE	119,749,485		94,0000	113,458,000	120,700,000		119,747,274			5.750	5.795	AO	1,522,999	5,714,222	07/19/2018	10/12/2110	
910860-BA-5	UNITED MEXICAN STATES-SENIOR UNSECURED N	D	1		2FE	220,684		98,8920	201,000	208,573		(2,248)			3.625	2.396	MS	2,145		01/26/2017	03/15/2022	
910860-BB-3	UNITED MEXICAN STATES-SENIOR UNSECURED N	D	1		2FE	8,267,018		90,9000	7,920,000	8,234,608		(8,075)			4.750	4.478	MS	259,160	333,250	10/04/2018	03/08/2044	
910860-BE-7	UNITED MEXICAN STATES-SR UNSECURED	D	1		2FE	5,309,258		101,0500	4,697,815	5,271,395		(11,126)			5.550	4.653	JJ	114,675	196,331	10/04/2018	01/21/2045	
910860-BF-4	UNITED MEXICAN STATES-SR UNSECURED	D	1		2FE	13,139,120		88,5500	12,318,191	13,143,052		4,862			4.600	4.971	JJ	280,848	336,043	10/04/2018	01/23/2046	
910860-BG-2	UNITED MEXICAN STATES-TRANCHE 00031	D	1		2FE	4,596,614		97,7500	4,501,388	4,605,000		725			4.125	4.147	JJ	84,425	162,456	04/13/2016	01/21/2026	
91087B-AA-8	UNITED MEXICAN STATES-SENIOR UNSECURED N	D	1		2FE	14,690,118		95,4000	14,081,994	14,716,094		6,428			3.600	3.656	JJ	222,891	531,396	01/13/2015	01/30/2025	
91087B-AC-4	MEXICO GOVERNMENT INTERN-SENIOR UNSECURE	D	1		2FE	1,660,313		96,6910	1,643,747	1,700,000		1,660,985			4.150	4.485	MS	18,225		12/17/2018	03/28/2027	
91087B-AD-2	Mexico Government Intern-SENIOR UNSECURE	D	1		2FE	236,000		88,7500	221,875	250,000		236,051			4.600	4.964	FA	4,504		10/04/2018	02/10/2048	
91087B-AE-0	Mexico Government Intern-SENIOR UNSECURE	D	1		2FE	3,968,909		93,6010	3,729,064	3,984,000		3,968,265			3.750	3.802	JJ	70,550	74,700	01/04/2018	01/11/2028	
917288-BA-9	REPUBLICA ORIENT URUGUAY-SENIOR UNSECURE	D	1		2FE	20,744,853		131,4300	20,614,796	15,685,000		20,404,608			7.875	4.886	JJ	1,160,187	1,204,569	06/14/2018	01/15/2033	
A03129-35-7	REPUBLIC OF INDONESIA-SENIOR UNSECURED	B			2FE	15,457,885		101,0825	15,351,797	15,345,680		976		(589,006)	2.150	2.133	JUL	151,734	269,984	09/18/2018	07/18/2024	
A06168-83-7	Macedonia Government Int-SENIOR UNSECURE	B			3FE	14,102,033		97,4000	13,273,555	13,627,880		13,441,335			26.459	2.997	JAN	368,050		01/11/2018	01/18/2025	
AL6543-17-0	Republic of Albania-SENIOR UNSECURED	B			4FE	6,977,897		99,3750	6,885,157	6,907,197		(131)			3.500	3.550	OCT	55,555		10/02/2018	10/09/2025	
G2927U-AD-4	Dubai DDF Sukuk Ltd-SENIOR UNSECURED NOT				1	7,000,000		103,9280	7,274,960	7,000,000		7,000,000			5.000	5.000	AO	59,306	350,000	06/13/2014	04/30/2029	
M52168-AF-4	DUBAI GOVT INT'L BOND-SENIOR UNSECURED				1	6,643,750		99,3640	6,955,480	7,000,000		6,669,678			5.250	5.609	JJ	154,146	367,500	11/14/2014	01/30/2043	
M82869-UP-4	Turkey Government Intern-SENIOR UNSECURE	B			3FE	2,834,833		91,0686	2,398,711	2,633,960		2,701,111			(9,502)		JUN	47,445	90,126	01/09/2018	06/14/2025	
N0431F-AH-3	Aruba Senior Note				2	37,000,000		106,9064	39,555,368	37,000,000		37,000,000			6.100	6.100	MS	570,519	2,257,000	03/31/2014	03/31/2024	
P01012-AE-6	REPUBLIC OF EL SALVADOR-SENIOR UNSECURED	D	1		4FE	277,725		101,2500	232,875	230,000		268,433		(1,801)	4.269		AO	4,269	18,975	01/01/2013	04/10/2032	
P01012-AN-6	REPUBLIC OF EL SALVADOR-SENIOR UNSECURED	D	1		4FE	626,900		94,5500	518,134	548,000		614,619		(2,227)	7.650	6.441	JD	1,863	41,922	01/01/2013	06/15/2035	
P14486-AJ-6	Banco Nacional de Desenv-SR UNSECURED	D	1		3FE	415,000		104,2500	417,000	400,000		411,184		(2,047)	5.750	5.076	MS	17,569	23,000	02/06/2017	09/26/2023	
P1910W-PT-0	PROVINCIA DE BUENOS AIRES-SENIOR UNSECURE	B			1FE	9,998,443		77,9017	7,583,107	9,734,200		9,866,119		(31,553)	5.375	4.990	JAN	507,712	539,351	11/29/2017	01/20/2023	
P1910W-PU-7	Provincia de Buenos Aire-SENIOR UNSECURE	B			1FE	162,265		77,9017	148,986	191,248		161,806		(1,758)	5.375	10.191	JAN	9,758	7,660	10/16/2018	01/20/2023	
P28714-AO-9	Colombia Government Inte-SENIOR UNSECURE	B	1		2FE	61,354,238		112,7833	60,704,935	53,824,400		60,844,596		(257,864)	3.875	1.863	MAR	1,616,750		12/14/2018	03/22/2026	
P6480J-AG-2	PROVINCIA DE MENDOZA-SENIOR UNSECURED	D	2		4FE	497,257		81,0000	486,000	600,000		485,250		(5,174)	8.375	8.375	MIN	5,863	50,250	10/03/2016	05/19/2024	
P6994Z-AB-5	CITY OF CORDOBA-SENIOR UNSECURED	D	1		4FE	3,675,000		70,0000	3,675,000	5,250,000		3,675,000		1,575,000	7.875	7.875	MS	105,656	413,438	09/22/2016	09/29/2024	
P7794G-AH-5	REPUBLIC OF PERU-SENIOR UNSECURED NOTE	D	2		2FE	1,262,834		98,8730	1,275,462	1,290,000		1,270,692		(35)	3.000	3.209	MS	50,955	38,700	01/01/2013	03/07/2027	
P75159-AA-9	PROVINCE OF JUJUY ARGENT-SENIOR UNSECURE	D	1		4FE	2,847,000		73,0000	2,847,000	3,900,000		2,847,000		1,053,000	8.625	8.625	MS	94,372	336,375	09/13/2017	09/20/2022	
P87324-BP-6	Peruvian Government Inte-SENIOR UNSECURE	B	3		2FE	11,135,590		108,4000	11,172,571	10,306,800		11,228,321		(4,449)	2.750	1.414	JAN	258,719		12/17/2018	01/30/2026	
P85091-BC-7	PANAMA BONOS DEL TESORO-SENIOR UNSECURED	D	1		2FE	6,651,000		107,5000	6,450,000	6,000,000		6,401,649		(103,767)	5.625	3.607	JJ	146,250	337,500	07/11/2016	07/25/2022	
P85091-CK-8	PANAMA BONOS DEL TESORO-SENIOR UNSECURED	D	1		2FE	10,805,000		104,5600	10,456,000	10,000,000		10,578,928		(95,137)	4.950	3.754	MIN	297,000	495,000	07/19/2016	05/24/2024	
P9767G-4H-8	UNITED MEXICAN STATES-SR UNSECURED	B	1		2FE	15,429,292		87,4100	16,016,309	18,323,200		16,397,878		1,188		4.000	4.476	MAR	598,573	755,777	03/20/2017	03/15/2115
UV3545-01-8	Indonesia Government Int-SENIOR UNSECURE	B			2FE	22,522,109		106,3900	22,405,977	21,060,228		22,413,390		(32,059)	3.375	2.309	JUL	301,392		12/14/2018	07/30/2025	
V5311V-AC-4	KINGDOM OF MOROCCO-UNSECURED NOTE	B			2FE	16,685,817		110,0000	16,125,676	14,659,705		15,995,640		(238,612)	3.500	1.735	JUN	277,250	529,085	12/14/2017	06/19/2024	
X0645A-AS-1	BANK GOSPODARSTWA KRAJOWI-SENIOR UNSECURE	B			1FE	13,546,059		101,8880	14,060,198	13,799,660		13,712,187		(11,365)	1.365	1.843	MAY	160,134	249,707	04/28/2016	05/06/2026	
X5158W-DR-0	Former Yugoslav Republic-UNSECURED NOTE	B			3FE	10,642,306		104,9000	9,610,518	9,161,600		9,098,975		(452,536)	3.975	4.246	JUL	161,206	375,527	07/17/2014	07/24/2021	
X5424X-BP-2	RUSSIAN FEDERATION-SENIOR UNSECURED	D	1		2FE	10,000,000		93,2586	9,325,860	10,000,000		10,000,000			5.250	5.250	JD	274,167	525,000	06/20/2017	06/23/2047	
X5424X-CA-4	Russian Foreign Bond - E-SENIOR UNSECURE	D	1		2FE	7,633,314		94,7200	7,388,160	7,800,000		7,642,065		8,751	4.375	4.625	MS	94,792	170,625	03/16/2018	03/21/2029	
X55005-UE-9	Ukraine Government Inter-SENIOR UNSECURE	D	1		4FE	632,486		96,3292	603,984	627,000		631,888		(598)	7.750	7.235	MS	16,198	6,074	10/16/2018	09/01/2020	
X55005-UF-6	Ukraine Government Inter-SENIOR UNSECURE	D	1		4FE	627,600		94,0000	564,000	600,000		627,936		(5,664)	7.750	6.235	MS	15,500	23,250	03/26/2018	09/01/2021	
X5500B-UN-6	Croatia Government Inter-SENIOR UNSECURE	B			3FE	2,083,865		101,0000	2,081,974	2,067,822		2,027,822		1,472	2.700	2.898	JUN	30,525		06/06/2018	06/15/2028	
X7330Z-FK-3	Croatia Government Inter-SENIOR UNSECURE	B			3FE	5,662,104		99,9024	5,606,003	5,611,480		5,505,027		8,642	2.750	2.952	JAN	174,686	142,371	11/16/2017	01/27/2030	
X7360W-AD-4	ROMANIA-UNSECURED NOTE	B	3		2FE	10,101,140		108,9897	9,985,200	9,161,600		9,113,855		(7,549)	2.875	2.973	OCT	45,981	272,353	10/21/2014	10/28/2024	
X7360W-AH-5	Romanian Government Inte-SENIOR UNSECURE	D	1		2FE	36,158,003		97,2500	33,411,210	34,356,000		35,534,491		(22,569)	3.875	3.599	OCT	231,767	1,351,810	07/27/2018	10/29/2035	
X7360W-AP-7	ROMANIA-SENIOR UNSECURED	D	1		2FE	10,566,398		99,5450	11,399,893	11,452,000		11,420,613		(3,438)	2.375	2.411	APR	194,063	280,464	04/10/2017	04/19/2027	
X7360W-AS-1	Romanian Government Inte-SENIOR UNSECURE	D	1		2FE																	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
Y7276L-DH-8	Kazakhstan Government In-SENIOR UNSECURE	B			2FE	30,795,357	100.4100	31,047,174	30,920,400	31,064,213		(3,891)		272,747	1.550	1.450	NOV	69,086		11/14/2018	11/09/2023
Y8137F-AB-4	REPUBLIC OF SRI LANKA-SENIOR UNSECURED	D			4FE	204,515	99.0000	198,000	200,000	200,586		(2,101)			5.125	4.030	AO	2,278	10,250	02/06/2017	04/11/2019
0699999. Subtotal - Bonds - All Other Governments - Issuer Obligations						1,504,770,502	XXX	1,480,982,287	1,441,625,477	1,486,656,955		(3,978,004)	7,515,120	(11,908,050)	XXX	XXX	XXX	24,623,114	56,727,393	XXX	XXX
1099999. Total - All Other Government Bonds						1,504,770,502	XXX	1,480,982,287	1,441,625,477	1,486,656,955		(3,978,004)	7,515,120	(11,908,050)	XXX	XXX	XXX	24,623,114	56,727,393	XXX	XXX
13063A-5G-5	State of California-GENERAL OBLIGATION U		1		1FE	18,007,973	143.2550	17,885,387	12,485,000	17,358,801		(125,407)		7,550	4.572	AO	235,654	838,013	10/04/2018	04/01/2039	
13063A-7D-0	CALIFORNIA ST-GENERAL OBLIGATION UNLTD		1		1FE	1,232,438	137.2720	1,207,994	880,000	1,214,546		(7,359)		7,300	4.255	AO	16,060	38,599	10/04/2018	10/01/2039	
13063B-BU-5	State of California-GENERAL OBLIGATION U		1		1FE	5,648,550	138.0490	5,459,838	3,955,000	5,533,695		(57,253)		7,350	4.186	MN	48,449	290,693	05/16/2017	11/01/2039	
13063B-FR-8	State of California-GENERAL OBLIGATION U		1		1FE	4,334,100	142.3790	4,271,370	3,000,000	4,143,510		(35,514)		7,625	4.633	MS	76,250	228,750	01/01/2013	03/01/2040	
13063B-FV-9	STATE OF CALIFORNIA-BUILD AMERICA GEN OB		1		1FE	1,534,431	105.5760	1,451,670	1,375,000	1,426,245		(41,915)		7,950	4.623	MS	36,438	109,313	05/27/2011	03/01/2036	
13063B-JA-1	State of California-GENERAL OBLIGATION U		1		1FE	8,674,411	107.5550	7,830,004	7,280,000	7,770,189		(162,888)		5,700	3.194	MN	69,160	414,960	01/01/2013	11/01/2021	
13063B-JB-9	CALIFORNIA ST BUILD AMERICA GEN OBLIG UN		1		1FE	374,991	108.1810	324,543	300,000	324,177		(12,627)		7,700	3.138	MN	3,850	23,100	10/06/2014	11/01/2030	
13063B-JC-7	CALIFORNIA ST BUILD AMERICA GEN OBLIG UN		1		1FE	15,962,737	145.6210	16,557,108	11,370,000	15,414,830		(103,166)		7,600	4.120	MN	144,020	864,120	12/01/2016	11/01/2040	
13063D-GD-4	State of California-GENERAL OBLIGATION U		2		1FE	7,947,884	104.6840	7,966,452	7,610,000	7,932,809		(15,075)		4,500	3.947	AO	85,613	148,395	06/21/2008	04/01/2033	
20772G-KM-9	STATE OF CONNECTICUT-GENERAL OBLIGATION U		1		1FE	26,995,250	104.4410	26,110,250	25,000,000	25,298,167		(200,402)		5,250	4.370	JD	109,375	1,312,500	09/19/2008	06/01/2020	
34153P-XD-5	State of Florida-GENERAL OBLIGATION UNLTD		2		1FE	7,497,853	103.8680	8,273,086	7,965,000	7,567,537		10,450		5,000	5.406	JD	33,187	398,250	01/14/2011	06/01/2040	
373384-NZ-5	State of Georgia-BUILD AMERICA GEN OBLIG		1		1FE	4,021,478	104.5900	4,206,064	4,021,478	4,021,478				4,503	4.502	MN	30,181	177,496	11/04/2009	11/01/2025	
373384-PA-8	State of Georgia-BUILD AMERICA GEN OBLIG		1		1FE	23,178,678	111.6100	24,810,903	22,230,000	22,774,390		(57,158)		4,964	4.586	MN	183,916	1,103,497	06/07/2011	11/01/2026	
373384-TP-1	State of Georgia-GENERAL OBLIGATION UNLTD		1		1FE	4,888,583	106.3870	5,212,963	4,900,000	4,893,830		811		4,150	4.172	JJ	101,675	203,350	06/30/2011	07/01/2025	
452151-LF-8	State of Illinois-GENERAL OBLIGATION UNLTD		2		2FE	117,374	95.3430	119,179	125,000	117,726		352		5,100	5.849	JD	531	6,375	04/12/2018	06/01/2033	
452152-BM-2	State of Illinois-GENERAL OBLIGATION UNLTD		1		2FE	6,711,640	106.3340	6,417,257	6,035,000	6,508,133		(36,154)		6,630	5.569	FA	166,717	400,121	07/16/2012	02/01/2035	
452152-FA-4	State of Illinois-GENERAL OBLIGATION UNLTD		1		2FE	25,865,700	107.1070	24,206,182	22,600,000	24,937,830		(175,623)		6,725	5.361	AO	379,963	1,519,850	01/01/2013	04/01/2035	
452152-GS-4	State of Illinois-GENERAL OBLIGATION UNLTD		1		2FE	638,660	110.8430	609,637	550,000	610,147		(4,601)		7,350	5.838	JJ	20,213	40,425	08/02/2011	07/01/2035	
57582N-WX-9	COMMONWEALTH OF MASSACHU-GENERAL OBLIGAT		1		1FE	10,959,988	108.6240	11,215,428	10,325,000	10,483,846		(56,793)		5,250	4.610	FA	225,859	542,063	09/19/2008	08/01/2021	
57582P-N3-0	Commonwealth of Massachu-GENERAL OBLIGAT		2		1FE	8,597,000	100.7290	10,072,900	10,000,000	8,725,894		26,634		4,000	4.900	JD	166,667	400,000	08/14/2013	06/01/2043	
57582P-S7-6	Commonwealth of Massachu-GENERAL OBLIGAT		2		1FE	19,360,000	102.9650	20,593,000	20,000,000	19,419,416		12,339		4,500	4.700	FA	375,000	900,000	07/31/2013	08/01/2043	
57582P-UE-8	Commonwealth of Massachu-GENERAL OBLIGAT		1		1FE	1,021,974	121.1620	963,238	795,000	998,938		(7,744)		5,456	3.435	JD	21,688	34,858	10/04/2018	12/01/2039	
57582P-UT-5	Commonwealth of Massachu-GENERAL OBLIGAT		1		1FE	296,925	110.3500	275,875	250,000	286,141		(3,055)		4,910	3.196	MN	2,046	12,275	04/27/2015	05/01/2029	
57582P-WK-2	Commonwealth of Massachu-GENERAL OBLIGAT		1		1FE	17,092,200	102.4380	15,365,700	15,000,000	15,622,881		(259,352)		4,200	2.343	JD	52,500	630,000	01/01/2013	12/01/2021	
574192-5C-0	MARYLAND ST-BUILD AMERICA GEN OBLIG		1		1FE	21,634,513	103.9820	22,049,383	21,205,000	21,340,442		(39,856)		4,300	4.080	MS	303,938	911,815	12/16/2010	03/01/2022	
574192-5E-6	STATE OF MARYLAND-BUILD AMER GEN OBLIG		1		1FE	26,232,500	106.6870	26,671,750	25,000,000	25,551,191		(94,408)		4,500	4.022	MS	375,000		09/09/2010	03/01/2024	
604129-L4-6	State of Minnesota-GENERAL OBLIGATION UN		1		1FE	13,969,320	107.4350	14,680,993	13,665,000	13,818,528		(30,248)		4,000	3.730	FA	227,750	546,600	08/09/2013	08/01/2027	
605680-5X-3	State of Mississippi-BUILD AMERICA GEN O		1		1FE	9,774,692	113.7600	10,124,640	8,900,000	9,524,548		(39,224)		5,245	4.475	MN	77,801	466,805	09/12/2011	11/01/2034	
644682-N3-6	NEW HAMPSHIRE ST-BUILD AMERICA GEN OBLIG		1		1FE	2,976,720	108.1400	3,244,200	3,000,000	2,982,782		1,268		4,375	4.444	JD	10,937	131,250	10/11/2013	06/01/2029	
181059-E4-4	Clark County School Dist-GENERAL OBLIGAT		2		1FE	9,016,560	113.8950	9,111,600	8,000,000	9,012,405		(4,155)		5,000	3.469	JD	66,667		12/12/2018	06/15/2036	
677521-DD-5	STATE OF OHIO-GEN OBLIG UNLTD BUILD AMER		1		1FE	4,150,000	107.6810	4,468,762	4,150,000	4,150,000				4,784	4.783	MN	33,089	198,536	04/14/2010	05/01/2023	
677521-WV-4	State of Ohio-GENERAL OBLIGATION UNLTD		2		1FE	8,661,724	103.7570	8,601,455	8,290,000	8,410,542		(41,938)		4,000	3.431	MS	97,638	331,600	06/07/2012	03/15/2030	
677521-WV-2	State of Ohio-GENERAL OBLIGATION UNLTD		2		1FE	12,366,480	103.4920	12,315,548	11,900,000	12,051,497		(52,664)		4,000	3.501	MS	140,156	476,000	06/07/2012	03/15/2031	
68607L-XP-7	State of Oregon-GENERAL OBLIGATION UNLTD		1		1FE	42,137,424	107.0740	35,946,955	33,572,067	36,096,786		(1,436,046)		5,762	1.682	JD	161,202	1,912,737	01/01/2013	06/01/2023	
68607L-XC-5	State of Oregon-GENERAL OBLIGATION UNLTD		1		1FE	430,582	116.0890	388,898	335,000	405,966		(9,116)		5,892	2.574	JD	1,645	19,738	08/02/2016	06/01/2027	
937440-FC-4	Washington Clackamas & Y-GENERAL OBLIGAT		3		1FE	2,006,150	141.9570	2,097,850	5,000,000	2,079,917		73,767		0,000	4.130	N/A			01/31/2018	06/15/2040	
70914P-M7-4	Commonwealth of Pennsylv-GENERAL OBLIGAT		2		1FE	5,084,850	103.7270	5,186,350	5,000,000	5,080,021		(4,829)		4,000	3.791	MS	66,667	54,444	05/16/2018	03/01/2035	
70914P-ME-9	PENNSYLVANIA ST-BUILD AMERICA GEN OBLIG		1		1FE	23,100,189	106.4040	24,733,610	23,245,000	23,182,530		10,132		4,650	4.708	FA	408,337	1,080,893	10/03/2013	02/15/2026	
70914P-NE-8	PENNSYLVANIA ST-BUILD AMERICA GEN OBLIG		2		1FE	25,337,008	102.5770	26,054,558	25,400,000	25,365,576		2,438		5,350	5.367	MN	226,483	1,358,900	05/19/2010	05/01/2030	
74514L-NA-1	PUERTO RICO CMILTH-REF GEN OBLIG UNLTD		1		6FE	222,500	54.0000	540,000	1,000,000	222,500				5,500	5.500	JJ			04/09/2014	07/01/2017	
880541-QQ-3	State of Tennessee-GENERAL OBLIGATION UN		1		1FE	4,730,000	100.9000	4,772,570	4,730,000	4,730,000				3,178	3.177	FA	62,633	150,319	10/12/2011	08/01/2020	
882722-KF-7	State of Texas-GENERAL OBLIGATION UNLTD		1		1FE	37,262,941	124.1380	42,051,948	33,875,000	36,694,892		(92,387)		5,517	4.829	AO	467,221	1,860,788	10/04/2018	04/01/2039	
882722-VN-8	State of Texas-GENERAL OBLIGATION UNLTD		1		1FE	10,314,123	112.1940	11,499,885	10,250,000	10,308,532		(2,387)		4,681	4.631	AO	119,951	479,803	08/02/2016		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22	
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date	
97705L-B2-2	State of Wisconsin-GENERAL OBLIGATION UN			2	1FE	2,931,764	104.3860	3,199,431	3,065,000	2,955,306		3,384			5.100	5.408	MM	104,210	156,315	09/16/2010	05/01/2041	
97705L-R4-1	State of Wisconsin-GENERAL OBLIGATION UN			2	1FE	13,451,263	103.2540	14,011,568	13,570,000	13,480,826		4,920			4.000	4.064	MM	361,867	542,800	12/06/2011	05/01/2032	
1199999. Subtotal - Bonds - U.S. States, Territories and Possessions - Issuer Obligations						629,453,151	XXX	646,576,739	594,043,545	613,530,542		(3,115,569)			XXX	XXX	XXX		9,177,672	27,475,484	XXX	XXX
1799999. Total - U.S. States, Territories and Possessions Bonds						629,453,151	XXX	646,576,739	594,043,545	613,530,542		(3,115,569)			XXX	XXX	XXX		9,177,672	27,475,484	XXX	XXX
09088R-WG-7	BIRMINGHAM AL CONV CABS GEN OBLIG UNLTD			2,5	1FE	4,444,400	108.7040	5,435,200	5,000,000	4,545,792		(4,678)			5.000	5.876	MS	83,333	250,000	03/20/2013	03/01/2037	
718814-J3-1	PHOENIX AZ-GENERAL OBLIGATION UNLTD			2	1FE	9,626,900	100.7860	10,078,600	10,000,000	9,711,532		14,284			3.500	3.755	JJ	175,000	350,000	05/24/2012	07/01/2034	
718814-ZZ-2	PHOENIX AZ-BUILD AMERICA GENERAL OBLIGAT			1	1FE	24,540,950	112.8100	27,638,450	24,500,000	24,526,448		(2,050)			5.269	5.254	JJ	645,453	1,290,905	06/14/2010	07/01/2034	
54438C-NZ-1	LOS ANGELES CA QINTY CLG-GENERAL OBLIGAT			1	1FE	789,400	137.4020	687,010	500,000	769,921		(8,252)			6.600	3.189	FA	13,750	33,000	08/02/2016	08/01/2042	
54438C-PA-4	LOS ANGELES CA QINTY CLG-BUILD AMERICA G			1	1FE	1,108,125	144.5870	1,048,256	725,000	1,090,784		(6,490)			6.750	3.783	FA	20,391	41,034	10/04/2018	08/01/2049	
54438C-PC-0	LOS ANGELES CA QINTY CLG-GENERAL OBLIGAT			1	1FE	339,490	132.4210	331,053	250,000	327,985		(3,301)			6.680	4.054	FA	6,958	16,700	04/27/2015	08/01/2036	
54438E-KD-9	LOS ANGELES CA QINTY RED-TAX ALLOCATION			2	1FE	229,314	121.2140	325,974	268,925	238,037		6,475			8.000	11.742	MS	7,171	20,552	09/02/2016	09/01/2038	
54438E-KE-7	LOS ANGELES CA QINTY RED-TAX ALLOCATION			2	1FE	630,795	125.3640	714,279	569,764	622,542		(4,429)			8.000	6.596	MS	61,994	46,866	09/02/2016	09/01/2038	
544646-A6-9	LOS ANGELES CA UNIF SCH -GENERAL OBLIGAT			1	1FE	57,978,857	117.3230	55,024,487	46,900,000	55,040,232		(826,173)			5.981	3.555	MM	1,402,545	2,805,089	06/16/2015	05/01/2027	
544646-XY-3	LOS ANGELES CA UNIF SCH-BUILD AMERICA GE			1	1FE	2,119,678	115.7250	1,978,898	1,710,000	2,028,224		(29,126)			5.755	3.380	JJ	49,205	98,411	08/02/2016	07/01/2029	
544646-XZ-0	LOS ANGELES CA UNIF SCH-BUILD AMERICA GE			1	1FE	3,694,923	118.3310	3,366,517	2,845,000	3,584,957		(40,482)			5.750	3.386	JJ	81,794	159,099	10/04/2018	07/01/2034	
544646-ZR-6	LOS ANGELES CA UNIF SCH-BUILD AMERICA GE			1	1FE	28,678,508	128.6910	27,533,439	21,395,000	27,444,596		(329,329)			6.758	4.024	JJ	722,937	1,435,324	10/04/2018	07/01/2034	
672325-TS-6	OAKLAND CA UNIF SCH DIST BUILD AMERICA G			1	1FE	9,652,178	103.8070	8,797,643	8,475,000	8,701,210		(375,333)			9.500	4.791	FA	335,469	805,125	11/13/2012	08/01/2034	
672325-WR-4	OAKLAND CA UNIF SCH DIST GEN OBLIG UNLTD			2	1FE	5,000,000	111.5500	5,577,500	5,000,000	5,000,000					6.877	6.874	FA	143,271	343,850	09/07/2012	08/01/2033	
796714-DD-2	SAN BERNARDINO CITY CA UNIF SD CONSTR CO			1	1FE	2,278,318	104.1360	2,103,547	2,020,000	2,051,946		(62,361)			7.703	4.906	FA	64,834	135,059	03/20/2013	02/01/2021	
797355-W5-9	SAN DIEGO CA UNIF SCH D-GENERAL OBLIGAT			2	1FE	3,840,738	39.1070	9,856,919	25,205,000	5,893,629		339,404			0.000	6.020	N/A			10/06/2011	07/01/2043	
798186-YY-2	SAN JOSE CA UNIF SCH DIST GEN OBLIG UNLT			2	1FE	490,875	104.3630	521,815	500,000	492,432		393			4.469	4.620	FA	9,310	22,345	10/06/2014	08/01/2034	
799561-MB-8	SAN YSIDRO CA SCH DIST GEN OBLIG UNLTD C			3	1FE	3,244,350	28.9940	4,349,100	15,000,000	3,914,823		200,249			0.000	5.320	N/A			05/08/2015	08/01/2044	
802833-CB-7	SANTEE CA QINTY DEV COMM TAX ALLOCATION			3	1FE	1,674,819	113.6820	1,614,284	1,420,000	1,539,142		(52,875)			9.500	5.194	FA	56,208	134,900	01/31/2012	08/01/2041	
901073-GL-4	TUSTIN CA UNIF SCH DIST-GEN OBLIG			2	1FE	5,487,100	111.0340	5,551,700	5,000,000	5,364,529		(47,331)			5.000	3.753	MS	83,333	250,000	05/14/2015	09/01/2038	
095680-AA-2	BLUE LAKE MET DIST #2 CO-GENERAL OBLIGAT			2	2Z	992,500	99.9910	992,500	992,500	992,500					5.750	5.750	JD	4,756	57,033	12/07/2016	12/01/2046	
101565-YR-4	BOULDER LARIMER & WELD C-GENERAL OBLIGAT			2	1FE	2,835,000	105.3970	2,988,005	2,835,000	2,835,000					5.740	5.737	JD	7,232	162,729	05/12/2010	12/15/2030	
101565-YS-2	BOULDER LARIMER & WELD C-GENERAL OBLIGAT			2	1FE	25,240,000	105.2690	26,569,896	25,240,000	25,240,000					5.790	5.767	JD	64,951	1,461,396	05/12/2010	12/15/2033	
249164-LJ-1	DENVER CITY & CNTY CO-GENERAL OBLIGATION			2	1FE	44,300,000	104.3940	46,246,542	44,300,000	44,300,000					5.650	5.647	FA	1,042,896	2,502,950	10/06/2010	08/01/2030	
406792-7D-7	Town of Hamden CT-GENERAL OBLIGATION UNL			2	2FE	711,819	114.0840	713,025	625,000	708,649		(3,169)			5.000	3.360	FA	13,455		07/18/2018	08/15/2030	
59333M-H5-7	MIAMI-DADE CNTY FL SCH BRD COPS SER A			2	1FE	2,219,200	109.7170	2,194,340	2,000,000	2,104,752		(21,933)			5.000	3.680	MM	16,667	100,000	03/21/2013	05/01/2031	
434462-PD-3	HOFFMAN ESTATES IL PARK DIST GEN OBLIG U			2	1FE	4,650,000	102.1640	4,750,626	4,650,000	4,650,000					4.000	3.999	JD	15,500	186,000	12/10/2014	12/01/2038	
05914F-MN-7	BALTIMORE CNTY MD-GENERAL OBLIGATION UNL			1	1FE	20,000,000	97.8950	19,579,000	20,000,000	20,000,000					3.739	3.739	FA	311,583	747,800	11/28/2012	08/01/2042	
05923T-BS-7	BALTIMORE MD SPL OBLIG-TAX ALLOCATION			2	2	180,446	100.2070	180,373	180,000	180,352		(39)			5.375	5.342	JD	806	9,675	01/06/2017	06/01/2036	
05923T-BT-5	BALTIMORE MD SPL OBLIG-TAX ALLOCATION			2	2	240,852	100.3570	240,857	240,000	240,682		(74)			5.500	5.452	JD	1,100	13,200	01/06/2017	06/01/2043	
05923T-BV-0	BALTIMORE MD SPL OBLIG-TAX ALLOCATION			2	2	2,303,000	99.9880	2,302,724	2,303,000	2,303,000					6.500	6.501	JD	12,475	149,695	01/06/2017	06/01/2030	
251129-S0-0	DETROIT MI CITY SCH DIST GEN OBLIG UNLTD			1	1FE	6,136,317	137.6220	7,686,189	5,585,000	6,024,557		(18,369)			7.747	6.860	MM	72,112	432,670	07/18/2011	05/01/2039	
533883-NE-0	LINCOLN MI CONSOL SCH DIST GEN OBLIG SER			2	1FE	1,524,964	111.1180	1,516,761	1,365,000	1,490,460		(14,734)			5.000	3.564	MM	11,375	68,250	03/10/2016	05/01/2040	
734353-MP-7	PORT HURON MI AREA SCH D-GENERAL OBLIGAT			2	1FE	8,569,920	103.1380	8,251,040	8,000,000	8,452,647		(54,150)			4.000	3.130	MM	53,333	320,000	09/29/2016	05/01/2039	
803820-LD-9	SARTELL MN INDEP SCH DIS-GENERAL OBLIGAT			3	1FE	1,285,700	57.0630	1,318,155	2,310,000	1,386,824		43,305			0.000	3.198	N/A			06/30/2016	02/01/2035	
803820-LE-7	SARTELL MN INDEP SCH DIS-GENERAL OBLIGAT			3	1FE	1,236,418	54.5540	1,262,925	2,315,000	1,335,129		42,329			0.000	3.248	N/A			06/30/2016	02/01/2036	
631294-4D-4	NASHUA NH-GENERAL OBLIGATION UNLTD			1	1FE	25,000,000	103.7580	25,939,500	25,000,000	25,000,000					4.376	4.376	JJ	504,456	1,094,000	01/11/2012	01/15/2042	
048339-VH-5	ATLANTIC CITY NJ-GENERAL OBLIGATION UNLTD			2	2FE	278,068	112.6050	281,513	250,000	274,166		(2,503)			5.000	3.621	MS	4,167	12,500	05/25/2017	03/01/2032	
048339-VJ-1	ATLANTIC CITY NJ-GENERAL OBLIGATION UNLTD			2	2FE	544,995	110.4150	552,075	500,000	538,797		(3,970)			5.000	3.881	MS	8,333	25,000	05/25/2017	03/01/2037	
660393-P8-6	NORTH LAS VEGAS NV BUILD AMERICA GEN OBL			1	1FE	4,330,000	121.2490	4,849,960	4,000,000	4,301,124		(11,356)			6.572	5.836	JD	21,907	262,880	04/26/2016	06/01/2040	
64966H-4K-3	NEW YORK NY-GENERAL OBLIGATION UNLTD			1	1FE	1,320,580	117.8130	1,178,130	1,000,000	1,288,942		(13,506)			5.517	3.207	AO	13,793	55,170	08/02/2016	10/01/2037	
64966H-MV-9	NEW YORK NY-GENERAL OBLIGATION UNLTD			1	1FE	373,779	113.3800	368,485	325,000	325,876		(3,111)			5.206	3.781	AO	4,230	16,920	04/27/2015	10/01/2031	
64966H-YM-6	City of New York NY-GENERAL OBLIGATION U			1	1FE	438,350	122.5200	453,324	370,000	437,637		(713)			5.968	4.297	MS	7,361		10/04/2018	03/01/2036	
64966H-YY-6	NEW YORK NY-GENERAL OBLIGATION UNLTD																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
966812-SC-0	YORK PA-GENERAL OBLIGATION UNLTD			2	1FE	1,530,000	110.0610	1,683,933	1,530,000	1,530,000					9.000	8.995	MN	17,595	136,263	12/15/2011	11/15/2027
586145-E2-6	MEMPHIS TN REF GENERAL OBLIGATION UNLTD			2	1FE	30,044,906	110.6570	30,165,098	27,260,000	29,191,226		(329,860)			5.000	3.509	AO	340,750		07/02/2014	04/01/2044
586145-PD-0	MEMPHIS TN-GENERAL OBLIGATION UNLTD			2	1FE	21,544,400	102.5820	20,516,400	20,000,000	20,128,576		(166,909)			5.250	4.360	AO	262,500	1,050,000	09/19/2008	10/01/2019
592112-DR-4	MET GOVT NASHVILLE & DAVIDSON GEN OBLIG			1	1FE	27,236,570	119.4350	32,307,168	27,050,000	27,181,962		(7,852)			5.707	5.648	JJ	771,872	1,543,744	08/13/2010	07/01/2034
232760-8B-7	CYPRESS-FAIRBANKS TX IND-GENERAL OBLIGAT			2	1FE	9,229,696	104.9200	9,185,746	8,755,000	9,067,119		(45,255)			4.000	3.351	FA	132,298	350,200	03/04/2015	02/15/2034
232760-8C-5	CYPRESS-FAIRBANKS TX IND-GENERAL OBLIGAT			2	1FE	7,578,000	104.6360	7,533,792	7,200,000	7,448,614		(96,023)			4.000	3.371	FA	108,800	288,000	03/04/2015	02/15/2035
442331-3K-8	City of Houston TX-GENERAL OBLIGATION LT			1	1FE	39,048,716	98.6420	38,470,380	39,000,000	39,046,789		(1,928)			3.961	3.953	MS	514,930	1,502,473	12/19/2018	03/01/2047
442331-QM-9	HOUSTON TX-GENERAL OBLIGATION LTD			1	1FE	10,310,821	117.9240	10,076,602	8,544,997	9,570,276		(118,061)			6.290	4.342	MS	179,160	533,392	11/09/2011	03/01/2032
442331-S6-2	CITY OF HOUSTON TX-GENERAL OBLIGATION LT			1	1FE	11,057,184	119.4540	10,863,655	9,094,425	10,957,274		(220,844)			6.290	3.218	MS	476,699	553,053	08/24/2017	03/01/2032
442403-FY-2	Houston Independent Scho-BUILD AMERICA G			1	1FE	8,950,000	100.4550	8,990,723	8,950,000	8,950,000					6.125	6.121	FA	207,093	548,188	11/12/2009	02/15/2028
387460-JJ-8	GRANITE UT SCH DIST SALT-BUILD AMERICA G			2	1FE	2,200,000	102.8220	2,262,084	2,200,000	2,200,000					4.954	4.952	JD	9,082	108,988	05/05/2010	06/01/2026
387460-JK-5	GRANITE UT SCH DIST SALT-BUILD AMERICA G			2	1FE	2,200,000	102.9600	2,265,120	2,200,000	2,200,000					5.054	5.052	JD	9,266	111,188	05/05/2010	06/01/2027
387460-JL-3	GRANITE UT SCH DIST SALT-BUILD AMERICA G			2	1FE	1,950,000	103.0970	2,010,392	1,950,000	1,950,000					5.154	5.152	JD	8,375	100,503	05/05/2010	06/01/2028
387460-JM-1	GRANITE UT SCH DIST SALT-BUILD AMERICA G			2	1FE	2,250,000	103.2340	2,322,765	2,250,000	2,250,000					5.254	5.252	JD	9,851	118,215	05/05/2010	06/01/2029
387460-JN-9	GRANITE UT SCH DIST SALT-BUILD AMERICA G			2	1FE	2,500,000	103.3710	2,584,275	2,500,000	2,500,000					5.354	5.352	JD	11,154	133,850	05/05/2010	06/01/2030
122062-SC-7	BURLINGTON VT TXBL PUB IMPT GEN OBLIG SE			1	1FE	1,015,000	111.9590	1,136,384	1,015,000	1,015,000					6.000	5.999	MN	10,150	60,450	09/28/2012	11/01/2032
494791-PM-0	KING CNTY WA PUB HOSP DIST #2 GEN OBLIG			2	1FE	4,941,850	102.3240	5,116,200	5,000,000	4,947,304		1,883			4.000	4.082	JD	16,667	200,000	10/02/2015	12/01/2037
1899999. Subtotal - Bonds - U.S. Political Subdivisions - Issuer Obligations						553,343,454	XXX	571,557,369	559,543,611	547,158,041		(2,324,117)			XXX	XXX	XXX	9,837,097	24,830,684	XXX	XXX
2499999. Total - U.S. Political Subdivisions Bonds						553,343,454	XXX	571,557,369	559,543,611	547,158,041		(2,324,117)			XXX	XXX	XXX	9,837,097	24,830,684	XXX	XXX
313580-DR-2	FANNIE MAE-UNSECURED			2	1FE	1,585,645	69.2185	1,557,417	2,250,000	1,685,832		42,262			0.000	2.555	N/A			08/02/2016	05/15/2030
455412-AU-0	INDIANAPOLIS IN WTR SYS -REVENUE BONDS			2	1FE	5,279,700	103.6370	5,181,850	5,000,000	5,226,688		(25,269)			4.000	3.331	AO	50,000	200,000	10/14/2016	10/01/2036
745268-8C-9	PUERTO RICO ELEC PWIR AUT-REVENUE BONDS		SD		6FE	54,685	100.7630	50,382	50,000	50,382	853	(797)			5.000	3.339	JJ	6,250	2,500	03/06/2013	07/01/2019
745260-B9-2	PUERTO RICO ELEC PWIR AUT-REVENUE BONDS				6*	4,078	65.0000	8,125	12,500	4,078	31			10.000	10.000	JJ			05/19/2016	07/01/2019	
745260-C5-9	PUERTO RICO ELEC PWIR AUT-REVENUE BONDS				6*	85,000	65.0000	8,125	12,500	4,078	31			10.000	10.000	JJ			06/22/2016	07/01/2019	
745260-D6-6	PUERTO RICO ELEC PWIR AUT-REVENUE BONDS				6*	3,059	65.0000	6,094	9,375	3,059	23			10.000	10.000	JJ			06/30/2016	01/01/2021	
745260-D7-4	PUERTO RICO ELEC PWIR AUT-REVENUE BONDS				6*	3,059	65.0000	6,094	9,375	3,059	23			10.000	10.000	JJ			06/30/2016	07/01/2021	
745260-D8-2	PUERTO RICO ELEC PWIR AUT-REVENUE BONDS				6*	1,020	65.0000	2,031	3,125	1,020	8			10.000	10.000	JJ			06/30/2016	01/01/2022	
745260-D9-0	PUERTO RICO ELEC PWIR AUT-REVENUE BONDS				6*	1,020	65.0000	2,031	3,125	1,020	8			10.000	10.000	JJ			06/30/2016	07/01/2022	
76116F-AB-3	RFCSP PRINCIPAL STRIP				1FE	378,711,600	70.5042	748,754,551	1,062,000,000	621,274,661		29,447,617			0.000	4.915	N/A			11/19/2008	01/15/2030
76116F-AC-1	RFCSP PRINCIPAL STRIP				1FE	291,525,351	69.8950	566,638,603	810,700,000	467,812,322		22,242,544			0.000	4.931	N/A			03/01/2010	04/15/2030
76116F-AG-2	RFCSP PRINCIPAL STRIP				1FE	373,885,841	94.7815	691,904,636	730,000,000	656,960,634		33,118,214			0.000	5.240	N/A			02/06/2008	01/15/2021
011839-GB-7	Alaska Housing Finance Corp Revenue			2	1FE	5,974,500	103.9540	6,237,240	6,000,000	5,977,846		1,112			4.000	4.034	JD	20,000	240,000	05/08/2015	06/01/2036
011903-EI-7	Alaska Indl Dev & Exp Revenue			2	1FE	1,035,890	107.4560	1,074,560	1,000,000	1,022,400		(4,708)			5.000	4.414	AO	12,500	50,000	03/26/2014	04/01/2033
011903-EX-5	Alaska Indl Dev & Exp Auth Revenue			2	1FE	2,255,270	107.2090	2,342,517	2,185,000	2,221,599		(7,671)			5.000	4.560	AO	27,313	109,250	03/26/2014	04/01/2034
178860-BI-1	CIVICVentures/AK REF REVENUE ANCHORAGE C			2	1FE	4,860,550	100.2280	5,011,400	5,000,000	4,875,448		4,750			4.000	4.202	MS	66,667	200,000	08/14/2015	09/01/2038
091156-MR-7	Birmingham-Jefferson Civ-SPECIAL TAX			2	1FE	2,820,300	111.3450	2,783,625	2,500,000	2,809,276		(11,024)			5.000	3.461	JJ	50,000		07/18/2018	07/01/2048
472682-RC-9	JEFFERSON CNTY AL SWR REVENUE CONV CAP			2,5	1FE	2,695,350	88.3600	4,638,900	5,250,000	2,898,243		(7,866)			0.000	1.924	AO			11/20/2013	10/01/2050
472682-RC-9	JEFFERSON CNTY AL SWR REVENUE CONV CAP			2,5	1FE	1,796,900	88.3600	3,092,600	3,500,000	1,933,801		(5,398)			0.000	2.004	AO			11/20/2013	10/01/2050
472682-RI-7	JEFFERSON CNTY AL SWR REVENUE VSUB LIEN			2	3FE	2,619,725	117.0980	2,927,450	2,500,000	2,601,181		(7,495)			6.500	5.945	AO	40,625	162,500	04/07/2014	10/01/2053
472682-RZ-8	JEFFERSON CNTY AL SWR REVENUE CONV CAP A			2,5	3FE	3,637,500	87.5000	6,562,500	7,500,000	4,092,341		(15,125)			0.000	3.179	AO			11/20/2013	10/01/2039
472682-SA-2	JJEFFERSON CNTY AL SWR REVENUE CONV CAP			2,5	3FE	3,730,880	87.0940	6,967,520	8,000,000	4,093,565		(13,948)			0.000	2.545	AO			01/08/2014	10/01/2046
547804-AE-4	Lower Alabama Gas Distri-REVENUE BONDS			1	1FE	11,098,960	113.9010	10,416,246	9,145,000	11,058,754		(41,206)			5.000	3.627	MS	152,417	357,250	06/07/2018	09/01/2046
04052B-BV-5	ARIZONA ST INDL DEV AUTH-REVENUE BONDS			2	4	108,145	97.9420	107,736	110,000	108,191		33			5.750	5.878	JJ	3,163	6,325	06/29/2017	07/01/2047
04052B-BW-3	ARIZONA ST INDL DEV AUTH-REVENUE BONDS			2	4	103,539	98.2040	103,114	105,000	103,558		15			5.875	5.972	JJ	3,084	6,169	06/29/2017	07/01/2052
040654-UL-7	ARIZONA ST TRANSPRTN BRD-REVENUE BONDS			1	1FE	6,308,988	107.6190	5,757,617	5,350,000	5,625,672		(104,923)			5.000	2.850	JJ	133,750	267,500	11/17/2011	07/01/2021
040654-UV-5	ARIZONA ST TRANSPRTN BRD-REVENUE BONDS			1	1FE	3,330,000	100.0960	3,333,197	3,330,000	3,330,000					3.024	3.023	JJ	50,350	100,699	11/17/2011	07/01/2019
50376F-AT-4	La Paz County Industrial-REVENUE BONDS			2	2FE	300,000	100.4590	301,377	300,000	300,000					5.000	5.000	FA	5,667		08/01/2018	02/15/2022
50989R-AA-8	LAKE HAVASU CITY AZ WISTWTR SYS-REVENUE B			2	1FE	1,711,938	111.2860	1,741,626	1,565,000	1,675,502		(14,746)			5.000	3.765	JJ	39,125	78,250	08/27/2015	07/01/2040
50989R-AC-4	LAKE HAVASU CITY AZ																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
072024-ND-0	BAY AREA CA TOLL AUTH TO-REVENUE BONDS			1	1FE	4,997,048	136.0980	4,525,259	3,325,000	4,923,350		(31,704)			6.263	3.519	AO	141,466	185,268	10/04/2018	04/01/2049
072024-NT-5	BAY AREA CA TOLL AUTH TO-REVENUE BONDS			1	1FE	10,532,856	117.0940	10,070,084	8,600,000	10,147,225		(207,355)			6.793	3.657	AO	341,009	584,198	02/13/2017	04/01/2030
072024-NU-2	BAY AREA CA TOLL AUTH TO-REVENUE BONDS			1	1FE	3,863,074	133.5050	3,804,893	2,850,000	3,802,841		(35,280)			6.918	4.175	AO	49,291	186,363	10/04/2018	04/01/2040
072024-NV-0	BAY AREA CA TOLL AUTH TO-REVENUE BONDS			1	1FE	1,849,084	142.0790	1,619,701	1,140,000	1,817,312		(13,638)			7.043	3.647	AO	20,073	78,354	12/01/2016	04/01/2050
072024-PY-2	Bay Area Toll Authority-REVENUE BONDS			1	1FE	285,764	142.1460	284,292	200,000	285,458		(306)			6.907	4.367	AO	3,454		10/04/2018	10/01/2050
106287-JH-6	BREA CA REDEV AGY-TAX ALLOC HSG SER B			2	1FE	1,646,400	111.5870	1,640,329	1,470,000	1,551,676		(28,922)			7.392	5.068	FA	45,276	108,662	11/06/2012	08/01/2029
120827-CN-8	BURBANK GLENDALE PASADENA CA ARPT REVENU			1	1FE	2,000,000	121.7780	2,435,560	2,000,000	2,000,000					5.812	5.811	JJ	58,120	116,240	05/03/2012	07/01/2041
130333-CA-3	CALIFORNIA ST HLTH FACS FING AGY REVENUE			2	1FE	191,819	97.5010	185,187	189,934	190,521		(358)			2.900	2.700	MON	482	5,419	05/19/2015	02/01/2042
13033L-8P-5	CALIFORNIA ST HLTH FACS -REVENUE BONDS			2	1FE	3,239,820	110.2150	3,306,450	3,000,000	3,184,097		(23,914)			5.000	3.937	FA	56,667	150,000	06/26/2015	08/15/2054
13033L-YS-0	CALIFORNIA ST HLTH FACS -REVENUE BONDS			2	1FE	21,396,200	107.8000	21,560,000	20,000,000	20,869,100		(220,480)			5.000	3.706	FA	377,778	1,000,000	04/30/2014	08/15/2051
130486-BD-4	California Municipal Fin-REVENUE BONDS			1	3FE	245,000	100.4540	246,112	245,000	245,000					5.750	5.752	JD	1,174	5,478	06/29/2018	06/01/2022
13048D-AG-3	CALIFORNIA ST MUNI FIN AUTH REV PARTNERS			2	3FE	112,500	100.0980	112,610	112,500	112,500					7.000	6.991	FA	3,281	2,552	11/16/2012	08/01/2019
13058T-EU-0	CALIFORNIA ST SCH FIN AU-REVENUE BONDS			2	5	246,385	102.1900	255,475	250,000	246,472		65			5.125	5.226	JD	1,068	12,813	02/10/2017	06/01/2047
13058T-EV-8	CALIFORNIA ST SCH FIN AU-REVENUE BONDS			2	5	247,205	102.3360	255,840	250,000	247,233		33			5.250	5.323	JD	1,094	13,125	02/10/2017	06/01/2052
13058T-EW-6	CALIFORNIA ST SCH FIN AU-REVENUE BONDS			2	5	615,000	98.8270	607,786	615,000	615,000					6.250	6.253	JD	3,203	32,083	02/10/2017	06/01/2025
130591-AK-6	CALIFORNIA ST SCH FIN AUTH EDU REV NEW D			2	3FE	1,690,000	100.2220	1,693,752	1,690,000	1,690,000					7.000	6.996	JD	9,858	116,288	10/11/2012	06/01/2023
130591-BD-1	California School Financ-REVENUE BONDS			2	3FE	520,000	99.8100	519,012	520,000	520,000					5.000	5.000	JJ	13,000	25,942	12/15/2017	07/01/2020
13059T-DN-6	CALIFORNIA SCH FIN AUTH -REVENUE BONDS			2	3FE	403,313	101.5750	416,458	410,000	405,285		1,013			6.000	6.332	JJ	12,300	24,600	12/16/2016	07/01/2025
130685-IB-2	CALIFORNIA ST PUBLIC WKS-REVENUE BONDS			1	1FE	5,806,073	145.2970	6,611,014	4,550,000	5,568,084		(45,685)			8.361	5.974	AO	95,106	380,426	01/01/2013	10/01/2034
130790-AU-2	CALIFORNIA STWD CMNTYS DEV AUTH REV EINS			2	5G1	468	0.5000	468	93,632	468			9,602		7.750	7.750	MM	1,736	3,555	11/08/2012	11/01/2020
130795-SE-3	California Statewide Com-REVENUE BONDS			2	1FE	14,469,200	106.7100	16,006,500	15,000,000	14,518,391		10,388			5.000	5.240	AO	187,500	517,161	09/05/2013	04/01/2042
130795-SE-3	California Statewide Com-REVENUE BONDS			2	1FE	17,601,550	106.7100	18,311,436	17,160,000	17,355,271		(54,829)			5.000	4.617	AO	214,500	490,161	02/07/2014	04/01/2042
13080K-BM-2	CALIFORNIA ST STWD CMNTY-REVENUE BONDS			2	5G1	1,314,300	99.0000	1,314,300	3,370,000	1,314,300			2,055,700		8.125	8.125	JJ	136,906	273,813	03/09/2017	07/01/2029
13080S-JK-1	CALIFORNIA STWD CMNTYS DEV AUTH REF REVE			2	1FE	5,508,150	113.8340	5,691,700	5,000,000	5,362,967		(43,277)			5.000	3.831	MS	83,333	250,000	06/24/2015	03/01/2033
282833-AQ-5	EL CENTRO CA FING AUTH REVENUE REDEV PRO			2	1FE	1,782,384	110.2480	1,885,241	1,710,000	1,736,437		(10,348)			6.625	5.901	MM	113,288	113,288	05/27/2011	11/01/2025
304216-JK-1	FAIRFIELD CA REDEV AGY TXBL TAX ALLOCATI			2	2	1,324,853	106.2110	1,247,979	1,175,000	1,248,681		(30,866)			9.500	6.348	MS	37,208	111,625	03/20/2012	09/01/2042
344395-EE-4	FOLSOM CA REDEV AGY TAX ALLOCA REDEV SER			2	1FE	918,271	116.6300	898,051	770,000	839,701		(23,663)			9.250	5.546	MS	23,742	71,225	08/22/2012	09/01/2030
359817-BY-8	FULLERTON CA REDEV AGY TXBL TAX ALLOCATI			2	1FE	1,060,675	104.5070	1,092,098	1,045,000	1,048,748		(2,143)			5.625	5.392	MS	19,594	58,781	08/22/2012	09/01/2021
364132-AX-8	GALT CA REDEV AGY TAX ALLOCATION TXBL SE			2	2FE	3,101,949	109.1400	2,859,468	2,620,000	2,794,297		(67,335)			9.250	6.151	MS	80,783	242,350	01/27/2012	09/01/2026
364132-AX-8	GALT CA REDEV AGY TAX ALLOCATION TXBL SE			2	2FE	1,183,770	109.1400	1,091,400	1,000,000	1,084,814		(17,320)			9.250	6.847	MS	30,833	92,500	01/27/2012	09/01/2026
45385L-CH-4	INDEP CITIES CA FIN AUTH MOBILE HOME REV			2	1	229,168	98.6480	230,305	233,462	232,349		1,218			5.750	6.268	MM	1,715	13,045	08/07/2017	05/15/2022
53945C-AP-5	LOS ANGELES CA WSTWTR SY-REVENUE BONDS			2	1FE	9,388,530	110.9080	9,981,720	9,000,000	9,196,206		(39,442)			5.000	4.450	JD	37,500	450,000	08/14/2013	06/01/2034
544435-4L-1	LOS ANGELES CA DEPT OF A-REVENUE BONDS			2	1FE	5,534,592	110.5330	5,305,584	4,800,000	5,336,268		(75,164)			5.000	3.056	MM	30,667	240,000	02/06/2015	05/15/2040
544435-4M-9	LOS ANGELES CA DEPT OF A-REVENUE BONDS			2	1FE	18,836,835	110.2300	18,342,272	16,640,000	18,270,732		(226,851)			5.000	3.282	MM	106,311	832,000	04/30/2015	05/15/2045
544435-C3-2	LOS ANGELES CA DEPT OF ARPTS-BUILD AMERI			1	1FE	1,218,259	126.1490	1,110,111	880,000	1,171,207		(18,867)			6.582	3.295	MM	7,401	57,922	08/02/2016	05/15/2039
544445-BD-0	LOS ANGELES CA DEPT OF A-REVENUE BONDS			1	1FE	10,000,000	101.1380	10,113,800	10,000,000	10,000,000					3.887	3.887	MM	49,667	388,700	11/16/2016	05/15/2038
544495-UG-7	LOS ANGELES CA DEPT WTR -REVENUE BONDS			1	1FE	455,280	123.3060	437,736	355,000	444,238		(3,163)			5.716	3.835	JJ	10,146	20,292	04/27/2015	07/01/2039
544495-VY-7	LOS ANGELES CA DEPT WTR -REVENUE BONDS			1	1FE	1,709,639	138.6630	1,650,090	1,190,000	1,671,916		(11,184)			6.574	3.990	JJ	39,115	78,231	12/09/2015	07/01/2045
544495-WA-8	LOS ANGELES CA DEPT WTR -REVENUE BONDS			1	1FE	169,462	141.1340	162,304	115,000	166,257		(921)			6.603	3.997	JJ	3,797	7,593	05/11/2015	07/01/2050
544525-NZ-7	LOS ANGELES CA DEPT OF W-REVENUE BONDS			1	1FE	324,300	121.3530	303,383	250,000	312,046		(3,500)			6.008	3.661	JJ	7,510	15,020	04/27/2015	07/01/2039
544652-6E-5	LOS ANGELES CA WSTWTR SY-REVENUE BONDS			1	1FE	1,587,456	121.8860	1,584,518	1,300,000	1,571,145		(9,509)			5.713	4.103	JD	6,189		03/29/2017	06/01/2039
544652-6F-2	LOS ANGELES CA WSTWTR SY-REVENUE BONDS			1	1FE	5,548,127	125.1730	5,607,750	4,480,000	5,488,367		(29,391)			5.813	4.192	JD	21,702	260,422	03/31/2017	06/01/2040
544712-2H-4	LOS ANGELES CNTY CA MET -REVENUE BONDS			2	1FE	27,810,482	120.4990	26,919,477	22,340,000	27,041,167		(246,026)			5.735	3.802	JD	106,767	1,281,199	11/30/2016	06/01/2039
587616-CN-1	MERCED CA IRR DIST ELEC SYS REF REVENUE			2	1FE	3,345,330	114.8220	3,444,660	3,000,000	3,239,980		(30,848)			5.000	3.651	AO	37,500	150,000	05/07/2015	10/01/2032
67232P-BB-8	OAKLAND CA REDEV AGY REVENUE SUB HSG SET			1	2FE	2,533,495	116.6300	2,507,545	2,150,000	2,356,972		(70,551)			9.250	5.324	MS	66,292	198,875	06/22/2012	09/01/2041
684273-HC-2	ORANGE CNTY CA LCL TRANSPRT-BUILD AMERI			1	1FE	47,821,330	132.3650	46,374,078	35,035,000	46,388,493		(546,607)			6.908	4.003	FA	914,305	2,420,218	03/28/2017	02/15/2041
68428T-AD-9	ORANGE CNTY CA SANTIN DIS-REVENUE BONDS			1	1FE	2,843,398	130.4110	2,692,987	2,065,000	2,786,929		(25,601)			6						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
797400-FN-3	SAN DIEGO ONTY CA REGL T-REVENUE BONDS	1			1FE	31,231,928		132,7230	29,500,000	31,046,754		(35,732)			5.911	5.498	AO	435,936	1,743,745	08/02/2016	04/01/2048
79741T-AR-5	SAN DIEGO ONTY CA WTR AU-REVENUE BONDS	1			1FE	20,106,346		131,0880	22,475,038	17,145,000		(77,030)			6.138	4.904	MN	546,589	1,037,926	10/04/2018	05/01/2049
79742G-AF-8	SAN DIEGO ONTY CA REGL A-REVENUE BONDS	1			1FE	13,752,729		109,3150	14,008,717	12,815,000		(38,745)			5.594	4.948	JJ	358,436	716,871	01/26/2017	07/01/2043
79742G-AF-8	SAN DIEGO ONTY CA REGL A-REVENUE BONDS	1			1FE	26,253,189		109,3150	27,208,504	24,890,000		(169,813)			5.594	4.948	JJ	696,173	1,392,347	03/14/2017	07/01/2043
79765R-SU-4	SAN FRANCISCO CITY & ONTY CA-BUILD AMERI	1			1FE	9,132,400		110,5340	8,732,186	7,900,000		(8,575,798)			5.500	3.569	MN	72,417	434,500	03/27/2014	11/01/2025
79765R-SV-2	SAN FRANCISCO CITY & ONTY CA-BUILD AMERI	1			1FE	12,542,322		122,8170	12,447,503	10,135,000		(97,992)			6.000	4.116	MN	292,900	596,392	10/04/2018	11/01/2040
79765R-TK-5	SAN FRANCISCO CITY & ONTY CA-BUILD AMERI	1			1FE	541,596		123,6690	507,043	410,000		526,021			6.000	3.659	MN	4,100	24,600	08/02/2016	11/01/2040
79765R-TL-3	SAN FRANCISCO CITY & ONTY CA-BUILD AMERI	1			1FE	2,635,246		142,5810	2,502,297	1,755,000		(2,593,863)			6.950	3.821	MN	20,329	94,993	08/01/2018	11/01/2050
798136-TR-8	SAN JOSE CA ARPT REVENUE-REVENUE BONDS	1			1FE	6,807,850		106,7070	7,469,490	7,000,000		6,831,021			6.750	6.983	MS	157,500	472,500	12/05/2011	03/01/2041
798136-TS-6	SAN JOSE CA ARPT REVENUE-REVENUE BONDS	1			1FE	10,412,500		106,6130	10,661,300	10,000,000		10,195,128			6.600	5.626	MS	220,000	660,000	01/31/2012	03/01/2041
798754-DM-6	SAN MARCOS CA REDEV AGY TAX ALLOCATION	2			1FE	1,982,063		109,8250	1,872,516	1,705,000		1,812,845			8.500	4.686	AO	36,231	144,925	08/22/2012	10/01/2030
80168N-EP-0	SANTA CLARA VLY CA TRANS-REVENUE BONDS	1			1FE	554,227		117,7770	506,441	430,000		531,583			5.876	2.911	AO	6,317	25,267	08/02/2016	04/01/2032
842440-VM-8	STHRN CALIFORNIA ST HOME-REVENUE BONDS	2			1FE	98,531		100,6710	100,671	100,000		98,776			5.800	5.905	MON	483	5,679	01/27/2009	12/01/2049
854733-DR-0	STANTON CA REDEV AGY-TAX ALLOCATION-CONS	2			1FE	767,164		117,1300	773,058	660,000		713,357			9.000	5.280	JD	4,950	59,400	08/21/2012	12/01/2040
861398-BG-9	STOCKTON CA PUBLIC FING AUTH WTR REVENUE	1			1FE	4,571,720		103,6650	4,146,600	4,000,000		4,142,634			7.942	3.085	AO	79,420	317,680	09/22/2015	10/01/2038
869398-BS-5	SUTTER BUTTE CA FLOOD AGY ASSMT REVENUE	2			1FE	5,466,500		111,2860	5,564,300	5,000,000		5,351,748			5.000	3.807	AO	62,500	250,000	05/29/2010	10/01/2040
913366-DF-4	UNIV OF CALIFORNIA CA RG-REVENUE BONDS	1			1FE	230,886		132,2710	231,474	175,000		228,465			6.583	4.353	MN	1,472	11,520	05/16/2017	05/15/2049
913366-EP-1	UNIV OF CALIFORNIA CA RG-REVENUE BONDS	1			1FE	277,444		131,8550	276,896	210,000		274,621			6.548	4.339	MN	1,757	13,751	05/16/2017	05/15/2048
913366-JP-6	Regents of the Universit-REVENUE BONDS	2			1	3,967,772		114,5140	4,460,320	3,895,000		3,955,445			5.250	4.850	MN	26,129	180,631	12/27/2017	05/15/2038
913366-JK-9	Regents of the Universit-REVENUE BONDS	2			1FE	1,125,645		111,7450	1,234,782	1,105,000		1,122,148			5.250	4.850	MN	7,413	51,244	12/27/2017	05/15/2038
91412F-7Y-7	UNIV OF CALIFORNIA-BUILD AMERICA REVENUE	1			1FE	2,136,376		120,3210	2,057,489	1,710,000		2,112,122			5.770	3.944	MN	12,607	60,417	08/01/2018	05/15/2043
91412G-C8-6	UNIV OF CALIFORNIA CA RE-REVENUE BONDS	1			1FE	1,420,917		102,8180	1,511,425	1,470,000		1,420,890			4.767	4.933	MN	8,954	70,075	05/16/2017	05/15/2115
91412G-DZ-5	UNIV OF CALIFORNIA-BUILD AMERICA REVENUE	1			1FE	2,027,996		124,1820	1,968,285	1,585,000		1,985,156			5.946	3.995	MN	12,042	94,244	05/16/2017	05/15/2045
91412G-VC-6	UNIV OF CALIFORNIA CA RE-REVENUE BONDS	1			1FE	154,488		105,7160	153,288	145,000		151,596			4.765	3.819	MN	883	6,909	05/11/2015	05/15/2044
924397-CP-5	VERNON CA ELEC SYS REVENUE SERIES B	1			2FE	509,585		110,3510	551,755	500,000		503,955			6.250	5.999	FA	13,021	31,250	02/13/2012	08/01/2022
924397-CQ-3	VERNON CA ELEC SYS REVENUE TXBL SERIES B	1			2FE	505,000		110,0550	550,275	500,000		502,063			6.250	6.118	FA	13,021	31,250	02/10/2012	08/01/2023
924397-CS-9	VERNON CA ELEC SYS REVENUE SERIES B	1			2FE	1,913,580		109,5450	2,190,900	2,000,000		1,948,116			6.375	6.870	FA	53,125	127,500	01/11/2012	08/01/2025
924397-CS-9	VERNON CA ELEC SYS REVENUE SERIES B	1			2FE	508,585		109,5450	547,725	500,000		503,547			6.375	6.149	FA	13,281	31,875	02/03/2012	08/01/2025
924397-CT-7	VERNON CA ELEC SYS REVENUE SERIES B	1			2FE	1,914,880		109,5770	2,191,540	2,000,000		1,945,192			6.500	6.970	FA	54,167	130,000	01/11/2012	08/01/2026
924397-CT-7	VERNON CA ELEC SYS REVENUE SERIES B	1			2FE	1,528,915		109,5770	1,643,655	1,500,000		1,511,996			6.500	6.245	FA	97,500	97,500	02/08/2012	08/01/2026
924402-AZ-3	VERNON CA REDEV AGY TAX -TAX ALLOCATION	2			1FE	2,996,280		113,7570	2,969,058	2,610,000		2,791,753			9.250	6.363	MS	80,475	241,425	09/11/2012	09/01/2030
956135-BH-9	W STANISLAUS CA IRR DIST COPS SER A	2			1FE	2,767,066		109,3170	3,049,944	2,790,000		2,770,249			5.250	5.314	JJ	73,238	146,475	08/08/2013	01/01/2038
956135-BJ-5	W STANISLAUS CA IRR DIST COPS SER A	2			1FE	2,578,538		109,1190	2,864,374	2,625,000		2,583,058			5.250	5.375	JJ	68,906	137,813	08/08/2013	01/01/2043
19648A-2X-2	COLORADO ST HLTH FACS AUTH REV EVANGELIC	2			2FE	3,154,770		105,9500	3,178,500	3,000,000		3,116,174			5.000	4.302	JD	12,500	150,000	07/10/2015	06/01/2040
19648A-N8-4	COLORADO ST HLTH FACS AUTH REV SOL HEALT	2			1FE	4,908,000		108,0560	5,402,800	5,000,000		4,916,849			5.000	5.122	JJ	125,000	250,000	10/30/2013	01/01/2044
19648A-V9-3	COLORADO ST HLTH FACS AUTH REV REF-COVEN	2			1FE	1,521,320		109,4460	1,537,716	1,405,000		1,483,674			5.000	4.001	JD	5,854	70,250	03/13/2015	12/01/2030
249182-LV-6	City & County of Denver -REVENUE BONDS	2			1FE	10,226,598		111,5800	10,321,150	9,250,000		10,201,679			5.000	3.748	JD	38,542	119,479	09/19/2018	12/01/2043
744387-AD-3	PUBLIC AUTH FOR COLORADO-REVENUE BONDS	1			1FE	6,631,250		135,5420	6,777,100	5,000,000		6,503,471			6.500	3.928	MN	41,528	325,000	01/24/2017	11/15/2038
75157T-AA-7	RAMPART RANGE METROPOLIT-REVENUE BONDS	2			1FE	2,263,180		111,7200	2,234,400	2,000,000		2,244,378			5.000	3.400	JD	8,333	110,278	11/03/2018	12/01/2042
759136-TJ-3	REGL TRANSPRTN DIST CO S-REVENUE BONDS	2			1FE	13,248,726		112,3720	13,428,454	11,950,000		13,014,094			5.000	3.680	MN	99,583	597,500	12/01/2016	11/01/2046
759151-AA-1	REGL CO TRANSPRTN DIST PRIV ACT REVENUE	2			2FE	1,002,000		101,7220	1,017,220	1,000,000		1,000,779			6.000	5.944	JJ	27,667	60,000	05/31/2011	01/15/2041
20774Y-QV-2	CONNECTICUT ST HLTH & ED-REVENUE BONDS	2			1FE	12,753,066		111,1320	12,669,048	11,400,000		12,201,682			5.000	3.580	JJ	285,000	570,000	06/09/2014	07/01/2031
20774Y-QN-0	CONNECTICUT ST HLTH & ED-REVENUE BONDS	2			1FE	13,283,142		110,8630	13,248,129	11,950,000		12,741,159			5.000	3.660	JJ	298,750	597,500	06/09/2014	07/01/2032
20774Y-QX-8	CONNECTICUT ST HLTH & ED-REVENUE BONDS	2			1FE	5,602,128		110,5950	5,596,107	5,060,000		5,382,053			5.000	3.710	JJ	126,500	253,000	06/09/2014	07/01/2033
20774Y-US-4	CONNECTICUT ST HLTH & EDL REV-ST SUPPORT	2			1FE	3,000,000		102,0070	3,060,210	3,000,000		3,000,000			4.000	3.999	JJ	60,000	120,000	03/18/2015	07/01/2038
20774Y-W3-7	CONNECTICUT ST HLTH & ED-REVENUE BONDS	2			2FE	3,190,740		104,2490	3,127,470	3,000,000		3,154,766			5.000	4.191	JJ	75,000	150,000	11/03/2016	07/01/2037
20774Y-W3-7	CONNECTICUT ST HLTH & ED-REVENUE BONDS	2			2FE	1,365,000		104,2490	1,422,999	1,365,000		1,365,000			5.000	5.000	JJ	34,125	68,250	12/02/2016	07/01/2037
20774Y-XG-7	CONNECTICUT ST HLTH & ED FACS AUTH REVEN	2			1FE	5,396,700		109,4970	5,474,850												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
25483V-RU-0	DIST OF COLUMBIA REVENUE-REVENUE BONDS			2	1	15,375	110.1270	16,519	15,000	15,213		(87)			6.500	5.813	AO	244	975	01/31/2017	10/01/2041
25483V-RY-2	DIST OF COLUMBIA REVENUE-REVENUE BONDS			2	3FE	1,009,637	104.3680	1,028,025	985,000	998,967		(5,699)			6.500	5.813	AO	16,006	64,025	01/30/2017	10/01/2041
254845-G0-7	DIST OF COLUMBIA WTR & S-REVENUE BONDS			1	1FE	15,146,183	121.5890	17,131,890	14,090,000	14,986,992		(31,709)			5.522	4.973	AO	582,157	778,500	05/31/2017	10/01/2044
254845-JR-2	DIST OF COLUMBIA WTR & S-REVENUE BONDS			2	1FE	8,536,322	109.7530	9,208,277	8,390,000	8,489,272		(18,354)			5.000	4.717	AO	104,875	419,500	08/09/2013	10/01/2048
254845-JZ-4	DIST OF COLUMBIA WTR & S-REVENUE BONDS			1	1FE	24,994,131	110.5900	26,757,251	24,195,000	24,992,123		(738)			4.814	4.657	AO	291,187	1,164,747	11/30/2017	10/01/2114
313586-RC-5	FANNIE MAE-SUBORDINATED				1FE	1,268,050	97.9179	1,292,516	1,320,000	1,307,243		16,399			0.000	1.266	N/A			08/02/2016	10/09/2019
31359M-EU-3	FANNIE MAE-UNSECURED				1FE	1,831,660	128.2372	1,795,321	1,400,000	1,796,958		(17,135)			6.250	3.032	MN	11,181	38,715	10/04/2018	05/15/2029
31359M-FP-3	Federal National Mortgage-UNSECURED				1FE	805,044	138.9537	819,827	590,000	801,700		(3,344)			7.250	3.415	MN	5,466	3,921	10/04/2018	05/15/2030
31359M-GK-3	FANNIE MAE-UNSECURED				1FE	1,555,770	134.0427	1,440,959	1,075,000	1,501,582		(23,895)			6.625	2.686	MN	9,100	50,534	10/04/2018	11/15/2030
31364F-YC-9	FANNIE MAE-UNSECURED				1FE	135,261	119.8040	119,804	100,000	128,714		(2,757)			5.625	2.193	AO	1,156	5,625	08/02/2016	04/17/2028
31398A-FD-9	FANNIE MAE-BOND				1FE	469,582	131.7883	460,226	460,000	467,602		(277)			5.625	5.472	JJ	11,931	25,875	11/28/2009	07/15/2037
010685-KF-1	ALACHUA CNTY FLA HEALTH FACs REV SHANDS			2	1FE	4,039,519	107.2260	3,886,943	3,625,000	3,932,268		(46,150)			5.000	3.406	JD	15,104	181,250	02/09/2016	12/01/2044
072222-AK-8	BAY CNTY FL EDUCNTL FACs REVENUE BAY HAV			2	2FE	63,943	100.0910	64,001	63,943	63,943					5.900	5.898	MS	1,258	3,457	04/18/2013	09/01/2022
14054C-AD-1	CAPITAL TRUST AGY FL EDU-REVENUE BONDS			2	3FE	165,000	99.8260	164,713	165,000	165,000					6.000	6.007	JJ	4,950	3,000	04/20/2017	07/01/2019
14054C-AL-3	CAPITAL TRUST AGENCY INC-REVENUE BONDS			2	3FE	190,000	96.8790	184,070	190,000	190,000					5.000	5.000	AO	2,006	9,500	11/03/2017	10/15/2047
14054C-AM-1	CAPITAL TRUST AGENCY INC-REVENUE BONDS			2	3FE	132,264	95.1480	128,450	135,000	132,284		25			5.000	5.128	AO	1,425	6,750	11/03/2017	10/15/2052
14054C-AN-9	CAPITAL TRUST AGENCY INC-REVENUE BONDS			2	3FE	125,000	99.1370	123,921	125,000	125,000					5.500	5.501	AO	1,451	6,875	11/03/2017	10/15/2022
194639-AF-7	COLLIER COUNTY INDUSTRIA-REVENUE BONDS			2	4	110,602	99.6470	110,212	110,602	110,602					5.500	5.499	JD	507	5,934	11/09/2017	12/01/2022
340618-CW-5	Florida Development Fina-REVENUE BONDS			2	2FE	53,273	104.5380	52,269	50,000	53,114		(158)			5.000	4.171	FA	944	431	06/06/2018	02/15/2038
340618-CX-3	Florida Development Fina-REVENUE BONDS			2	2FE	174,184	103.7000	171,105	165,000	173,739		(445)			5.000	4.292	FA	3,117	1,421	06/06/2018	02/15/2048
340618-CY-1	Florida Development Fina-REVENUE BONDS			2	2FE	260,000	100.1370	260,356	260,000	260,000					5.000	5.005	FA	4,911	2,239	06/06/2018	02/15/2021
341507-K5-9	FLORIDA ST BRD OF EDU LO-REVENUE BONDS			2	1FE	5,578,160	101.0610	5,659,416	5,600,000	5,584,999		1,197			3.000	3.030	JJ	84,000	168,000	11/08/2012	07/01/2029
341507-K6-7	FLORIDA ST BRD OF EDU LO-REVENUE BONDS			2	1FE	5,610,988	100.3300	5,698,744	5,680,000	5,630,836		3,511			3.000	3.090	JJ	85,200	170,400	11/08/2012	07/01/2030
341507-K7-5	FLORIDA ST BRD OF EDU LO-REVENUE BONDS			2	1FE	5,360,519	100.3300	5,478,018	5,460,000	5,387,042		4,703			3.000	3.130	JJ	81,900	163,800	11/08/2012	07/01/2031
341507-K8-3	FLORIDA ST BRD OF EDU LO-REVENUE BONDS			2	1FE	5,421,018	98.9040	5,489,172	5,550,000	5,453,014		5,681			3.000	3.160	JJ	83,250	166,500	11/08/2012	07/01/2032
341618-BD-0	FLORIDA ST DEPT OF TRANS-REVENUE BONDS			2	1FE	6,010,131	109.8510	6,206,582	5,650,000	5,886,635		(47,133)			5.000	3.974	JJ	141,250	282,500	02/12/2014	07/01/2041
341618-BF-5	FLORIDA ST DEPT OF TRANS-REVENUE BONDS			2	1FE	15,995,979	109.7620	16,530,157	15,060,000	15,680,442		(123,524)			5.000	3.991	JJ	376,500	753,000	02/12/2014	07/01/2043
343136-L7-0	FLORIDA ST TURNPIKE AUTH REV BUILD AMER			2	1FE	1,160,140	101.9180	1,019,180	1,000,000	1,027,579		(54,645)			6.800	1.250	JJ	34,000	68,000	10/06/2014	07/01/2039
392274-J6-4	GTR ORLANDO FL AVIATION -REVENUE BONDS			2	1FE	21,005,061	109.2510	20,921,567	19,150,000	20,573,405		(182,327)			5.000	3.743	AO	239,375	957,500	10/01/2015	10/01/2045
432275-AA-3	HILLSBOROUGH CNTY FL AVIATION REV TAMPA			2	1FE	5,436,850	108.7700	5,438,500	5,000,000	5,320,022		(49,049)			5.000	3.751	AO	62,500	250,000	08/19/2015	10/01/2044
432275-AQ-8	HILLSBOROUGH CNTY FL AVI-REVENUE BONDS			2	1FE	64,000,000	109.2670	69,930,880	64,000,000	64,000,000					5.250	5.250	AO	840,000	3,360,000	08/19/2015	10/01/2041
432308-D9-2	HILLSBOROUGH CNTY FL AVI-REVENUE BONDS			2	1FE	10,821,900	108.4430	10,844,300	10,000,000	10,598,789		(91,540)			5.000	3.829	AO	125,000	500,000	07/23/2015	10/01/2040
432308-E2-6	HILLSBOROUGH CNTY FL AVI-REVENUE BONDS			2	1FE	9,151,270	108.2260	9,199,210	8,500,000	8,977,575		(72,842)			5.000	3.899	AO	106,250		07/23/2015	10/01/2044
432308-E8-3	HILLSBOROUGH CNTY FL AVIATION AUTH REVEN			2	1FE	3,213,240	108.1720	3,245,160	3,000,000	3,155,009		(23,576)			5.000	3.984	AO	37,500		07/23/2015	10/01/2040
511665-JP-7	LAKELAND FL HOSP SYS REVENUE REGL HEALTH			2	1FE	2,681,675	108.1090	2,702,725	2,500,000	2,633,113		(19,776)			5.000	3.974	MN	15,972	125,000	08/07/2015	11/15/2040
523470-GA-4	LEE CNTY FL ARPT REF REVENUE			2	1FE	4,457,360	112.8410	4,513,640	4,000,000	4,319,958		(41,129)			5.000	3.651	AO	50,000	200,000	06/03/2015	10/01/2033
573903-FX-4	MARTIN CNTY FL HLTH FACs AUTH REVENUE MA			2	2FE	3,139,170	105.2320	3,156,960	3,000,000	3,103,162		(15,147)			5.000	4.330	MN	19,167	150,000	08/28/2015	11/15/2045
58333A-LZ-2	MIAMI-DADE CNTY FL EDUCNTL FACs REVENUE			2	1FE	8,718,400	108.9870	8,718,960	8,000,000	8,534,916		(74,602)			5.000	3.787	AO	100,000	400,000	10/01/2015	04/01/2040
58333N-ZF-3	MIAMI-DADE CNTY FL SPL O-REVENUE BONDS			3	1FE	4,838,900	49.6940	4,969,400	10,000,000	5,271,926					0.000	3.639	N/A	186,754		07/15/2016	10/01/2036
58333P-L6-3	MIAMI-DADE CNTY FL AVIAT-REVENUE BONDS			2	1FE	15,507,885	108.7160	15,328,956	14,100,000	14,987,235		(135,894)			5.000	3.771	AO	176,250	705,000	12/03/2014	10/01/2036
58333P-R7-5	MIAMI-DADE CNTY FL AVIATION REV SER A			2	1FE	20,818,590	109.1250	21,279,375	19,500,000	20,437,696		(118,155)			5.000	4.174	AO	243,750	975,000	06/10/2015	10/01/2038
58333P-V9-6	MIAMI-DADE CNTY FL AVIAT-REVENUE BONDS			2	1FE	2,500,000	96.5210	2,413,025	2,500,000	2,500,000					3.756	3.756	AO	23,475	93,900	08/04/2016	10/01/2036
58333P-W2-0	MIAMI-DADE CNTY FL AVIAT-REVENUE BONDS			2	1FE	10,000,000	96.2330	9,623,300	10,000,000	10,000,000					3.856	3.856	AO	96,400	385,600	08/04/2016	10/01/2041
58334P-FR-3	MIAMI-DADE CNTY FL TRANSIT SALES SURTAX			2	1FE	3,497,760	111.6600	3,517,290	3,150,000	3,388,467		(31,926)			5.000	3.680	JJ	78,750	157,500	05/14/2015	07/01/2035
836753-KD-4	SOUTH BROWARD FL HOSP DIST REF REVENUE			2	1FE	5,103,750	103.0410	5,152,050	5,000,000	5,069,684		(9,608)			4.000	3.750	MN	33,333	200,000	03/25/2015	05/01/2036
914727-DT-6	UNIV OF NORTH FLORIDA FL-REVENUE BONDS			2	1FE	3,772,425	112.1520	3,897,282	3,475,000	3,718,429		(26,065)			5.000	3.951	MN	28,958	173,750	11/16/2016	11/01/2035
04780N-JJ-7	ATLANTA GA DEV AUTH-REV DOWNTOWN STADIUM			2	1FE	3,313,230	112.5390	3,376,170	3,000,000	3,214,364		(28,621)			5.000	3.751	JJ	75,000	150,000	05/11/2015	07/01/

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
931557-AW-2	WALKER CNTY GA DEV AUTH ECON DEV REVENUE			2	1FE	489,385	103.4370	517,185	500,000	490,212		291			5.500	5.671	FA	11,458	27,500	09/18/2015	08/01/2037
40064R-DK-2	GUAM INTERNATIONAL ARPT AUTH REF REVENUE			2	2FE	4,930,650	113.7250	5,686,250	5,000,000	4,936,710		1,380			6.375	6.485	AO	79,688	318,750	08/29/2013	10/01/2043
40065N-AL-1	GUAM GOVT BUS PRIVILEGE TAX REVENUE SER			2	3FE	3,349,000	102.3510	3,479,934	3,400,000	3,354,712		1,204			5.125	5.231	JJ	87,125	174,250	11/21/2013	01/01/2042
40065N-AL-1	GUAM GOVT BUS PRIVILEGE TAX REVENUE SER			2	3FE	1,871,500	102.3510	1,944,669	1,900,000	1,875,162		888			5.125	5.242	JJ	48,688	97,375	11/21/2013	01/01/2042
46246K-3P-5	IOWA ST FIN AUTH REVENUE-REVENUE BONDS			2	2FE	7,751,520	102.7220	7,190,540	7,000,000	7,605,587		(70,432)			5.000	3.650	IN	44,722	350,000	11/04/2016	05/15/2047
451295-WT-2	IDAHO ST HLTH FACIS AUTH REVENUE ST LUKES			2	1FE	2,038,864	106.6810	2,032,273	1,905,000	1,999,971		(16,297)			5.000	3.923	MS	31,750	95,250	08/11/2015	03/01/2044
451295-YZ-6	IDAHO HEALTH FACILITIES -REVENUE BONDS			2	4	173,446	100.5570	170,947	170,000	173,126		(275)			5.250	4.990	IN	1,140	8,925	11/03/2017	11/15/2047
451295-ZA-0	IDAHO HEALTH FACILITIES -REVENUE BONDS			2	4	110,000	99.4870	109,436	110,000	110,000					3.625	3.625	IN	510	3,088	11/15/2017	11/15/2019
45130C-AK-7	IDAHO ST HSG & FIN ASSN ECON DEV REVENUE			2	1FE	2,912,190	107.6860	3,230,580	3,000,000	2,924,566		2,085			7.250	7.512	JJ	108,750	217,500	06/29/2011	01/01/2040
051687-DG-3	AURORA IL SF MTGE REVENUE BOND			2	1FE	263,010	100.3920	293,379	292,233	265,966		383			5.500	6.192	MON	17,412	16,073	12/04/2008	06/01/2045
167562-MQ-7	CHICAGO IL MIDWAY ARPT REV 2ND LIEN SER			2	1FE	5,017,450	109.4240	5,471,200	5,000,000	5,008,897		(1,941)			5.500	5.450	JJ	137,500	275,000	11/22/2013	01/01/2032
167593-LR-1	CHICAGO IL O'HARE INTERNATIONAL REVENUE			2	2FE	4,954,300	111.5560	5,577,800	5,000,000	4,960,225		1,335			5.750	5.824	JJ	143,750	287,500	08/07/2013	01/01/2038
167593-UT-7	CHICAGO IL O'HARE INTERN-REVENUE BONDS			2	1FE	2,268,000	109.3650	2,187,300	2,000,000	2,213,522		(26,724)			5.000	3.281	JJ	50,000	100,000	11/09/2016	01/01/2041
167593-WR-9	CHICAGO IL O'HARE INTERN-REVENUE BONDS			2	1FE	5,298,050	109.5780	5,478,900	5,000,000	5,248,495		(25,575)			5.000	4.260	JJ	125,000	250,000	12/01/2016	01/01/2047
451913-AH-0	ILLINOIS ST FIN AUTH REVENUE BOND			2	1FE	14,800,150	85.1820	24,975,362	29,320,000	21,817,505		821,622			0.000	5.259	N/A			09/17/2009	07/15/2025
45201Y-YL-5	ILLINOIS ST HSG DEV AUTH REV PROG SER B			2	1FE	308,006	95.7190	309,523	323,366	309,565		378			2.750	2.997	MON	741	8,846	08/27/2004	06/01/2043
452020-CK-7	ILLINOIS ST FIN AUTH STU HSG REVENUE UNI			2	4FE	2,642,575	99.7400	2,493,500	2,500,000	2,601,717		(13,312)			5.000	4.276	JJ	62,500	125,000	04/30/2015	07/01/2030
45203H-AJ-8	ILLINOIS ST FIN AUTH REVENUE BOND			2	1FE	14,496,428	109.0950	14,455,088	13,250,000	14,189,294		(129,311)			5.000	3.732	MN	376,042	662,500	09/11/2015	05/01/2045
45203H-SF-5	ILLINOIS ST FIN AUTH REVENUE OSF HEALTHC			2	1FE	2,636,025	107.1260	2,678,150	2,500,000	2,605,034		(12,905)			5.000	4.287	IN	15,972	125,000	09/17/2015	11/15/2045
45203H-E4-0	ILLINOIS ST FIN AUTH REVENUE BOND			2	1FE	17,620,805	109.0730	17,069,925	15,650,000	17,028,892		(221,803)			5.000	3.261	FA	326,042	782,500	12/04/2014	08/01/2038
45204E-BZ-0	ILLINOIS ST FIN AUTH REVENUE			2	1FE	3,842,158	100.8920	3,842,647	3,660,000	3,800,287		(16,374)			4.000	3.410	JD	12,200	146,400	05/05/2016	12/01/2036
45204E-C7-1	Illinois Finance Authori-REVENUE BONDS			1	1FE	1,832,170	98.6350	1,874,065	1,900,000	1,834,188		2,018			3.548	3.950	FA	25,467	38,762	07/31/2018	08/15/2029
45204E-D4-7	Illinois Finance Authori-REVENUE BONDS			1	1FE	30,393,984	97.6240	29,872,944	30,600,000	30,398,097		4,113			3.944	3.985	FA	455,926	693,947	02/26/2018	08/15/2047
45204E-PQ-5	ILLINOIS ST FIN AUTH REV-REVENUE BONDS			2	1FE	5,551,150	108.4550	5,422,750	5,000,000	5,438,957		(53,222)			5.000	3.591	FA	94,444	250,000	10/28/2016	02/15/2045
45204E-LH-9	ILLINOIS ST FIN AUTH REV-REVENUE BONDS			2	2FE	4,241,680	101.0510	4,042,040	4,000,000	4,210,194		(19,463)			5.000	4.273	AO	50,000	200,000	05/24/2017	10/01/2038
45204E-VE-5	ILLINOIS FINANCE AUTHORI-REVENUE BONDS			2	2FE	133,263	107.1230	133,904	125,000	132,318		(697)			5.000	4.181	FA	2,604	6,250	08/04/2017	08/01/2042
45204E-VF-2	ILLINOIS FINANCE AUTHORI-REVENUE BONDS			2	2FE	159,164	106.5990	159,899	150,000	158,118		(772)			5.000	4.241	FA	3,125	7,500	08/04/2017	08/01/2047
45204E-VP-0	ILLINOIS FINANCE AUTHORI-REVENUE BONDS			2	2FE	1,061,920	106.7480	1,067,480	1,000,000	1,054,852		(5,215)			5.000	4.231	FA	20,833	50,000	08/04/2017	08/01/2046
452227-CC-3	State of Illinois-REVENUE BONDS			2	2FE	5,118,719	101.3240	5,400,569	5,330,000	5,295,907		71,272			4.750	6.189	JD	11,252	699,935	09/05/2013	06/15/2034
452227-FY-3	State of Illinois-REVENUE BONDS			2	1FE	22,040,650	93.2360	20,511,920	22,000,000	22,030,629		(1,713)			4.080	4.066	JD	1,098,653	1,062,840	05/22/2012	06/15/2036
452252-LX-5	Illinois State Toll High-REVENUE BONDS			2	1FE	3,242,970	110.5070	3,315,210	3,000,000	3,237,084		(5,886)			5.000	3.780	JJ	75,000		10/09/2018	01/01/2041
592247-K6-6	MET PIER & EXPO AUTH IL ST TAX REVENUE-C			2	2FE	1,600,750	47.1730	2,358,650	5,000,000	2,073,841		107,995			0.000	5.420	N/A			02/25/2014	06/15/2035
592248-BD-9	MET PIER & EXPOSITION AU-REVENUE BONDS			2	1FE	5,478,794	28.6960	16,609,245	57,880,000	8,478,098		255,615			0.000	21.223	N/A			04/01/2011	06/15/2046
79467B-AR-6	Sales Tax Securitization-REVENUE BONDS			1	1FE	722,640	90.3390	722,712	800,000	723,392		752			3.587	4.328	JJ	14,348		09/19/2018	01/01/2043
79467B-BN-4	Sales Tax Securitization-REVENUE BONDS			1	1FE	1,240,880	90.8670	1,226,705	1,350,000	1,241,581		701			3.820	4.335	JJ	25,785		09/14/2018	01/01/2048
84552Y-LZ-2	S WSTRN IL DEV AUTH REVENUE BELLEVILLE R			2	2Z	2,000,000	98.7710	1,975,420	2,000,000	2,000,000					9.250	9.239	JJ	92,500	185,000	10/20/2011	07/01/2029
84552Y-PX-3	S WSTRN IL DEV AUTH REVENUE			2	1FE	4,914,750	100.4680	5,023,400	5,000,000	4,921,214		2,429			4.000	4.115	AO	42,222	200,000	12/10/2015	10/15/2040
92870P-AL-2	VOLO VLG IL SPL SVC AREA #3 & 6 SPECIAL			2	1FE	1,257,175	100.2430	1,253,038	1,250,000	1,255,523		(662)			4.000	3.928	MS	16,667	50,000	02/18/2016	03/01/2036
45471A-CI-0	INDIANA ST FIN AUTH REVENUE			2	2FE	1,667,680	103.7680	2,075,360	2,000,000	1,696,532		4,687			5.000	6.774	FA	41,556	110,000	06/01/2011	08/15/2045
455057-PS-2	INDIANA ST FIN AUTH REVENUE MARIAN UNIVE			2	2FE	5,012,500	105.7780	5,288,900	5,000,000	5,006,605		(2,371)			6.375	6.316	MS	93,854	318,750	12/05/2013	09/15/2041
455060-A7-0	INDIANA ST FIN AUTH REVE-REVENUE BONDS			2	1FE	2,274,240	110.4940	2,209,880	2,000,000	2,222,670		(25,103)			5.000	3.341	MS	33,333	100,000	11/02/2016	09/01/2036
455060-GY-5	INDIANA ST FIN AUTH REVENUE			2	2FE	1,692,500	105.6770	2,113,540	2,000,000	1,726,234		7,151			5.000	6.227	JJ	50,000	100,000	08/26/2013	07/01/2040
455060-QM-0	INDIANA ST FIN AUTH REVENUE CMNTY FNDTN			2	1FE	3,347,070	109.1700	3,275,100	3,000,000	3,250,510		(35,850)			5.000	3.483	MS	50,000	150,000	03/26/2015	03/01/2036
455060-RA-5	INDIANA ST FIN AUTH REV SERIES 2015A MAR			2	2FE	2,958,803	103.8580	2,876,867	2,770,000	2,907,482		(19,263)			5.000	4.080	MS	46,167	138,500	04/01/2015	03/01/2039
455060-SU-0	INDIANA ST FIN AUTH REVENUE CONV CTR PRO			2	1FE	7,366,050	103.0910	7,731,825	7,500,000	7,380,510		4,397			4.000	4.126	FA	125,000	300,000	05/08/2015	02/01/2037
455060-UM-5	INDIANA ST FIN AUTH REVENUE DEACONESS HE			2	1FE	6,116,688	102.0780	6,379,875	6,250,000	6,131,560		4,458			4.000	4.152	MS	83,333	250,000	06/24/2015	03/01/2037
500364-AA-2	KOKOMO IN MF HSG REVENUE-REVENUE BONDS			2	5	180,000	102.4270	184,369	180,000	180,000					5.750	5.751	JJ	5,175	10,350	03/2	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
491552-ZM-0	KENTUCKY ST TURNPIKE AUT-REVENUE BONDS	2		1FE		3,725,542		110,3420	3,630,000	3,679,316		(9,638)			5.000	4.662	JJ	90,750	181,500	09/13/2013	07/01/2033
546282-5L-4	LOUISIANA ST LOCAL GOVT -REVENUE BONDS	2		3Z		2,715,000		100,1000	2,715,000	2,715,000					7.500	7.503	FA	84,844	198,938	02/23/2017	02/01/2026
546282-YL-2	LOUISIANA ST LCL GOVT ENVRM FACS REVENU	2		1FE		3,989,440		106,5050	4,260,200	3,989,480		348			5.000	5.022	AO	50,000	200,000	11/21/2013	10/01/2038
546398-9F-3	LOUISIANA ST PUBLIC FACS AUTH REF REVENU	2		1FE		2,154,820		109,0860	2,000,000	2,107,796		(14,577)			5.000	4.032	MN	12,778	100,000	07/30/2015	05/15/2034
546398-3G-1	LOUISIANA ST PUBLIC FACS AUTH REF REVENU	2		1FE		2,148,160		108,6690	2,000,000	2,103,210		(13,936)			5.000	4.072	MN	12,778	100,000	07/30/2015	05/15/2035
546398-6X-1	LOUISIANA ST PUBLIC FACS-REVENUE BONDS	2		2FE		163,375		106,9930	155,000	162,189		(686)			5.000	4.342	JJ	3,875	7,750	03/09/2017	07/01/2037
546398-7H-5	LOUISIANA ST PUBLIC FACS-REVENUE BONDS	2		2FE		187,751		109,7070	175,000	185,931		(1,054)			5.000	4.121	JJ	4,375	8,750	03/09/2017	07/01/2032
546398-7J-1	LOUISIANA ST PUBLIC FACS-REVENUE BONDS	2		2FE		144,021		108,8690	135,000	142,737		(744)			5.000	4.192	JJ	3,375	6,750	03/09/2017	07/01/2033
546475-PS-7	LOUISIANA ST GAS & FUELS-REVENUE BONDS	2		1FE		11,584,832		108,8620	11,025,000	11,389,880		(75,494)			5.000	4.156	MN	91,875	551,250	12/10/2013	05/01/2043
546475-OP-2	LOUISIANA ST GAS & FUELS-REVENUE BONDS	2		1FE		5,826,950		112,2890	5,000,000	5,512,572		(87,655)			5.000	2.910	MN	41,667	250,000	04/06/2015	05/01/2036
546475-OS-6	LOUISIANA ST GAS & FUELS-REVENUE BONDS	2		1FE		4,302,141		112,0770	4,342,984	4,170,193		(49,672)			5.000	3.424	MN	32,292	193,750	07/11/2014	05/01/2039
546475-PK-2	LOUISIANA ST GAS & FUELS-REVENUE BONDS	2		1FE		3,299,554		113,6040	2,780,000	3,123,945		(48,906)			5.000	2.850	MN	23,167	139,000	04/06/2015	05/01/2034
575579-HE-0	MASSACHUSETTS ST BAY TRA-REVENUE BONDS	2		1FE		10,096,600		121,1550	10,000,000	10,055,066		(5,107)			5.000	4.920	JJ	250,000	500,000	09/19/2008	07/01/2027
575832-VJ-6	MASSACHUSETTS ST CLG BLD-REVENUE BONDS	2		1FE		22,677,353		103,6380	23,250,000	22,770,216		14,385			4.250	4.405	MN	164,688	988,125	12/14/2011	05/01/2041
575830-CY-2	MASSACHUSETTS ST DEV FIN AGY REVENUE	2		2FE		1,971,240		107,2080	2,000,000	1,980,161		1,383			6.000	6.133	JJ	60,000	120,000	06/02/2011	07/01/2031
575830-F6-0	Massachusetts Development-REVENUE BONDS	2		1FE		34,661,910		107,1760	32,900,000	34,068,582		(232,781)			5.000	4.125	JJ	822,500	1,645,000	05/29/2014	07/01/2044
57584X-XF-3	MASSACHUSETTS ST DEV FIN-REVENUE BONDS	2		1FE		4,000,947		102,4740	3,730,000	3,948,826		(24,595)			4.000	3.141	AO	37,300	149,200	10/05/2016	10/01/2039
57585J-VZ-1	MASSACHUSETTS ST HLTH & -REVENUE BOND SE	2		1FE		9,839,970		123,9900	10,500,000	10,102,079		32,955			5.000	5.745	JJ	273,000	546,000	10/20/2008	01/01/2028
575896-MY-8	MASSACHUSETTS ST PORT AU-REVENUE BONDS	2		1FE		5,227,174		108,8460	4,845,000	5,111,148		(42,631)			5.000	3.881	JJ	121,125	242,250	07/10/2014	07/01/2039
575896-MZ-5	MASSACHUSETTS ST PORT AU-REVENUE BONDS	2		1FE		5,206,582		108,1130	4,845,000	5,101,376		(41,012)			5.000	3.921	JJ	121,125	242,250	07/10/2014	07/01/2044
575896-NM-1	MASSACHUSETTS ST PORT AU-REVENUE BONDS	2		1FE		2,715,515		112,0510	2,425,000	2,597,980		(28,000)			5.000	3.625	JJ	60,625	121,250	07/10/2014	07/01/2035
575898-CT-6	MASSACHUSETTS ST PORT AU-REVENUE BONDS	1		1FE		20,252,257		123,1340	21,659,271	17,590,000		19,884,018			6.352	5.109	JJ	558,658	1,117,317	01/06/2015	07/01/2037
576000-KV-4	Massachusetts School Bui-REVENUE BONDS	2		1FE		117,975		122,4520	100,000	117,815		(160)			5.715	4.219	FA	2,159		10/04/2018	08/15/2039
576000-KI-2	MASSACHUSETTS ST SCH BLD-REVENUE BONDS	1		1FE		11,000,000		114,0290	11,000,000	11,000,000					5.488	5.467	JD	327,472	601,480	06/16/2010	06/15/2027
576000-LA-9	MASSACHUSETTS ST SCH BLD-REVENUE BONDS	1		1FE		12,748,019		109,9520	11,680,000	12,374,723		(58,386)			4.885	4.124	JD	263,095	570,568	09/29/2011	07/15/2028
57604T-AD-8	MASSACHUSETTS ST TRANSPR-REVENUE BOND	1		1FE		9,383,428		121,9680	8,555,000	9,247,765		(28,691)			5.731	4.983	JD	226,971	490,287	08/02/2016	06/01/2040
57604T-AX-4	MASSACHUSETTS ST TRANSPR-REVENUE BONDS	2		1FE		14,269,917		103,8680	13,335,000	13,612,178		(108,914)			4.000	3.100	JD	309,150	533,400	06/01/2012	06/01/2030
57604T-BT-2	MASSACHUSETTS ST TRANSPR-REVENUE BONDS	2		1FE		98,771,000		103,4320	100,000,000	98,894,325		26,573			4.375	4.452	JD	364,583	4,375,000	11/06/2013	06/01/2043
914440-LJ-9	UNIV OF MASSACHUSETTS MA-REVENUE BONDS	1		1FE		5,236,107		117,5890	4,968,135	5,060,001		(32,968)			5.450	3.880	MN	38,377	230,263	04/27/2015	11/01/2040
05923T-CA-5	BALTIMORE MD SPL OBLIG-REVENUE BONDS	2		2		1,725,000		98,0560	1,725,000	1,725,000				5.000	5.001	MS	86,250	86,250	05/24/2017	09/01/2025	
355697-CH-4	County of Frederick MD-REVENUE BONDS	2		3FE		330,000		99,5690	330,000	330,000				5.000	5.002	MS	5,500	15,750	12/07/2017	09/01/2021	
355697-CJ-0	County of Frederick MD-REVENUE BONDS	2		3FE		630,000		99,0140	630,000	630,000				5.000	5.102	MS	10,710	32,130	12/07/2017	09/01/2022	
574218-GR-8	MARYLAND ST HLTH & HGR E-REVENUE BONDS	2		1FE		13,827,870		106,5570	14,870,029	13,955,000		1,534			5.000	5.055	MN	89,157	697,750	12/03/2013	11/15/2051
574297-DE-4	MARYLAND ST STADIUM AUTH-REVENUE BONDS	1		1FE		4,030,000		99,8510	4,030,000	4,030,000				3.103	3.102	JD	5,558	125,051	12/15/2011	12/15/2019	
574300-HZ-5	MARYLAND ST TRANSPR AUTH-BUILD AMERICA	2		1FE		11,911,625		125,1530	11,610,000	11,859,651		(7,925)			5.888	5.694	JJ	341,798	683,597	06/16/2010	07/01/2043
59447T-BR-3	MICHIGAN ST FIN AUTH REVENUE MCLAREN HEA	2		1FE		3,358,980		111,8170	3,000,000	3,242,393		(33,335)			5.000	3.570	MN	19,167	150,000	03/19/2015	05/15/2033
59447T-EE-9	MICHIGAN ST FIN AUTH REVENUE BOND	2		1		21,280		108,6190	20,000	20,652		(83)			5.000	3.808	JD	83	1,000	11/09/2015	12/01/2039
59447T-EG-4	MICHIGAN ST FIN AUTH REVENUE	2		1FE		5,785,894		106,1070	5,980,000	5,799,666		4,646			5.000	5.238	JD	24,917	299,000	11/09/2015	12/01/2039
59447T-HM-2	MICHIGAN ST FIN AUTH REV-REVENUE BONDS	2		1FE		8,835,714		99,6170	8,330,000	8,736,531		(44,588)			4.000	3.291	MN	42,576	333,200	09/14/2016	11/15/2036
594615-AQ-9	MICHIGAN ST BLDG AUTH REVENUE FACS PROG	2		1FE		3,000,000		111,4880	3,000,000	3,000,000				5.000	5.000	AO	31,667	150,000	06/26/2013	10/15/2029	
594698-LE-0	MICHIGAN ST STRATEGIC FUND REVENUE UNITE	2		2FE		5,500,000		103,1130	5,500,000	5,500,000				6.250	6.248	MN	43,924	343,750	08/14/2013	11/15/2043	
75972R-AD-8	RENAISSANCE PUBLIC SCH ACA REVENUE BOND	2		3FE		120,800		98,9460	120,800	120,799				6.750	6.742	MN	1,359	7,769	07/25/2017	05/01/2021	
958638-TW-8	WSTRN MI UNIV REF REVENUE BONDS	2		1FE		3,981,800		112,4760	4,499,040	3,983,426		347			5.250	5.281	MN	26,833	210,000	09/27/2013	11/15/2043
60375C-AR-5	CITY OF MINNEAPOLIS MN-REVENUE BONDS	2		5		225,000		98,5840	225,000	225,000				7.000	7.002	JJ	7,875	15,750	07/27/2017	07/01/2024	
60416Q-GA-6	MINNESOTA ST HSG FIN AGY REVENUE GNMA &	2		1FE		280,287		97,5010	280,287	280,287				3.250	3.250	MN	759	9,087	08/13/2014	09/01/2044	
852297-CL-2	HOUSING & REDEVELOPMENT -REVENUE BONDS	2		4		120,000		99,1190	120,000	120,000				5.000	5.001	JJ	3,000	6,000	07/27/2017	07/01/2022	
48503T-AA-5	KANSAS CITY MO INDL DEV -REVENUE BOND	2		1		9,677,022		117,6795	9,479,341	8,055,218		9,074,426		5.242	3.134	MN	24,632	421,092	01/01/2013	12/10/2032	
60635H-Z7-7	MISSOURI ST HLTH & EDUC-REVENUE BONDS	2		2FE		2,067,100		92,8020	1,856,040	2,053,215		(6,501)			4.000	3.571	FA	33,333	80,000	09/29/2016	02/01/2037
60637B-FA-3	MISSOURI ST HSG DEV COMM-TAXABLE-REF-SPL	2		1FE		210,824		96,6010	210,824	210,824											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
658290-AH-7	State of North Carolina-REVENUE BONDS				1FE	46,504,712	108.6660	42,673,138	39,270,000	41,528,959		(755,240)			5.000	2.870	MM	327,250	1,963,500	10/06/2011	11/01/2021
658308-AA-9	NORTH CAROLINA ST TPK AUTH-BUILD AMERICA	1			1FE	11,684,768	115.4640	11,430,936	9,900,000	11,124,344		(104,808)			5.318	3.764	JJ	263,241	526,482	03/18/2013	01/01/2031
658308-AB-7	NORTH CAROLINA ST TPK AUTH-BUILD AMERICA	1			1FE	44,429,743	119.5430	51,941,434	43,450,000	44,272,002		(30,582)			5.418	5.246	JJ	1,177,061	2,354,121	09/13/2013	01/01/2041
65830T-AH-8	North Carolina Turnpike -REVENUE BONDS	2			1	269,186	100.0000	260,000	260,000	260,000		(9,186)			6.700	0.811	JJ	8,710	1,790	05/24/2018	01/01/2039
65830T-AJ-4	North Carolina Turnpike -REVENUE BONDS	2			1FE	196,713	100.3290	190,625	190,000	190,000		(6,713)			6.700	0.811	JJ	8,365	1,308	05/24/2018	01/01/2039
259230-LZ-1	DOUGLAS ONTY NE HOSP AUTH #2 REV HEALTH	2			1FE	2,400,325	106.5330	2,396,993	2,250,000	2,365,746		(14,409)			5.000	4.127	MM	18,750	112,500	08/03/2015	11/01/2045
644614-3H-0	NEW HAMPSHIRE ST HLTH & EDU FACS REVENUE	2			1FE	5,657,800	112.8550	5,642,750	5,000,000	5,482,881		(65,500)			5.000	3.335	JJ	125,000	250,000	04/29/2015	07/01/2035
64461X-BL-8	NEW HAMPSHIRE ST HLTH & -REVENUE BONDS	2			5	338,100	98.8940	341,184	345,000	339,661		1,379			4.000	4.483	JJ	6,900	13,340	11/15/2017	07/01/2022
64461X-BL-8	NEW HAMPSHIRE ST HLTH & -REVENUE BONDS	2			5	345,000	98.8940	341,184	345,000	345,000					4.000	3.999	JJ	6,900	14,260	06/12/2017	07/01/2022
14760N-AV-2	CASINO REINVESTMENT DEV AUTH NJ REVENUE	1			3FE	3,965,000	102.9580	4,118,320	4,000,000	3,977,787		3,919			5.460	5.593	JD	18,200	218,400	06/26/2015	06/01/2025
3133EC-K2-9	FEDERAL FARM CREDIT BANK-UNSECURED				1FE	1,445,081	99.1150	1,288,476	1,300,000	1,432,045		(5,509)			3.470	2.757	MS	11,904	45,110	08/02/2016	03/26/2037
3133ED-RR-5	FEDERAL FARM CREDIT BANK-UNSECURED				1FE	893,542	103.5042	776,282	750,000	885,228		(3,513)			3.930	2.924	FA	12,281	29,475	08/02/2016	08/01/2044
3133EE-E9-7	FEDERAL FARM CREDIT BANK-UNSECURED				1FE	1,738,210	96.9293	1,550,869	1,600,000	1,724,606		(5,755)			3.250	2.675	JD	3,900	52,000	08/02/2016	12/04/2035
3133EE-VX-5	FEDERAL FARM CREDIT BANK-UNSECURED				1FE	2,142,506	98.2437	1,964,874	2,000,000	2,122,697		(8,364)			3.040	2.675	MM	5,742	60,800	08/02/2016	05/27/2031
37970P-OP-1	GLOUCESTER ONTY NJ IMPT AUTH-REVENUE ROW	2			1FE	2,964,420	101.7180	3,051,540	3,000,000	2,967,784		1,104			4.000	4.082	JJ	60,000	120,000	08/17/2015	07/01/2038
64577B-G4-0	NEW JERSEY ST ECON DEV A-REVENUE BONDS	2			2FE	362,656	105.2460	368,361	350,000	360,664		(1,083)			5.000	4.542	JJ	8,750	17,500	02/09/2017	07/01/2047
645770-AK-7	NEW JERSEY ST ECON DEV AUTH REVENUE	2			2FE	10,000,000	107.3090	10,730,900	10,000,000	10,000,000					7.000	6.997	JD	31,111	700,000	08/15/2012	06/15/2030
64578E-KB-2	New Jersey Economic Deve-REVENUE BONDS	2			2FE	1,371,083	104.3220	1,319,673	1,265,000	1,362,303		(8,780)			5.000	3.971	JD	2,811	59,209	01/05/2018	06/15/2047
645912-DV-5	NEW JERSEY ST ECON DEV AUTH REVENUE CHAR	2			3FE	400,000	98.3370	393,348	400,000	400,000					8.000	8.000	AO	8,000	32,000	01/29/2015	10/01/2023
645912-DZ-6	NEW JERSEY ECONOMIC DEVE-REVENUE BONDS	2			5	330,000	99.0310	326,802	330,000	330,000					6.125	6.133	JJ	10,106	20,213	08/25/2017	07/01/2023
645912-ED-4	NEW JERSEY ECONOMIC DEVE-REVENUE BONDS	2			3FE	342,485	96.6500	333,443	345,000	342,495		28			5.125	5.175	MS	5,894	17,681	09/18/2017	09/01/2052
645913-AA-2	NEW JERSEY ST ECON DEV A-REVENUE BONDS	2			2FE	12,893,990	121.1270	12,651,715	10,445,000	12,192,580		(165,779)			7.425	4.950	FA	292,982	775,541	03/14/2016	02/15/2029
646066-IM-8	NEW JERSEY ST EDUCNL FACS AUTH REVENUE	2			1FE	4,980,800	105.8610	5,293,050	5,000,000	4,983,467		905			4.000	4.032	JJ	100,000	200,000	08/12/2015	07/01/2033
646136-2T-7	New Jersey Transportatio-REVENUE BONDS	1			2FE	1,323,090	45.0710	1,352,130	3,000,000	1,339,294		16,204			0.000	4.300	N/A			09/14/2018	12/15/2037
646136-3L-3	New Jersey Transportatio-REVENUE BONDS	2			1FE	3,716,685	111.0060	3,707,600	3,340,000	3,698,295		(18,391)			5.000	3.361	JD	7,422	64,945	07/17/2018	06/15/2029
646136-3N-9	New Jersey Transportatio-REVENUE BONDS	2			1FE	521,291	110.3810	518,791	470,000	518,791		(2,501)			5.000	3.411	JD	1,044	9,139	07/18/2018	06/15/2030
646136-3Q-2	New Jersey Transportatio-REVENUE BONDS	2			1FE	487,054	109.8980	483,551	440,000	484,762		(2,292)			5.000	3.441	JD	978	8,555	07/18/2018	06/15/2031
646136-3U-1	NEW JERSEY ST TRANSPRTN TRUSTFUND REVENU	1			2FE	896,077	37.4000	1,438,030	3,845,000	1,179,278		84,669			0.000	5.720	N/A			02/12/2014	12/15/2039
646139-5V-3	NEW JERSEY ST TURNPIKE AUTH REVENUE SER	2			1FE	7,868,840	111.2460	7,787,220	7,000,000	7,598,857		(88,518)			5.000	3.411	JJ	175,000	350,000	10/23/2015	01/01/2034
646139-XB-3	NEW JERSEY ST TURNPIKE A-REVENUE BONDS	2			1FE	2,544,750	136.6070	2,458,926	1,800,000	2,460,768		(21,294)			7.102	4.302	JJ	63,918	127,836	10/06/2014	01/01/2041
11380T-BP-5	Brooklyn Arena Local Dev-REVENUE BONDS	2			2FE	3,354,390	107.2370	3,217,110	3,000,000	3,323,959		(30,431)			5.000	3.450	JJ	69,167	75,000	02/09/2018	07/15/2042
12008E-NL-6	Build NYC Resource Corp-REVENUE BONDS	2			3FE	830,000	99.3770	824,829	830,000	830,000					5.000	5.001	JD	3,458	41,500	12/07/2017	06/01/2022
377450-AK-7	Glen Cove Local Economic-REVENUE BONDS	2			2Z	285,000	100.3600	286,026	285,000	285,000					6.000	5.942	JJ	8,645		06/26/2018	07/01/2023
40175R-AB-1	GUILDERLAND INDUSTRIAL D-REVENUE BONDS	2			5	1,790,000	98.6770	1,766,318	1,790,000	1,790,000					7.000	6.997	JJ	62,650	125,300	11/09/2017	01/01/2026
47200M-AA-8	JAWONIO INC -TAXABLE REV DV SER B 144A (	2			4	3,770,000	97.4710	3,674,657	3,770,000	3,770,000					6.375	6.375	MJSD	20,028	240,338	12/21/2017	12/01/2032
531127-AC-2	LIBERTY DEV CORP NY REVENUE BOND	1			1FE	1,747,680	121.1740	1,817,610	1,500,000	1,717,281		(8,924)			5.250	4.050	AO	19,688	78,750	05/27/2015	10/01/2035
542691-AT-7	Long Island Power Author-REVENUE BONDS	2			1FE	1,675,725	112.2310	1,683,465	1,500,000	1,675,199		(526)			5.000	3.430	MS	25,000		12/18/2018	09/01/2042
58259Y-GF-0	MET TRANSPRTN AUTH NY REVENUE BOND	1			1FE	793,074	132.8270	796,962	600,000	761,368		(5,898)			6.814	4.568	MM	5,224	40,884	01/01/2013	11/15/2040
63166L-DM-0	Nassau County Local Econ-REVENUE BONDS	2			2Z	210,000	100.0750	210,158	210,000	210,000					6.000	6.001	MJSD	9,345		04/02/2018	12/01/2023
649430-AA-6	NEW YORK CITY NY INDL DE-REVENUE BONDS	1			2FE	14,426,298	131.7660	13,166,376	9,992,241	12,726,696		(457,661)			11.000	5.070	MS	915,955	1,082,912	03/01/2013	03/01/2029
64967B-AA-0	NEW YORK CITY NY INDL DE-REVENUE BONDS	1			2FE	746,201	105.8120	952,035	899,742	763,763		4,776			5.900	7.603	MS	44,237	52,883	06/02/2011	03/01/2046
64971M-4N-9	NEW YORK CITY NY TRANSIT-REVENUE BONDS	1			1FE	1,255,644	104.4460	1,148,906	1,100,000	1,159,675		(96,608)			5.808	2.298	FA	26,620	63,888	04/27/2015	08/01/2030
64971M-4P-4	NEW YORK CITY NY TRANSIT-REVENUE BONDS	1			1FE	735,289	117.4220	686,919	585,000	719,337		(5,483)			5.508	3.578	FA	13,426	25,773	10/04/2018	08/01/2037
64971M-5L-2	NEW YORK CITY NY TRANSIT-REVENUE BONDS	1			1FE	998,024	117.2560	873,557	745,000	970,527		(11,780)			5.572	3.036	MM	6,919	41,511	08/02/2016	11/01/2038
64971M-5M-0	NEW YORK CITY NY TRANSIT-REVENUE BONDS	1			1FE	400,026	104.8380	366,933	350,000	371,597		(11,385)			5.932	2.467	MM	3,460	20,762	04/27/2015	11/01/2036
64971M-5L-9	NEW YORK CITY NY TRANSIT-REVENUE BONDS	1			1FE	5,659,078	104.7540	5,881,937	5,615,000	5,628,848		(4,141)			4.875	4.787	FA	114,055	273,731	04/28/2010	02/01/2022
64971M-M7-4	NEW YORK CITY NY TRANSIT-REVENUE BONDS	1			1FE	12,734,573	123.0610	15,690,278	12,750,000	12,735,939		351			5.800	5.809	FA	308,125	739,500	03/24/2010	02/01/2040
64971M-S7-8	NEW YORK CITY NY TRANSIT-REVENUE BONDS	1			1FE	477,488	117.588														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
64972F-T6-3	NEW YORK CITY NY MUNI WT-REVENUE BONDS	1		1	1FE	2,700,169		121,1930	2,654,127	2,190,000		2,662,534		(11,203)	5.440	4.041	JD	5,295	119,136	12/01/2016	06/15/2043
64972F-Y3-4	NEW YORK CITY NY MUNI WT-REVENUE BONDS	1		1	1FE	931,888		128,2250	903,986	705,000		918,058		(4,070)	5.882	3.964	JD	1,843	32,286	10/04/2018	06/15/2044
64972G-DJ-0	NEW YORK CITY NY MUNI WT-REVENUE BONDS	2		1	1FE	68,047,200		109,2490	71,011,850	65,000,000		66,772,404		(281,602)	5.000	4.431	JD	144,444	3,250,000	01/29/2014	06/15/2047
64972G-J0-8	New York City Water & Sewer - Revenue Bo				1FE	400,000		100,0000	400,000	400,000		400,000			1.730	1.730	MCN	225	43,294	09/09/2016	06/15/2048
64983Q-HJ-6	NEW YORK ST DORM AUTH REVENUE BOND				1FE	10,676,700		108,3870	10,838,700	10,000,000		10,159,105		(62,149)	5.500	4.780	MM	70,278	550,000	09/19/2008	05/15/2021
64983Q-HV-4	NEW YORK ST DORM AUTH REVENUE BOND				1FE	13,239,125		111,5800	13,947,500	12,500,000		12,729,825		(61,457)	5.500	4.900	MM	87,847	687,500	09/19/2008	05/15/2022
649902-2F-9	NEW YORK ST DORM AUTH REVENUE BOND	1		1	1FE	1,492,646		117,1350	1,335,339	1,140,000		1,457,920		(12,479)	5.389	3.336	MS	18,089	61,435	08/02/2016	03/15/2040
649902-H4-8	NEW YORK ST DORM AUTH REVENUE BOND	1		1	1FE	2,037,699		116,5510	1,987,195	1,705,000		1,977,978		(15,142)	5.427	3.890	MS	27,245	92,530	05/11/2015	03/15/2039
649902-T2-9	NEW YORK ST DORM AUTH ST-REVENUE BONDS	1		1	1FE	1,011,256		114,5080	910,339	795,000		967,850		(18,551)	5.500	2.564	MS	12,875	43,725	08/02/2016	03/15/2030
649902-T3-7	NEW YORK ST DORM AUTH REVENUE BOND	1		1	1FE	4,526,766		121,1280	5,450,760	4,500,000		4,526,216		(1,502)	5.600	5.534	MS	74,200	252,000	04/27/2015	03/15/2040
649902-T4-5	NEW YORK ST DORM AUTH REVENUE BOND				1FE	12,500,000		112,4060	14,050,750	12,500,000		12,500,000			5.051	5.051	MS	185,905	631,375	09/16/2010	09/15/2027
649902-Z0-9	NEW YORK ST DORM AUTH REVENUE BOND	1		1	1FE	1,025,145		118,7160	979,407	825,000		999,872		(8,738)	5.628	3.580	MS	13,671	35,449	10/04/2018	03/15/2039
64990B-FE-8	NEW YORK ST DORM AUTH REVENUE BOND	2		1	1FE	34,522,200		111,4100	33,423,000	30,000,000		33,397,534		(465,608)	5.000	3.065	JJ	750,000	1,500,000	04/10/2015	07/01/2048
64990B-FN-8	NEW YORK ST DORM AUTH REVENUE BOND	2		1	1FE	54,554,517		111,5970	52,562,187	47,100,000		52,665,446		(764,984)	5.000	2.986	JJ	1,177,500	2,355,000	04/10/2015	07/01/2045
64990B-IM-2	NEW YORK ST DORM AUTH REVENUE ALLIANCE L				5	540,000		99,7500	538,650	540,000		540,000			5.550	5.549	MJSD	2,498	28,814	06/01/2015	12/01/2020
64990C-W9-8	NEW YORK STATE DORMITORY-REVENUE BONDS				4	750,000		99,3270	744,953	750,000		750,000			6.125	6.126	JAJSO	11,484	44,984	10/25/2017	10/01/2024
64990F-GK-4	New York State Dormitory-REVENUE BONDS				1FE	1,682,115		113,2980	1,699,470	1,500,000		1,681,569		(546)	5.000	3.370	FA	28,333	28,333	12/18/2018	02/15/2042
650014-TJ-2	NEW YORK ST THRUWAY AUTH-BUILD AMERICA R				1FE	17,259,004		118,3940	20,363,768	17,200,000		17,244,490		(3,651)	5.883	5.846	AO	252,969	1,011,876	10/06/2014	04/01/2030
650035-TD-0	NEW YORK ST URBAN DEV CO-REVENUE BONDS	1		1	1FE	10,911,485		114,8720	12,463,612	10,850,000		10,897,869		(3,001)	5.770	5.707	MS	184,335	621,541	10/04/2018	03/15/2039
650035-VB-1	NEW YORK ST URBAN DEV CORP REVENUE	1		1	1FE	59,515,969		118,7490	70,317,220	59,215,000		59,453,061		(13,471)	5.838	5.791	MS	1,017,886	3,456,972	05/11/2015	03/15/2040
650116-AR-7	NEW YORK ST TRANSPRTN DE-REVENUE BONDS	2		2	2FE	3,242,490		105,1400	3,154,200	3,000,000		3,181,740		(29,217)	5.000	3.770	JJ	75,000	150,000	11/09/2016	07/01/2046
650116-AV-8	NEW YORK ST TRANSPRTN DE-REVENUE BONDS	2		2	2FE	4,190,120		106,2630	4,250,520	4,000,000		4,144,723		(22,715)	5.250	4.500	JJ	105,000	210,000	12/08/2016	01/01/2050
650116-CJ-3	New York Transportation -REVENUE BONDS				2FE	2,251,140		112,5570	2,251,140	2,000,000		2,266,309		(15,631)	5.000	3.279	JJ	66,111		05/11/2018	01/01/2030
69361F-AA-2	PSCH INC-TXBL REVENUE BONDS SERIES D				5	2,965,000		99,6020	2,953,199	2,965,000		2,965,000			6.800	6.799	MJSD	72,732	205,303	06/01/2015	12/01/2025
73358W-EK-6	PORT AUTH OF NEW YORK & -REVENUE BONDS	2		1	1FE	276,953		114,4600	286,150	250,000		276,534		(237)	4.926	4.300	AO	3,079	4,865	10/04/2018	10/01/2051
73358W-JA-3	PORT AUTH OF NEW YORK & -REVENUE BONDS	1		1	1FE	3,152,957		101,7410	3,118,362	3,065,000		3,151,729		(481)	4.458	4.307	AO	34,159	59,489	10/04/2018	10/01/2062
87172N-AH-1	SYRACUSE NY INDL DEV AGY REVENUE CAROUSE				2FE	9,298,548		104,2970	9,412,804	9,025,000		9,171,156		(24,895)	5.693	5.325	JJ	256,897	508,242	08/03/2012	01/01/2028
02765U-DN-1	AMERICAN MUNI PWR-OHIO REVENUE BUILD AME	1		1	1FE	363,122		125,4710	368,960	310,000		360,485		(937)	5.939	4.838	FA	5,955	18,411	12/09/2015	02/15/2047
02765U-EK-6	AMERICAN MUNI PWR-OHIO REVENUE BUILD AME	1		1	1FE	5,875,320		158,9170	6,356,680	4,000,000		5,728,014		(27,784)	6.084	5.141	FA	122,158	323,360	01/01/2013	02/15/2050
102869-AE-4	BOWLING GREEN OH STUDENT HSG REVENUE BON	2		1	1FE	3,935,250		105,7670	4,204,238	3,975,000		3,748,054		(86,110)	6.000	3.997	JD	19,875	238,500	12/16/2013	06/01/2045
186103-GB-7	CLEVELAND-CUYAHOGA CNTY -REVENUE BONDS	2		2	2FE	1,810,000		106,2470	1,923,071	1,810,000		1,810,000			7.875	7.872	MM	18,213	142,337	12/05/2011	11/15/2041
18610R-BA-1	CLEVELAND-CUYAHOGA CNTY OH PORT REVENUE	2		1	1FE	3,216,758		118,5430	3,307,350	2,790,000		3,117,044		(18,926)	5.000	3.851	JJ	69,750	139,500	03/22/2013	07/01/2033
18610R-BB-9	CLEVELAND-CUYAHOGA CNTY OH PORT REVENUE	2		1	1FE	2,718,362		119,0240	2,844,674	2,390,000		2,661,476		(10,839)	5.000	4.070	JJ	59,750	119,500	03/22/2013	07/01/2037
232265-SU-8	CUYAHOGA CNTY OH HOSP RE-REVENUE BONDS	2		2	2FE	2,608,130		107,6470	2,664,263	2,475,000		2,589,896		(11,338)	5.500	4.802	FA	51,425	136,125	05/10/2017	02/15/2052
232265-SV-6	CUYAHOGA CNTY OH HOSP RE-REVENUE BONDS	2		2	2FE	1,098,174		107,2940	1,126,587	1,050,000		1,091,581		(4,085)	5.500	4.902	FA	21,817	57,750	05/10/2017	02/15/2057
353180-JQ-6	FRANKLIN CNTY OH HLTH CARE FACS REVENUE	2		2	2FE	5,893,125		103,5910	5,697,505	5,500,000		5,785,170		(42,445)	5.000	3.998	MM	35,139	275,000	03/24/2015	11/15/2044
47770V-AK-6	JOBSOHIO BEVERAGE SYS ST-REVENUE BONDS	1		1	1FE	13,492,413		108,7720	14,738,606	13,550,000		13,501,356			5.000	5.031	JJ	338,750	677,500	08/09/2013	01/01/2038
47770V-AK-6	JOBSOHIO BEVERAGE SYS ST-REVENUE BONDS	2		1	1FE	6,422,588		108,7720	7,015,794	6,450,000		6,427,272		995	5.000	5.034	JJ	161,250	322,500	08/09/2013	01/01/2038
47770V-AZ-3	JOBSOHIO BEVERAGE SYS ST-REVENUE BONDS	1		1	1FE	32,673,593		106,7230	34,156,696	32,005,000		32,541,064		(30,063)	4.532	4.362	JJ	725,233	1,450,467	08/02/2016	01/01/2035
676900-UC-5	OHIO HOUSING FINANCE AGE-REVENUE BONDS	1		5	5	715,000		98,8330	706,656	715,000		715,000			5.125	5.126	JJ	18,322	36,644	10/04/2017	01/01/2032
676900-LD-3	OHIO HOUSING FINANCE AGE-REVENUE BONDS	1		5	5	875,000		98,4890	861,779	875,000		875,000			5.450	5.451	JJ	23,844	47,688	10/04/2017	01/01/2038
677525-TF-4	OHIO ST AIR QUALITY DEV -REVENUE BONDS				5FE	3,531,200		97,0000	3,618,100	3,730,000		3,721,984		48,909	5.625	8.324	JJ	11,18/2016	17,484/	11/18/2016	01/31/2019
67756C-CU-0	OHIO ST HOSP REV HEALTH SYS INC SER A				1FE	6,787,980		108,3060	6,498,360	6,000,000		6,610,059		(75,630)	5.000	3.365	JJ	138,333	300,000	02/10/2016	01/15/2041
67760H-KT-7	OHIO ST TURNPIKE COMMISSION CONV REVENUE	2,5			1FE	5,809,000		99,5470	9,954,700	10,000,000		6,438,370		(18,168)	0.000	2.588	FA			07/31/2013	02/15/2036
677659-V7-6	OHIO ST WTR DEV AUTH REVENUE BOND	1		1	1FE	42,179,722		113,1450	47,667,989	42,130,000		42,168,912		(1,458)	4.917	4.908	JD	172,628	2,071,532	10/05/2010	06/01/2042
67766W-OG-0	OHIO ST WTR DEV AUTH REVENUE BOND	1		1	1FE	23,596,880		109,8560	25,871,088	23,550,000		23,585,268		(1,909)	4.879	4.858	JD	95,750	1,139,484	10/04/2018	12/01/2034
889396-OR-1	TOLEDO OH WTRIKS REV REF & IMPT	2		1	1FE	4,196															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
20281P-JQ-6	CMWLTH FING AUTH PA REVENUE SERIES A			2	1FE	1,382,588	109.5060	1,368,825	1,250,000	1,339,744					5.000	3.731	JD	5,208	62,500	04/10/2015	06/01/2034
514061-AR-1	LANCASTER CNTY PA SOL WST MGMT REV SER A			2	1FE	2,073,880	110.0840	2,201,680	2,000,000	2,000,000					5.250	4.780	JD	4,667	105,000	12/11/2013	12/15/2031
514061-AS-9	LANCASTER CNTY PA SOL WST MGMT REV SER A			2	1FE	2,065,860	109.8420	2,196,840	2,000,000	2,036,549					5.250	4.830	JD	4,667	105,000	12/11/2013	12/15/2032
66353R-BZ-6	NORTHAMPTON CNTY PA GEN -REVENUE BONDS			2	1FE	9,655,371	102.4400	9,204,234	8,985,000	9,511,216					4.000	3.130	FA	135,773	359,400	06/24/2016	08/15/2034
70869P-HX-8	PENNSYLVANIA ST ECON DEV-REVENUE BONDS			2	2FE	5,133,300	106.3520	5,317,600	5,000,000	5,109,663					5.000	4.650	JD	125,694	250,000	12/19/2016	06/30/2042
70870E-DH-9	PENNSYLVANIA ST ECON DEV FING REV CAPITA			2	1FE	1,601,068	53.3250	2,988,866	5,605,000	2,056,863					0.000	10.781	N/A			12/18/2013	01/01/2035
70917S-SJ-3	PENNSYLVANIA ST HGR EDUC-REVENUE BONDS			2	1FE	18,900,000	101.3910	19,162,899	18,900,000	18,900,000					4.000	3.999	FA	285,600	756,000	04/17/2015	08/15/2045
709224-WQ-8	Pennsylvania Turnpike Co-REVENUE BONDS			2	1FE	5,422,250	107.8950	5,394,750	5,000,000	5,409,829					5.000	3.850	JD	20,833	125,000	09/07/2018	06/01/2042
709224-ZW-2	Pennsylvania Turnpike Co-REVENUE BONDS			2	1FE	3,349,170	110.6690	3,320,070	3,000,000	3,322,649					5.000	3.580	JD	12,500	150,417	02/13/2018	12/01/2035
717901-AN-2	PHILADELPHIA PA AUTH FOR-REVENUE BONDS			2	1FE	20,988,360	101.0820	21,474,871	21,245,000	21,009,153					4.000	4.071	JJ	424,900	849,800	08/14/2014	07/01/2044
717901-AP-7	PHILADELPHIA PA AUTH FOR-REVENUE BONDS			2	1FE	16,090,369	109.3720	15,722,225	14,375,000	15,579,962					5.000	3.320	JJ	359,375	718,750	08/14/2014	07/01/2042
745190-ZQ-4	PUERTO RICO HIGHWAY & TR-REVENUE BONDS			2	2FE	1,605,780	102.9640	1,853,352	1,800,000	1,605,780					5.250	5.250	JJ	47,250	94,500	10/05/2017	07/01/2033
762196-JT-1	RHODE ISLAND ST HLTH & E-REVENUE BONDS			2	1FE	1,982,740	103.5230	2,070,460	2,000,000	1,983,926					4.000	4.072	MM	10,222	80,000	03/10/2017	05/15/2034
160070-DC-9	CHARLESTON CNTY SC APRT DIST REVENUE			2	1FE	4,906,650	110.6600	5,533,000	5,000,000	4,918,786					5.500	5.647	JJ	137,500	275,000	08/21/2013	07/01/2038
837151-JA-8	SOUTH CAROLINA ST PUBLIC SVC AUTH REVENU			2	1FE	5,842,020	104.8770	6,292,620	6,000,000	5,856,286					5.125	5.306	JD	25,625	307,500	08/08/2013	12/01/2043
11023P-AF-1	BRISTOL TN INDL DEV BRD -REVENUE BONDS			2	5	604,678	87.1520	675,428	775,000	671,034					0.000	5.000	N/A			11/10/2016	12/01/2021
396649-EV-3	Greenville Health & Edu-REVENUE BONDS			2	1FE	4,501,760	111.6860	4,467,440	4,000,000	4,477,732					5.000	3.511	JJ	100,000	13,889	05/10/2018	07/01/2037
586169-AN-4	MEMPHIS TN HLTH EDUCNL-TYBL REVENUE			2	6*	7	0.0010	7	720.003	7					8.680	8.680	MS			10/01/2009	09/15/1996
582041-WH-6	Metropolitan Government -REVENUE BONDS			2	1FE	2,337,434	107.4250	2,363,350	2,200,000	2,335,482					5.000	4.040	JJ	55,000		11/08/2018	07/01/2046
582098-G6-8	Metropolitan Government -REVENUE BONDS			2	1FE	8,550,000	137.8220	11,783,781	8,550,000	8,550,000					6.693	6.692	JJ	286,126	572,252	12/09/2010	07/01/2041
582098-N2-9	Metropolitan Government -REVENUE BONDS			2	1FE	19,680,625	109.6730	20,070,159	18,300,000	19,193,927					5.000	3.809	JJ	457,500	915,000	02/04/2014	07/01/2040
649083-AA-0	NEW VALLEY GENERATION I-PASS THRU CERTIF			1	1FE	213,100	100.6928	187,179	185,891	185,891					7.299	5.206	MS	3,995	8,442	05/11/2004	03/15/2019
880557-3E-1	TENNESSEE ST SCH BOND AU-REVENUE BONDS			1	1FE	1,190,935	86.8680	1,320,394	1,520,000	1,315,867					1.515	3.512	MJSD	1,023		01/01/2013	09/15/2026
880557-7X-5	TENNESSEE ST SCH BOND AU-REVENUE BOND			1	1FE	22,850,000	111.2860	25,428,851	22,850,000	22,850,000					4.848	4.848	MS	326,176	1,107,768	09/23/2010	09/15/2027
880558-BQ-3	TENNESSEE ST SCH BOND AU-REVENUE BONDS			2	1FE	8,771,400	100.7440	8,865,472	8,800,000	8,776,279					3.750	3.772	MM	55,000	330,000	07/13/2012	05/01/2037
880558-GH-8	TENNESSEE ST SCH BOND AU-REVENUE BONDS			1	1FE	4,195,103	100.6010	4,255,422	4,230,000	4,197,883					3.950	4.001	MM	27,848	167,085	04/16/2015	11/01/2045
880591-DX-7	TENN VALLEY AUTH GLOBAL PIIR BD 2005 SER			1	1FE	515,770	114.4922	526,664	460,000	507,369					4.650	3.802	JD	951	21,390	06/09/2017	06/15/2035
036472-AA-6	ANSON TX EDU FACS CORP EDU REV			2	2FE	330,000	104.1050	343,547	330,000	330,000					5.000	4.999	FA	5,233	16,500	03/28/2016	08/15/2045
036472-AB-4	ANSON TX EDU FACS CORP EDU REV			2	2FE	490,000	105.3120	516,029	490,000	490,000					6.125	6.123	FA	11,338	28,740	03/28/2016	08/15/2025
041806-KR-0	ARLINGTON TX HGR EDU FIN-REVENUE BONDS			2	3FE	718,599	100.4770	703,339	700,000	710,110					5.000	4.372	JD	1,556	35,000	08/26/2016	06/15/2036
041806-PV-6	Arlington Higher Educati-REVENUE BONDS			2	4	190,000	99.2300	188,537	190,000	190,000					6.000	5.996	FA	4,307	11,400	12/15/2017	08/15/2022
052451-AR-2	AUSTIN TX RENTAL CAR SPL FAC REV AGM CR			1	1FE	3,250,800	107.2890	3,218,670	3,000,000	3,158,732					5.750	4.252	MM	22,042	172,500	10/22/2014	11/15/2042
235036-2S-8	DALLAS-FORT WORTH TX INT-REVENUE BONDS			2	1FE	10,812,257	107.8960	10,773,416	9,985,000	10,548,893					5.000	3.712	MM	83,208	499,250	08/06/2014	11/01/2045
235036-E4-8	DALLAS-FORT WORTH TX INT-REVENUE BONDS			2	1FE	7,375,759	104.4670	7,082,863	6,780,000	7,112,144					5.000	3.177	MM	56,500	282,500	03/16/2015	11/01/2042
235036-Y8-7	DALLAS-FORT WORTH TX INT-REVENUE BONDS			2	1FE	34,315,378	106.0250	34,378,606	32,425,000	33,592,244					5.000	3.977	MM	270,208	1,621,250	05/22/2014	11/01/2039
235241-LS-3	DALLAS TX AREA RAPID TRA-REVENUE BONDS			1	1FE	21,300,670	129.7090	22,050,530	17,000,000	20,938,216					5.999	4.324	JD	84,986	1,019,830	07/22/2015	12/01/2044
235241-LW-4	DALLAS TX AREA RAPID TRA-REVENUE BONDS			1	1FE	1,261,732	116.5270	1,153,617	990,000	1,245,228					5.022	3.528	JD	4,143	49,718	08/02/2016	12/01/2048
235241-LX-2	DALLAS TX AREA RAPID TRA-REVENUE BONDS			1	1FE	19,850,000	114.1340	22,655,599	19,850,000	19,850,000					4.922	4.922	JD	81,418	977,017	09/28/2010	12/01/2041
235241-RW-8	DALLAS TX AREA RAPID TRA-REVENUE BONDS			2	1FE	5,565,950	111.4070	5,570,350	5,000,000	5,450,628					5.000	3.520	JD	20,833	250,000	11/30/2016	12/01/2046
283738-AC-6	EL PASO TX DOWNTOWN DEV -REVENUE BONDS			2	1FE	5,483,050	120.7800	6,039,000	5,000,000	5,315,725					7.250	5.675	FA	136,944	362,500	08/22/2013	08/15/2038
41315R-GV-0	HARRIS CNTY TX HLTH FACS-REVENUE BONDS			2	1FE	1,590,000	100.0000	1,590,000	1,590,000	1,590,000					1.130	1.130	MM	10,431	9,967	08/30/2016	12/01/2041
414009-JK-9	HARRIS CNTY TX CULTURAL EDU FACS REVENUE			2	1FE	2,189,030	103.5240	2,272,352	2,195,000	2,189,625					4.000	4.021	AO	21,950	87,800	05/14/2015	10/01/2034
442435-SB-5	HOUSTON TX UTILITY SYS R-REVENUE BONDS			1	1FE	26,000,000	102.9610	26,769,860	26,000,000	26,000,000					3.828	3.828	MM	127,175	995,280	03/13/2014	05/15/2028
463805-8P-5	IRVING TX HOTEL OCCUPANCY TAX REVENUE			2	2FE	1,813,004	105.5010	1,740,767	1,650,000	1,764,800					7.250	5.522	FA	45,192	119,625	10/21/2014	08/15/2053
64542R-DJ-7	NEW HOPE CULTURAL EDU FACS FIN REV NCCD			2	5FE	5,078,100	90.4160	4,520,800	5,000,000	5,059,478					5.000	4.785	JD	125,000	250,000	07/16/2015	07/01/2047
650348-AK-1	NEWARK HGR EDU FIN CORP -REVENUE BONDS			2	1FE	3,241,740	102.1420	3,064,260	3,000,000	3,190,099					4.000	3.020	AO	30,000	120,000	09/14/2016	04/01/2035
650348-AL-9	NEWARK HGR EDU FIN CORP -REVENUE BONDS			2	1FE	2,353,573	101.6320	2,220,659	2,185,000	2,317,616					4.000	3.060	AO	21,850	87,400	09/14/2016	04/01/2036
66285H-FB-7	N TX TOLLWAY AUTH-BUILD AMERICA REVENUE			1	1FE	1,788,823	137.6060	1,688,426	1,227,000	1,763,328					6.						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
876380-JY-6	TARRANT CNTY TX CULTURAL EDU REV HENDRIC	2		1FE	1,781,118	110,1360		1,982,448	1,800,000	1,784,627		827			5.125	5.217	MS	30,750	92,250	11/14/2013	09/01/2033
876388-GY-7	Tarrant County Cultural -REVENUE BONDS	2		1FE	3,148,650	105,7880		3,173,640	3,000,000	3,144,944		(3,706)			5.000	4.270	MN	19,167	75,000	10/03/2018	11/15/2046
87638T-FG-3	TARRANT CNTY TX CULTURAL-REVENUE BONDS	2		1FE	5,393,150	103,7210		5,186,050	5,000,000	5,316,937		(36,413)			4.000	3.061	FA	75,556	200,000	10/06/2016	02/15/2035
88256C-EX-3	TEXAS ST MUNI GAS ACQUIS-REVENUE BONDS	1		1FE	3,279,225	114,2630		3,186,635	2,788,860	3,155,987		(79,001)			6.250	3.096	JD	7,747	173,718	12/12/2016	12/15/2026
88275F-NX-3	TEXAS DEPARTMENT OF HOUS-REVENUE BONDS	2		1FE	413,910	99,0030		400,962	405,000	412,433		(1,089)			3.180	2.853	MS	10,812	12,323	08/18/2017	03/01/2039
88276P-OH-7	TEXAS ST PUBLIC FIN AUTH REVENUE SER Q	1		2FE	2,063,400	119,5910		2,391,820	2,000,000	2,041,891		(3,611)			8.125	7.770	FA	61,389	162,500	05/27/2011	02/15/2027
88283L-HT-6	TEXAS ST TRANSPRTN COMM-BUILD AMERICA RE	1		1FE	3,931,237	110,5340		4,128,445	3,735,000	3,829,942		(14,170)			5.028	4.520	AO	46,949	187,796	08/10/2010	04/01/2026
88283L-HU-3	TEXAS ST TRANSPRTN COMM-BUILD AMERICA RE	1		1FE	15,445,173	113,5910		16,930,739	14,905,000	15,327,742		(31,590)			5.178	4.798	AO	563,302	752,277	10/04/2018	04/01/2030
889691-AA-9	TOM GREEN CNTY TX CULTURAL EDU REV SER Q	2		3FE	4,975,565	101,6960		5,201,750	5,115,000	4,988,029		2,962			7.500	7.753	FA	144,925	383,625	05/31/2013	08/15/2037
915115-3X-5	UNIV OF TEXAS TX PERMANE-REVENUE BONDS	1		1FE	1,039,957	121,2730		933,802	770,000	1,015,604		(9,597)			5.262	3.023	JJ	20,259	40,517	08/02/2016	07/01/2039
915137-SR-0	University of Texas Syst-REVENUE BONDS	1		1FE	216,824	111,2630		222,526	200,000	216,706		(118)			4.794	4.169	FA	3,622	10,044	10/04/2018	08/15/2046
155675-CL-3	CENTRAL UT WTR CONSERVANCY DIST REV SER A	2		1FE	43,000,000	103,3760		44,451,680	43,000,000	43,000,000					5.700	5.700	AO	612,750	2,451,000	05/27/2010	10/01/2040
744190-AN-9	PROVO UT SALES TAX REVEN-REVENUE BONDS	1		2FE	5,746,300	108,6250		5,431,250	5,000,000	5,320,801		(77,968)			5.420	3.600	FA	102,378	271,000	01/01/2013	02/15/2026
79569T-AE-3	SALT LAKE CNTY UT TRANSP-BUILD AMERICA R	1		1FE	13,426,525	105,2840		13,450,031	12,775,000	13,152,191		(58,517)			4.308	3.727	FA	207,909	550,347	12/10/2013	08/15/2025
917393-AX-8	UTAH CNTY UT HOSP REV IHC SER A	2		1FE	37,584,130	109,2720		36,059,760	33,000,000	36,247,137		(549,724)			5.000	3.001	MN	210,833	1,650,000	08/10/2015	05/15/2045
91754T-UI-1	UTAH CHARTER SCHOOL FINA-REVENUE BONDS	2		5	432,316	98,9490		430,428	435,000	432,555		223			5.250	5.333	JD	1,015	22,838	08/31/2017	06/15/2037
91754T-UI-1	UTAH CHARTER SCHOOL FINA-REVENUE BONDS	2		5	352,810	98,9490		351,269	355,000	352,895		97			5.250	5.310	JD	828	18,638	08/31/2017	06/15/2037
91754T-UX-9	UTAH CHARTER SCHOOL FINA-REVENUE BONDS	2		5	436,750	97,7560		435,014	445,000	436,892		151			5.375	5.151	JD	1,063	23,919	08/31/2017	06/15/2048
91754T-UX-9	UTAH CHARTER SCHOOL FINA-REVENUE BONDS	2		5	529,988	97,7560		527,882	540,000	530,306		296			5.375	5.531	JD	1,290	29,025	08/31/2017	06/15/2048
95640T-CS-9	W VLY CITY UT SALES TAX -REVENUE BONDS	2		1FE	5,775,015	50,2560		13,312,814	26,490,000	11,173,934		916,389			0.000	8.743	N/A			05/24/2011	07/15/2035
04144R-DJ-5	ARLINGTON CNTY VA INDL D-REVENUE BONDS	1		1FE	4,515,000	101,5560		4,585,253	4,515,000	4,515,000					4.014	4.013	JD	8,055	181,232	05/22/2013	12/15/2033
04144R-DK-2	ARLINGTON CNTY VA INDL D-REVENUE BONDS	1		1FE	12,305,000	100,6460		12,384,490	12,305,000	12,305,000					4.114	4.113	JD	22,499	506,228	05/22/2013	12/15/2042
058696-AG-0	BALLSTON QUARTER CMINTY D-TAX ALLOCATION	2		5	3,480,000	96,5080		3,358,478	3,480,000	3,480,000					7.000	7.001	MS	81,200	243,600	11/17/2016	03/01/2046
110354-AN-7	BRISTOL VA INDL DEV AUTH REVENUE SER A F	2		2	4,394,158	97,9150		4,302,540	4,394,158	4,394,158					6.750	6.749	MN	49,434	287,259	11/25/2014	11/01/2033
31333X-AY-0	FEDERAL HOME LOAN BANK-UNSECURED	1		1FE	428,829	128,5775		428,829	300,000	428,829		(5,671)			5.500	2.514	JJ	7,608	16,500	08/02/2016	07/15/2036
31333X-SJ-6	Federal Home Loan Banks-UNSECURED	1		1FE	283,990	115,8722		289,681	250,000	283,418		(571)			5.000	3.496	MS	3,229		10/04/2018	09/28/2029
313444-AA-2	FREDDIE MAC-UNSECURED	1		1FE	1,069,136	133,9621		1,000,681	736,000	1,035,659		(15,018)			6.750	2.778	MS	14,628	31,977	10/04/2018	03/15/2031
915217-RY-1	UNIV OF VIRGINIA-BUILD AMERICA REVENUE	1		1FE	217,764	132,6270		198,941	150,000	210,767		(1,990)			6.200	3.444	MS	3,100	9,300	04/27/2015	09/01/2039
915217-WX-7	University of Virginia-REVENUE BONDS	1		1FE	18,062,002	97,3450		18,291,126	18,790,000	18,061,715		(287)			4.179	4.350	MS	261,745	689,044	07/27/2018	09/01/2117
927781-TQ-7	VIRGINIA ST CLG BLDG AUTH EDUC-BUILD AME	2		1FE	3,536,352	102,6380		3,694,968	3,600,000	3,560,148		3,239			5.625	5.783	FA	84,375	202,500	01/19/2010	02/01/2028
927781-TS-3	VIRGINIA ST CLG BLDG AUTH EDUC-BUILD AME	2		1FE	17,332,140	102,6040		17,853,096	17,400,000	17,354,734		2,785			5.750	5.781	FA	416,875	1,000,500	02/05/2010	02/01/2030
927781-VE-1	VIRGINIA ST CLG BLDG AUTH EDUC-BUILD AME	1		1FE	74,250,000	110,2570		81,865,823	74,250,000	74,250,000					4.830	4.829	FA	1,494,281	3,586,275	10/05/2010	02/01/2030
927793-TC-3	VIRGINIA ST CMILTH TRANSPRTN-BUILD AMERI	1		1FE	23,409,754	113,7700		26,053,330	22,900,000	23,282,663		(22,766)			5.350	5.165	MN	156,547	1,225,150	06/11/2010	05/15/2035
928104-LK-2	VIRGINIA ST SMALL BUSINE-REVENUE BOND	2		2FE	1,333,170	105,9700		1,589,550	1,500,000	1,349,235		3,392			5.500	6.378	JJ	41,250	82,500	08/15/2013	01/01/2042
928172-V6-9	Virginia Public Building-REVENUE BONDS	2		1	266,393	104,3440		281,728	269,999	267,727		1,334			5.750	6.313	FA	6,469	9,272	12/26/2017	08/01/2030
928172-V7-7	Virginia Public Building-REVENUE BONDS	2		1FE	8,317,527	103,5270		8,727,327	8,430,001	8,323,881		6,354			5.750	5.901	FA	201,969	289,488	12/26/2017	08/01/2030
928175-TZ-1	VIRGINIA ST PUBLIC SCH A-REVENUE BONDS	1		1FE	9,300,000	113,4310		10,549,083	9,300,000	9,300,000					5.310	5.309	JD	21,948	493,830	06/24/2010	06/15/2027
973121-BM-7	WINCHESTER VA ECON DEV AUTH HOSP REVENUE	2		6*	4,929,000	103,2040		5,160,200	5,000,000	4,936,911		2,449			4.000	4.102	JJ	100,000	200,000	06/26/2015	01/01/2037
927676-RO-1	VIRGIN ISLANDS PUBLIC FI-REVENUE BONDS	2		1FE	1,160,250	98,3810		2,557,906	2,600,000	1,160,250					5.250	5.250	AO	34,125	136,500	11/09/2012	10/01/2027
15504R-GG-8	CENTRAL PUGET SOUND WA RE-REVENUE BONDS	2		1FE	3,315,660	111,9330		3,357,990	3,000,000	3,250,847		(31,854)			5.000	3.608	MN	25,000	150,000	11/30/2016	11/01/2045
15504R-GJ-2	CENTRAL PUGET SOUND WA RE-REVENUE BONDS	2		1FE	27,995,750	111,6070		27,901,750	25,000,000	27,305,237		(294,294)			5.000	3.472	MN	208,333	1,250,000	08/05/2015	11/01/2050
259561-RZ-3	DOUGLAS CNTY WA PUBLIC UTIL DIST #1 REVE	2		1FE	4,893,267	111,9260		5,053,459	4,515,000	4,795,463		(36,170)			5.000	3.931	MS	75,250	225,750	06/01/2015	09/01/2035
389532-HZ-8	GRAYS HARBOR CNTY WA PUB UTIL REVENUE SE	2		1FE	3,807,247	112,0040		3,830,537	3,420,000	3,678,222		(37,928)			5.000	3.590	JJ	85,500	171,000	05/14/2015	01/01/2031
495289-RE-5	KING CNTY WA SWR REVENUE-REVENUE BONDS	2		1	8,832,793	104,5460		8,954,368	8,565,003	8,679,327		(72,464)			5.000	4.074	JJ	214,125		02/12/2014	01/01/2050
495289-6J-4	KING CNTY WA SWR REVENUE-REVENUE BONDS	2		1FE	2,949,417	104,6980		2,994,360	2,859,997	2,898,172		(24,197)			5.000	4.074	JJ	71,500	143,000	02/12/2014	01/01/2050
495289-VK-3	KING CNTY WA SWR REVENUE BOND	2		1FE	8,127,592	100,0000		8,190,000	8,190,000	8,190,000					5.250	5.579	JJ	214,988	429,975	02/08/2011	01/01/2042
495289-X6-2	KING CNTY WA SWR REVENUE SER A	2		1FE	22,150,776	110,3210		21,236,793	19,250,000	21,373,581		(318,730)			5.000	2.979					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
97712D-SJ-6	Wisconsin Health & Educa-REVENUE BONDS			2	3FE	675,863		101,5610	625,000	671,435		(4,427)			5.000	3.850	JJ	15,625	15,625	02/22/2018	07/01/2036
97712D-SK-3	WISCONSIN ST HLTH & EDUC-REVENUE BONDS			2	3FE	3,444,144		101,1830	3,085,000	3,383,940		(32,581)			5.000	3.514	JJ	77,125	154,250	02/22/2018	07/01/2039
112513-AD-8	BROOKE CNTY W VA CNTY COMM-REVENUE TXBL			2	4FE	3,555,000		103,3580	3,555,000	3,555,000					9.000	9.000	AO	79,988	319,950	06/17/2011	10/01/2023
61022C-AC-3	MONONGALIA COUNTY COMMIS-REVENUE BONDS			2	4	19,604		20,440	20,000	19,611		8			5.750	5.907	JD	96	(1,462)	09/28/2017	06/01/2043
67732P-AE-8	OHIO CNTY WV CNTY COMMIS-REVENUE BONDS			1	2FE	9,702,138		109,7830	9,640,000	9,682,778		(3,339)			8.250	8.175	MS	662,750	795,300	09/07/2011	03/01/2035
98322V-AJ-5	WYOMING CMNTY DEV AUTH STU HSG REVENUE			2	2FE	500,000		105,4130	500,000	500,000					6.250	6.247	JJ	15,625	31,250	07/07/2011	07/01/2031
98322V-AK-2	WYOMING CMNTY DEV AUTH STU HSG REVENUE			2	2FE	1,500,000		104,7890	1,500,000	1,500,000					6.500	6.497	JJ	48,750	97,500	07/07/2011	07/01/2043
2599999. Subtotal - Bonds - U.S. Special Revenues - Issuer Obligations						4,585,336,750		5,729,914,802	6,085,971,418	5,254,676,485	977	70,408,743	2,065,302		XXX	XXX	XXX	55,218,224	165,363,552	XXX	XXX
30250G-AB-4	FDIC STRUCTURED SALE GUA-SERIES 2010-S1			4	1	681,000		99,1491	683,755	652,522		6,832			3.250	4.498	MON	4,037	20,614	03/05/2010	04/01/2038
31282X-VL-2	FREDDIEMAC STRIP-SERIES 176 CLASS PO			4	1	992		91,8708	1,174	1,108		8			0.000	2.440	N/A			08/29/2011	06/01/2026
31282Y-B4-0	FREDDIEMAC STRIP-SERIES 183 CLASS IO			6	1	478		22,1013	570	2,579		402			7.000	8.317	MON	15	11	08/29/2011	04/01/2027
31282Z-B6-5	FREDDIEMAC STRIP-SERIES 184 CLASS IO			6	1	713		16,1555	524	3,241		540			7.000	0.134	MON	19	(40)	08/29/2011	12/01/2026
31282Z-BV-0	FREDDIEMAC STRIP-SERIES 176 CLASS IO			6	1	392		16,8419	310	1,839		299			7.000	2.622	MON	11	(16)	08/29/2011	06/01/2026
31282Z-CE-7	FREDDIEMAC STRIP-SERIES 192 CLASS IO			6	1	151		19,9356	144	722		140			6.500	(1.472)	MON	4	(11)	08/29/2011	02/01/2028
31282Z-CP-2	FREDDIEMAC STRIP-SERIES 200 CLASS IO			6	1	169		21,9312	156	712		173			6.500	(7.174)	MON	4	(22)	08/29/2011	01/01/2029
31282Z-DH-9	FREDDIEMAC STRIP-SERIES 224 CLASS IO			6	1	7,450		16,9081	32,705	11,220					6.000	(10,859)	MON	164	(1,777)	08/29/2011	03/01/2033
31283E-AC-6	FHLIC-GNMA STRIPS-SERIES 3 CLASS IO			6	1	94		6,4326	484	7,519		(9)			9.500	9.500	MON	60	657	04/30/1993	07/01/2022
3128CV-F7-4	FREDDIEMAC STRIP-SERIES 211 CLASS PO			4	1	537,693		90,8549	602,957	663,648		528,064			0.000	8.253	MON			08/07/2002	07/01/2029
31290K-VZ-9	FREDDIE MAC-POOL #555132			4	1	6		99,7709	5	6		6			8.000	5.400	MON		(9)	01/05/1999	07/01/2020
31290L-AP-2	FREDDIE MAC-POOL #555414			4	1	29		100,1520	28	28		28			9.000	8,028	MON	1	7	04/13/2000	09/01/2020
31290L-AY-3	FREDDIE MAC-POOL #555423			4	1	1,571		100,3889	1,535	1,529		(4)			9.000	8,285	MON	24	117	04/07/2000	04/01/2021
312916-G7-8	FHLIC-GNMA-SERIES 15 CLASS L			4	1	441,009		105,4377	465,280	441,285		440,216			7.000	7,169	MON	2,574	29,884	09/10/1997	07/01/2023
313374-2F-2	FHLIC-GNMA-SERIES 30 CLASS J			4	1	97,154		107,1301	102,213	95,410		95,471			7.500	7,458	MON	942	6,956	08/15/1997	04/01/2024
31351B-N3-5	FREDDIEMAC STRIP-SERIES 192 CLASS PO			4	1	597		90,4835	653	722		669			0.000	2,777	N/A			08/29/2011	02/01/2028
31359P-G6-5	FANNIEMAE WHOLE LOAN-SERIES 1997-W1 CLAS			4	1	60,645		109,0780	67,686	62,053		61,453			7.000	7,373	MON	362	2,893	11/12/1999	04/01/2027
31392A-7B-8	FANNIEMAE GRANTOR TRUST-SERIES 2002-T1			4	1	14,661		114,8886	16,584	14,435		16,510			7.000	6,876	MON	85	990	08/29/2011	11/01/2031
31393C-7G-2	Fannie Mae Pool-SERIES 2003-W13 CLASS AV			4,5	1	9,353		99,6917	9,324	9,353		9,353			2.786	2,723	MON	4	214	07/21/2003	10/25/2033
911760-PC-4	VENDEE MORTGAGE TRUST-SERIES 2000-2 CLAS			5,6	1	16,852		0.0001	4	838		4			0.000	0.000	MON	34,927		08/29/2011	06/01/2030
31358F-HF-9	FANNIE MAE-SERIES 1990-128 CLASS J			4	1	1,795		101,3251	1,733	1,710		1,716			8.500	7,027	MON	12	110	04/28/1999	10/01/2020
31358G-SJ-2	FANNIE MAE-SERIES 1991-65 CLASS Z			4	1	15,404		102,2434	15,703	15,358		15,341			6.500	6,636	MON	83	955	04/08/1999	06/01/2021
31358G-SM-0	FANNIE MAE-SERIES 1991-42 CLASS M			4	1	696		876,4193	253	29		227			1,178	100	MON	28	310	01/01/2013	05/01/2021
31358G-IN-3	FANNIE MAE-SERIES G-12 CLASS G			4	1	231		183,8036	19	10		10			1,050	417	MON	9	65	01/01/2013	05/01/2021
31358H-M2-8	FANNIE MAE-SERIES 1991-100 CLASS M			4	1	5,238		103,1999	6,790	6,580		6,401			7.000	9,918	MON	38	444	07/09/1991	08/01/2021
31358J-EQ-0	FANNIE MAE-SERIES 1991-122 CLASS N			4	1	22,496		103,0264	26,779	25,993		25,536			7.500	9,923	MON	162	1,791	08/08/1991	09/01/2021
31358J-VC-2	FANNIE MAE-SERIES 1991-135 CLASS K			4	1	40,551		102,4332	60,051	58,625		56,021			6.000	10,600	MON	293	2,975	08/28/1991	10/01/2021
31358K-CE-6	FANNIE MAE-SERIES 1991 - 152 CLASS O			4	1	1,080		1,049,8125	466	44		386			1,008	500	MON	37	428	01/01/2013	11/01/2021
31358K-CR-7	FANNIE MAE-SERIES 1991-148 CLASS L			4	1	20,802		102,2421	30,745	30,071		28,748			6.000	10,724	MON	150	1,693	09/23/1991	11/01/2021
31358K-FJ-2	FANNIE MAE-SERIES 1991-154 CLASS PK			4	1	29,381		102,0296	36,407	35,683		34,774			6.150	9,125	MON	183	2,091	09/26/1991	11/01/2021
31358M-HN-7	FANNIE MAE-SERIES G92-21 CLASS S			4	1	908		181,0421	713	394		394			147,875	140,634	MON	10	605	04/13/1994	04/25/2022
31358N-TD-4	FANNIE MAE-SERIES 1992-103 CLASS Z			4	1	34,912		105,5140	39,413	37,354		36,819			7.500	8,767	MON	233	2,691	12/25/1992	06/01/2022
31358P-V4-6	FANNIE MAE-SERIES 1992-148 CLASS D			4	1	320,898		106,0788	308,007	290,356		294,457			8.000	6,850	MON	1,936	22,794	12/01/1996	08/01/2022
31358Q-D9-3	FANNIE MAE-SERIES 1992-177 CLASS S			4	1	69,657		120,0856	169,415	141,078		110,855			19,031	40,373	MON	4,647	28,540	10/25/1994	10/25/2022
31358Q-EU-5	FANNIE MAE-SERIES 1992-162 CLASS D			4	1	17,792		104,9922	18,680	17,792		17,792			7.000	7,000	MON	104	1,200	01/19/2001	09/01/2022
31358Q-MX-0	FANNIE MAE-SERIES 1992-172 CLASS Z			4	1	132,300		105,2816	156,289	148,448		145,076			7.000	8,903	MON	1,321	9,981	08/11/1992	09/01/2022
31358Q-TG-0	FANNIE MAE-SERIES G92-52 CLASS Z			4	1	74,432		104,3175	85,011	81,493		79,998			7.500	9,276	MON	853	5,832	07/29/1992	09/01/2022
31358R-AZ-6	FANNIE MAE-SERIES G92-58 CLASS B			4	1	4,622		97,0218	6,017	6,035		138			0.000	6,701	N/A			11/19/2001	10/01/2022
31358R-D9-1	FANNIE MAE-SERIES 1992-210 CLASS Z			4	1	488,983		105,7061	504,788	500,895		858			7.500	8,080	MON	36,756	42,013	03/17/1997	12/01/2022
31358R-FR-9	FANNIE MAE-SERIES 1992-206 CLASS Z			4	1	92,224		104,1484	102,759	98,666		97,345			7.000	8,032	MON	8,986	8,093	03/19/1997	11/01/2022
31358A-YN-3	FANNIE MAE-SERIES 1993-87CLASS S			4	1	5,051		105,3902	5,191	4,926		4,957			6.500	6,075	MON	27	311	08/29/2011	06/01/2023
31358Q-KG-7	FANNIE MAE-SERIES 2006-33CLASS ON			4	1	1,786		93,3826	2,058	2,204		2,108			0.000	2,681	N/A			08/29/2011	09/01/2023
31358E-XH-9	FANNIE MAE-SERIES 1993-189 CLASS SC			4	1	214,254		118,7499	404,253	340,424		287,829			14,411	26,380	MON	7,474	48,486	06/17/1994	10/25/2023
31358F-V7-0	FANNIE MAE-SERIES 1993-251 CLASS PJ			4	1	81,233															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31359N-J7-7	FANNIE MAE-SERIES 1997-13 CLASS OG			4	1	516,976	107.3199	554,536	516,713	515,842		70			6.500	6.583	MON	2,799	32,148	02/03/1999	04/01/2027
31359P-B4-7	FANNIE MAE-SERIES 1997-49 CLASS E			4	1	97,723	108.6196	107,866	99,306	98,335		72			7.500	7.951	MON	621	6,186	08/29/2000	06/01/2027
31359S-J3-5	FANNIE MAE-SERIES 2001-19 CLASS PE			4	1	238,386	109.3793	227,010	207,544	227,969		(2,116)			6.500	3.161	MON	1,124	12,972	01/01/2013	05/01/2031
31359U-T2-1	FANNIE MAE-SERIES 1998-61CLASS PL			4	1	28,174	108.5319	30,369	27,982	28,034		(3)			6.000	5.928	MON	140	1,644	08/29/2011	11/01/2028
31359X-CD-9	FANNIE MAE-SERIES 1999-54CLASS LH			4	1	39,615	108.8033	43,037	39,555	39,522		3			6.500	6.534	MON	214	2,508	08/29/2011	11/01/2029
31359X-CL-1	FANNIE MAE-SERIES 1999-54 PO			4	1	92,815	93.5714	116,796	124,820	105,094		2,542			0.000	10.087	N/A			01/04/2002	11/01/2029
313602-UK-8	FANNIE MAE-SERIES 1989-63 CLASS Z			4	1	1,327	100.7381	1,332	1,323	1,322		1			9.500	9.753	MON	10	80	04/03/1992	06/01/2019
313603-B4-3	FANNIE MAE-SERIES 1990-18 CLASS J			4	1	3,051	101.0827	3,381	3,344	3,320		27			6.990	9.220	MON	19	206	09/27/1991	03/01/2020
313603-G7-1	FANNIE MAE-SERIES G-3 CLASS B			4	1	949	97.8442	2,143	2,191	2,112		114			0.000	14.067	N/A			08/02/1990	03/01/2020
313615-TX-4	FANNIE MAE-POOL #50966			4	1	3,584	107.1696	3,951	3,686	3,627		10			7.000	7.931	MON	22	252	08/03/2000	01/01/2024
31363W-HM-0	FANNIE MAE-POOL #100235			4	1	1,556	102.8004	1,530	1,489	1,489		(19)			9.500	7.942	MON	12	121	03/14/2000	04/01/2021
31363W-HX-6	FANNIE MAE-POOL #100245			4	1	833	100.8698	826	821	821		(4)			8.000	7.599	MON	5	60	10/12/2000	12/01/2020
31363W-JS-5	FANNIE MAE-POOL #100272			4	1	451	100.8698	441	437	438		(4)			9.000	7.937	MON	3	30	04/12/2000	09/01/2022
31364H-C6-2	FANNIEMAE STRIP-SERIES 240 CLASS 2			6	1	1,492	12.4355	1,026	8,250	922		106			7.000	4.770	MON	48	(74)	08/29/2011	09/01/2023
31364H-E8-6	FANNIEMAE STRIP-SERIES 249 CLASS 2 10			6	1	21,956	11.5851	11,580	99,953	22,593		10			6.500	6.500	MON	541	(1,411)	01/04/2002	10/01/2023
31364H-F6-9	FANNIEMAE STRIP-SERIES 252 CLASS 2			6	1	2,210	12.6695	1,456	11,493	1,475		72			7.500	(1.684)	MON	72	(244)	08/29/2011	11/01/2023
31364H-L8-8	FANNIEMAE STRIP-SERIES 273 CLASS 2			6	1	336	16.9648	294	1,734	289		7			7.000	0.475	MON	10	(19)	08/29/2011	08/01/2026
31364H-NV-5	FANNIEMAE STRIP-SERIES 142 CLASS 2 10			6	1	2,275	8.4449	748	8,854	5,245		10			9.000	9.000	MON	86	(680)	11/19/2001	06/01/2022
31364H-TG-2	FANNIEMAE STRIP-SERIES 191 CLASS 2 10			6	1	6,327	7.3022	2,869	39,289	2,910		10			8.000	38.007	MON	262	605	10/31/2008	12/01/2022
31364H-TU-1	Federal National Mortgage-SERIES 197 CLAS			6	1	13,257	11.7335	6,599	56,244	5,496		10			8.000	12.901	MON	375	(164)	10/31/2008	01/01/2023
31364H-VU-8	FANNIEMAE STRIP-SERIES 221 CLASS 2			6	1	1,422	11.5745	878	7,589	814		10			7.500	7.566	MON	47	(73)	08/29/2011	05/01/2023
31364H-VI-4	FANNIEMAE STRIP-SERIES 222 CLASS 2			6	1	910	11.0504	513	4,641	534		10			7.000	(0.998)	MON	27	(94)	08/29/2011	06/01/2023
31368H-EA-7	FANNIE MAE-POOL #190129			4	1	180,525	107.3018	220,803	205,778	190,809		1,943			6.000	10.462	MON	1,125	11,916	08/18/1994	11/01/2023
31368H-EB-5	FANNIE MAE-POOL #190130			4	1	72,870	107.3018	89,318	83,240	77,333		970			6.000	10.349	MON	648	4,868	08/19/1994	11/01/2023
3136FA-2A-7	FANNIEMAE STRIP-SERIES 339 CLASS 8			6	1	1,193	18.8375	1,242	6,592	2,907		10			5.500	(18.244)	MON	30	(716)	08/29/2011	11/01/2033
3136FA-2E-9	FANNIEMAE STRIP-SERIES 339 CLASS 12			6	1	11,183	19.3980	11,149	57,477	15,058		10			6.000	(3.739)	MON	287	(1,175)	08/29/2011	06/01/2033
3136FA-2H-2	FANNIEMAE STRIP-SERIES 339 CLASS 15			6	1	67,589	21.8728	94,308	431,167	98,901		10			6.000	0.063	MON	2,156	(3,816)	08/29/2011	10/01/2033
3136FA-6K-1	FANNIEMAE STRIP-SERIES 343 CLASS 13			6	1	9,428	18.0664	10,820	59,892	28,325		10			5.500	(18.859)	MON	275	(7,156)	08/29/2011	09/01/2033
3136FA-A6-7	FANNIEMAE STRIP-SERIES 334 CLASS 10			6	1	83,301	21.6702	108,922	502,634	137,954		10			6.000	(5.593)	MON	2,513	(13,626)	08/29/2011	02/01/2033
3136FA-B2-5	FANNIEMAE STRIP-SERIES 334 CLASS 14			6	1	27,205	23.1026	45,790	198,201	47,792		10			6.500	0.784	MON	1,074	(1,098)	08/29/2011	02/01/2033
3136FA-B5-8	FANNIEMAE STRIP-SERIES 334 CLASS 17			6	1	623	23.8084	691	2,901	718		10			6.500	(0.658)	MON	16	(29)	08/29/2011	02/01/2033
3136FA-C6-5	FANNIEMAE STRIP-SERIES 333CLASS 2			6	1	9,362	19.7969	9,687	48,931	28,739		10			5.500	(23.765)	MON	224	(9,059)	08/29/2011	04/01/2033
3136FA-HB-9	FANNIEMAE STRIP-SERIES 319 CLASS 2			6	1	206	22.2932	273	1,222	330		10			6.500	(4.098)	MON	7	(27)	08/29/2011	02/01/2032
3136FA-KM-1	FANNIEMAE STRIP-SERIES 321 CLASS 2			6	1	3,421	23.4395	3,554	15,162	5,250		10			6.500	(10.670)	MON	82	(818)	08/29/2011	04/01/2032
3136FA-LQ-1	FANNIEMAE STRIP-SERIES 322CLASS 1			4	1	2,242	88.2716	2,552	2,891	2,493		19			0.000	4.331	N/A			08/29/2011	04/01/2032
3136FA-LR-9	FANNIEMAE STRIP-SERIES 322 CLASS 2			6	1	546	21.2436	614	2,891	1,176		10			6.000	(16.613)	MON	14	(261)	08/29/2011	04/01/2032
3136FA-VA-8	FANNIEMAE STRIP-SERIES 338 CLASS 2			6	1	41	20.3063	52	254	134		10			5.500	(21.323)	MON	1	(39)	08/29/2011	07/01/2033
3136FA-XH-8	FANNIEMAE STRIP-SERIES 331 CLASS 4			6	1	60,082	19.5628	67,663	345,873	97,322		10			6.000	(6.417)	MON	1,729	(9,908)	08/29/2011	02/01/2033
3136FA-XN-5	FANNIEMAE STRIP-SERIES 331 CLASS 9			6	1	739	19.8201	1,007	5,079	1,195		10			6.500	1.163	MON	28	(25)	08/29/2011	02/01/2033
3136FA-Z9-4	FANNIEMAE STRIP-SERIES 339CLASS 7			6	1	10,128	21.7121	12,731	58,637	24,685		10			5.500	(17.325)	MON	269	(5,809)	08/29/2011	11/01/2033
3136FA-ZX-1	FANNIEMAE STRIP-SERIES 334 CLASS 3			6	1	1,620	22.3972	2,127	9,499	3,491		10			5.500	(14.964)	MON	44	(729)	08/29/2011	07/01/2033
3136FA-ZY-9	FANNIEMAE STRIP-SERIES 334 CLASS 4			6	1	18,269	18.6894	22,131	118,415	41,085		10			5.500	(13.610)	MON	543	(7,975)	08/29/2011	07/01/2033
3136FC-AB-2	FANNIEMAE STRIP-SERIES 344 CLASS 2			6	1	694	20.7821	773	3,718	911		10			6.000	(1.865)	MON	19	(53)	08/29/2011	12/01/2033
3136FC-BD-7	FANNIEMAE STRIP-SERIES 346 CLASS 2			6	1	46	22.8991	69	302	153		10			5.500	(19.881)	MON	1	(41)	08/29/2011	12/01/2033
3136FC-HX-7	FANNIEMAE STRIP-SERIES 351 CLASS 8			6	1	4,179	19.4840	4,692	24,080	11,392		10			5.500	(18.139)	MON	110	(2,768)	08/29/2011	04/01/2034
3136FC-HZ-2	FANNIEMAE STRIP-SERIES 351 CLASS 10			6	1	2,550	21.0254	2,881	13,700	7,146		10			5.500	(20.098)	MON	63	(1,904)	08/29/2011	04/01/2034
3136FC-JA-5	FANNIEMAE STRIP-SERIES 351 CLASS 11			6	1	1,358	18.8262	1,368	7,265	4,319		10			5.500	(22.068)	MON	33	(1,271)	08/29/2011	11/01/2034
3136FC-QE-9	FANNIEMAE STRIP-SERIES 356 CLASS 10			6	1	3,132	20.1777	3,388	16,791	8,547		10			5.500	(18.531)	MON	77	(2,117)	08/29/2011	06/01/2035
3136FC-QG-4	FANNIEMAE STRIP-SERIES 356 CLASS 12			6	1	1,450	21.5911	1,790	8,290	3,749		10			5.500	(16.466)	MON	38	(832)	08/29/2011	02/01/2035
3136FC-WC-6	FANNIEMAE STRIP-SERIES 362 CLASS 12			6	1	2,607	23.1779	3,317	14,311	3,780		10			6.000	(4.262)	MON	72	(315)	08/29/2011	08/01/2035
3136FC-WD-4	FANNIEMAE STRIP-SERIES 362 CLASS 13			6	1	1,413	20.5403	1,588	7,732	1,931		10			6.000	(2.541)	MON	39	(128)	08/29/2011	08/01/2035
3136FC-YZ																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31371H-HL-5	FANNIE MAE-POOL #252335 FHA/VA			4	1	224,846	110.3390	243,153	220,369	223,230	(182)				7.000	6.532	MON	1,285	15,204	01/05/1999	02/01/2029
31371H-PH-5	FANNIE MAE-POOL #252524			4	1	41,619	100.7206	40,259	39,971	40,947	(145)				8.000	7.122	MON	266	3,176	05/13/1999	04/01/2029
31371H-VM-7	FANNIE MAE-POOL #252720 FHA/VA			4	1	145,454	110.6150	161,146	145,682	145,454					7.500	7.556	MON	1,331	10,826	10/18/2000	08/01/2029
31371H-XN-3	FANNIE MAE-POOL #252785			4	1	16,244	103.9458	16,597	15,967	16,214	(35)				8.000	7.447	MON	106	1,271	09/17/1999	08/01/2029
31371H-YT-0	FANNIE MAE-POOL #252790 FHA/VA			4	1	42,577	110.2968	46,608	42,257	42,463	(10)				7.500	7.325	MON	502	3,136	06/30/2003	09/01/2029
31371H-Y9-3	FANNIE MAE-POOL #252836			4	1	43,553	110.2302	47,190	42,810	43,220	(64)				8.000	7.659	MON	285	3,408	09/17/1999	09/01/2029
31371J-7F-5	FANNIE MAE-POOL #253894			4	1	22,576	112.5888	22,208	19,725	22,100	(149)				6.500	2.984	MON	107	1,260	01/01/2013	08/01/2031
31371J-KP-8	FANNIE MAE-POOL #253302			4	1	1,106	102.1448	1,097	1,074	1,113	7				9.000	7.729	MON	8	88	07/11/2000	04/01/2030
31371J-MX-9	FANNIE MAE-POOL #253374			4	1	11,302	105.6293	11,592	10,974	11,205	(13)				9.000	8.266	MON	82	971	07/11/2000	05/01/2030
31371J-NQ-3	FANNIE MAE-POOL #253399			4	1	81	112.1569	84	75	80					8.500	6.391	MON	1	7	06/30/2003	08/01/2030
31371J-NZ-3	FANNIE MAE-POOL #253408			4	1	8,403	112.8300	9,206	8,159	8,328	(17)				9.000	8.285	MON	61	713	07/11/2000	07/01/2030
31371J-P4-0	FANNIE MAE-POOL #253443			4	1	5,754	114.6641	6,408	5,589	5,700	(10)				9.000	8.315	MON	89	487	07/12/2000	08/01/2030
31371J-QN-7	FANNIE MAE-POOL #253461			4	1	411	99.8816	404	405	406	(1)				8.500	7.918	MON	3	17	07/31/2000	07/01/2020
31371J-TE-4	FANNIE MAE-POOL #253549			4	1	232,487	108.9412	250,495	229,936	231,888	(92)				8.000	7.710	MON	1,533	18,031	10/30/2000	10/01/2030
31371K-AG-6	FANNIE MAE-POOL #253907			4	1	24,721	114.4728	23,685	20,691	23,861	(225)				7.000	2.561	MON	121	1,427	01/01/2013	07/01/2031
31371K-EX-5	FANNIE MAE-POOL #254050			4	1	137,041	112.6599	134,895	119,737	134,451	(352)				6.500	2.930	MON	649	7,624	01/01/2013	11/01/2031
31371L-CD-9	FANNIE MAE-POOL # 254868			4	1	47,634	106.1855	46,426	43,721	47,400	45				5.000	2.782	MON	182	2,148	01/01/2013	09/01/2033
31371L-DH-9	FANNIE MAE-POOL #254904			4	1	718,478	107.7042	704,104	653,739	710,131	(1,579)				5.500	3.092	MON	2,996	35,406	01/01/2013	10/01/2033
31371L-EG-0	FANNIE MAE-POOL #254935			4	1	151,742	101.4627	167,749	165,331	156,224	1,241				4.500	6.132	MON	620	7,411	06/04/2004	08/01/2033
31371L-EW-5	FANNIE MAE-POOL #254949			4	1	670,248	106.1843	653,234	615,190	664,983	(118)				5.000	2.837	MON	2,563	30,230	01/01/2013	11/01/2033
31371L-S7-5	FANNIE MAE-POOL #255342			4	1	218,639	107.3018	234,468	218,521	218,521	(1)				6.000	5.998	MON	1,093	12,787	08/29/2011	07/01/2024
31371L-SA-8	FANNIE MAE-POOL #255313			4	1	396,292	107.7031	390,134	362,231	391,920	(250)				5.500	3.251	MON	1,660	19,555	01/01/2013	08/01/2034
31371L-VJ-5	FANNIE MAE-POOL #255417			4	1	23,957	107.3018	25,691	25,691	23,944					6.000	5.997	MON	120	1,398	08/29/2011	09/01/2024
31371M-DL-8	FANNIE MAE-POOL #255807			4	1	10,004	100.5309	9,945	9,893	9,911	(8)				5.500	5.229	MON	45	466	11/17/2008	08/01/2020
31371N-YD-1	FANNIE MAE-POOL #257308			4	1	822	116.5856	937	804	819					6.500	5.898	MON	4	51	11/17/2008	08/01/2038
313730-CG-9	FANNIE MAE-POOL #299871			4	1	4,075	100.8625	3,991	3,957	4,019	(6)				9.000	8.202	MON	30	345	02/23/2000	12/01/2024
31373U-G8-4	FANNIE MAE-POOL #303823			4	1	1,675	100.6065	1,607	1,597	1,664	3				9.500	7.507	MON	13	141	09/25/2000	05/01/2025
31373U-JT-5	FANNIE MAE-POOL #303674			4	1	8,681	108.3459	9,081	8,382	8,554	(18)				8.000	7.084	MON	56	655	01/31/2001	01/01/2026
31373X-RE-3	FANNIE MAE-POOL #306585			4	1	3,816	100.0874	3,607	3,604	3,699	(7)				10.000	8.707	MON	30	355	04/17/2000	03/01/2025
31374S-M1-1	FANNIE MAE-POOL #323104			4	1	3,605	100.4151	3,443	3,429	3,553	(15)				8.500	5.862	MON	24	257	03/13/1998	07/01/2022
31374T-E3-9	FANNIE MAE-POOL #323354			4	1	59,280	108.8693	65,438	60,107	59,421	22				6.000	6.419	MON	301	3,511	12/06/2001	11/01/2028
31374T-G8-4	FANNIE MAE-POOL #323424			4	1	1,477	110.2994	1,675	1,486	1,486	1				7.500	8.299	MON	9	112	05/04/2000	12/01/2028
31376S-P8-2	FANNIE MAE-POOL #364212			4	1	5,202	101.1632	5,085	5,026	5,152					8.500	7.420	MON	36	409	09/14/1999	06/01/2026
31378Q-DF-5	FANNIE MAE-POOL #405202			4	1	18,048	107.3157	19,308	17,991	18,057	27				6.000	5.863	MON	90	1,060	08/14/2003	03/01/2028
31378T-Q6-3	FANNIE MAE-POOL #408255			4	1	22,271	107.6551	24,694	22,938	22,486	66				6.000	6.757	MON	115	1,354	03/31/1999	03/01/2028
31378X-AG-1	FANNIE MAE-POOL #411407			4	1	1,378	100.0147	1,417	1,417	1,393					7.500	8.149	MON	9	105	05/04/2000	05/01/2028
31378Y-M7-6	FANNIE MAE-POOL #412682			4	1	39,777	108.6957	44,530	40,968	40,176	99				6.000	6.744	MON	205	2,430	03/31/1999	03/01/2028
31379A-M3-6	FANNIE MAE-POOL #413578			4	1	8,049	101.4476	8,395	8,276	8,140	22				7.500	8.147	MON	52	617	05/04/2000	01/01/2028
31379B-F3-2	FANNIE MAE-POOL #414286			4	1	2,329	102.2193	2,448	2,395	2,350					7.500	8.233	MON	15	175	05/04/2000	02/01/2028
31379D-CM-9	FANNIE MAE-POOL #415976			4	1	29,624	108.8422	32,849	30,181	29,725	36				6.000	6.554	MON	693	1,782	02/22/1999	12/01/2028
31379J-VR-4	FANNIE MAE-POOL #421024			4	1	56,127	103.5741	57,291	55,314	55,760	(61)				8.500	8.172	MON	392	4,648	08/16/2000	06/01/2027
31379R-EN-4	FANNIE MAE-POOL #426841			4	1	494	100.5921	421	418	440	(10)				10.000	4.528	MON	3	41	06/30/2003	04/01/2021
31379V-G8-6	FANNIE MAE-POOL #430523			4	1	29,755	100.9319	31,132	30,844	29,656	(152)				7.500	9.019	MON	193	2,153	05/12/2000	06/01/2028
31379X-LH-6	FANNIE MAE-POOL #432428			4	1	8,109	100.0136	8,338	8,337	8,192					7.500	8.173	MON	52	619	05/04/2000	06/01/2028
31380G-2S-7	FANNIE MAE-POOL #440085			4	1	26,046	107.3413	28,337	26,389	26,183	35				6.000	6.298	MON	132	1,575	11/30/1998	12/01/2028
31380G-GN-3	FANNIE MAE-POOL #439505			4	1	2,152	101.4461	2,245	2,213	2,177	6				7.500	8.115	MON	14	165	05/04/2000	08/01/2028
31380H-QK-6	FANNIE MAE-POOL #440658			4	1	26,261	107.3018	28,551	26,608	26,357	8				6.000	6.347	MON	133	1,556	11/30/1998	10/01/2028
31380H-SA-6	FANNIE MAE-POOL #440713			4	1	8,764	101.1828	9,697	8,595	8,686	(15)				7.000	6.612	MON	50	598	09/21/1998	11/01/2028
31380J-UU-5	FANNIE MAE-POOL #441695			4	1	22,726	101.3888	23,886	23,558	22,487	144				7.500	9.279	MON	147	1,753	05/12/2000	09/01/2028
31380P-Y7-8	FANNIE MAE-POOL #446334			4	1	27,605	100.3967	27,043	26,936	27,395	33				7.000	6.281	MON	157	1,744	09/25/1998	08/01/2026
31380S-5S-8	FANNIE MAE-POOL #449157			4	1	105,880	107.3023	114,677	106,873	105,921	(50)				6.000	6.325	MON	534	6,091	12/01/1998	12/01/2028
31380S-5I-9	FANNIE MAE-POOL #449161			4	1	19,134	107.3033	20,924	19,499	19,193	(43)				6.000	6.579	MON	408	1,084	02/22/1999	12/01/2028
31380S-7J-6	FANNIE MAE-POOL #449197			4	1	3,002	107.3018	3,282	3,059	2,994	3				6.000	6.788	MON	35	179	02/22/1999	12/01/2028
31380T-NA-5	FANNIE MAE-POOL #449585			4	1	2,595	100.0193	2,668	2,668	2,624	7				7.500	8.117	MON	17	199	05/04/2000	11/01/2028
31380T-V8-1	FANNIE MAE-POOL #449839			4	1	11,648	107.3859	12,450	11,594	11,624	(4)				6.500	6.406	MON	63	745	11/25/1998	11/01/2028
31380T-WU-1	FANNIE MAE-POOL #449859			4	1	11,458	107.3018	11,802	10,999	11,272	(45)				6.000	5.114	MON	55	656	06/30/2003	11/01/2028
31380U-ZE-1	FANNIE MAE-POOL #450841			4	1	11,846	107.3018	12,954	12,073	11,901	24				6.000	6.522	MON	60	719	02/22/1999	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31380W-LK-8	FANNIE MAE-POOL #452486			4	1	1,890	101.4372	1,880	1,853	1,882		(4)		7.000	6.445	MON		11	129	09/21/1998	11/01/2028
31380W-UP-7	FANNIE MAE-POOL #452490			4	1	4,776	105.7231	4,951	4,683		(8)			7.000	6.571	MON		27	325	09/21/1998	11/01/2028
31380X-HC-9	FANNIE MAE-POOL #453027			4	1	106,657	107.3018	115,995	108,101	107,051		63		6.000	6.355	MON		541	6,355	11/30/1998	12/01/2028
31380X-KT-8	FANNIE MAE-POOL #453106			4	1	15,160	108.7992	16,819	15,459	15,243		15		6.000	6.510	MON		218	911	02/22/1999	01/01/2029
31381A-RG-8	FANNIE MAE-POOL #455087			4	1	24,668	108.1462	27,152	25,107	24,793		41		6.000	6.458	MON		405	1,493	02/09/1999	12/01/2028
31381B-V2-2	FANNIE MAE-POOL #456133			4	1	8,522	107.3396	9,310	8,674	8,547		19		6.000	6.536	MON		114	517	02/09/1999	12/01/2028
31381C-5Y-9	FANNIE MAE-POOL #457263			4	1	520	102.5953	533	519	519				8.500	8.483	MON		4	41	05/19/2000	12/01/2023
31381C-6D-4	FANNIE MAE-POOL #457268			4	1	1,066	100.6518	1,024	1,017	1,066		7		9.500	7.720	MON		8	89	03/01/2000	07/01/2028
31381C-QV-2	FANNIE MAE-POOL #456868			4	1	18,599	107.3145	20,393	19,003	18,713		(2)		6.000	6.554	MON		95	1,134	02/22/1999	03/01/2029
31381D-YG-4	FANNIE MAE-POOL #458011			4	1	2,833	100.5422	2,696	2,682	2,682		(33)		10.000	8.288	MON		22	195	04/17/2000	12/01/2020
31381N-KY-8	FANNIE MAE-FNMA			4	1	726,297	107.2074	695,801	649,023	684,561		(13,478)		4.680	2.503	MON	2,616	30,708	06/25/2014	08/01/2028	
31381S-D8-2	FANNIE MAE-POOL #469127			4	1	580,971	101.5622	555,911	547,360	547,360		(10,442)		3.400	1.440	MON	1,603	18,832	07/08/2014	09/01/2021	
31382H-D6-9	FANNIE MAE-POOL #482625			4	1	10,104	107.3050	11,035	10,284	10,125		(25)		6.000	6.563	MON		189	577	02/09/1999	02/01/2029
31382K-NV-6	FANNIE MAE-POOL #484704			4	1	1,783	107.3018	1,949	1,817	1,776		(10)		6.000	6.819	MON		9	97	02/22/1999	02/01/2029
31382K-NI-4	FANNIE MAE-POOL #484705			4	1	3,007	107.3407	3,290	3,065	3,028		5		6.000	6.432	MON		15	183	02/22/1999	02/01/2029
31382S-GP-0	FANNIE MAE-POOL #490806			4	1	27,297	107.3859	26,081	24,287	26,193		(317)		6.500	3.868	MON		132	1,569	01/01/2013	04/01/2029
31383M-QB-2	FANNIE MAE-POOL #507250			4	1	103,885	106.4823	92,589	86,952	97,820		(1,618)		7.500	3.322	MON		543	6,466	01/01/2013	12/01/2028
31383S-BM-1	FANNIE MAE-POOL #511344			4	1	27,908	102.5010	27,777	27,099	27,901		(117)		9.000	7.954	MON		203	2,428	07/11/2000	11/01/2029
31384T-S7-3	FANNIE MAE-POOL #533442			4	1	10,637	104.9841	10,828	10,314	10,588		29		9.000	8.065	MON		77	832	09/13/2000	01/01/2030
31384V-T3-6	FANNIE MAE-POOL #535270			4	1	2,885	118.8149	3,163	2,662	2,810		(5)		8.500	6.630	MON		19	222	06/30/2003	04/01/2030
31384V-Z8-8	FANNIE MAE-POOL #535467			4	1	322,840	108.7299	348,357	320,387	321,942		(106)		8.000	7.828	MON	2,136	25,223	07/26/2000	12/01/2029	
31384W-DH-0	FANNIE MAE-POOL #535704			4	1	177,654	106.1217	194,515	183,294	178,703		111		5.500	6.344	MON		840	9,883	06/30/2003	12/01/2030
31384W-NM-8	FANNIE MAE-POOL #535996			4	1	106	115.4773	115	99	105				7.500	5.798	MON		1	8	11/17/2008	06/01/2031
31384X-QC-5	FANNIE MAE-POOL #536951			4	1	11,331	102.0395	11,227	11,002	11,296		(43)		9.000	8.074	MON		83	979	07/11/2000	05/01/2030
31384X-KK-9	FANNIE MAE-POOL #537182			4	1	3,278	108.8368	3,464	3,183	3,251		(1)		9.000	8.252	MON		24	279	07/11/2000	05/01/2030
31384Y-VL-7	FANNIE MAE-POOL #538019			4	1	18,288	100.7856	18,103	17,962	18,150		(16)		8.500	8.088	MON		127	1,500	04/27/2000	12/01/2027
31385A-T7-2	FANNIE MAE-POOL #538874			4	1	579	100.1305	563	572	572		(1)		9.000	8.425	MON		4	50	07/11/2000	06/01/2030
31385D-HK-0	FANNIE MAE-POOL #541234			4	1	3,359	100.1283	3,266	3,262	3,315		(8)		9.000	8.429	MON		24	292	07/11/2000	06/01/2030
31385E-GJ-2	FANNIE MAE-POOL #542101			4	1	2,764	102.0129	2,742	2,688	2,732		(6)		9.000	8.429	MON		20	231	07/12/2000	05/01/2030
31385E-PE-3	FANNIE MAE-POOL #542321			4	1	1,560	100.1369	1,517	1,515	1,541		(4)		9.000	8.399	MON		11	135	07/11/2000	06/01/2030
31385H-Y6-3	FANNIE MAE-POOL #545333			4	1	26,606	112.4301	26,136	23,247	26,044		(138)		6.500	3.007	MON		126	1,485	01/01/2013	12/01/2031
31385J-EK-0	FANNIE MAE-POOL #545638			4	1	95,394	112.6232	90,801	80,623	93,528		(553)		6.500	2.063	MON		437	5,149	01/01/2013	05/01/2032
31385J-ER-5	FANNIE MAE-POOL #545644			4	1	25,447	105.1776	25,482	24,227	25,274		(2)		7.500	5.984	MON		151	1,769	08/29/2011	04/01/2029
31385P-5A-8	FANNIE MAE-POOL #549041			4	1	6,290	100.1004	6,087	6,081	6,206		(9)		9.000	7.945	MON		46	527	08/10/2000	10/01/2024
31385X-AW-7	FANNIE MAE-POOL #555421			4	1	2,143,995	106.2040	2,089,961	1,967,874	2,127,876		(215)		5.000	2.782	MON	8,199	96,671	01/01/2013	05/01/2033	
31385X-LZ-8	FANNIE MAE-POOL #555744			4	1	32,687	118.0781	36,668	31,054	32,375		(72)		7.500	6.211	MON		194	2,294	08/29/2011	04/01/2033
31386G-YB-3	FANNIE MAE-POOL #563306			4	1	20,618	107.3175	21,073	19,636	20,417		2		7.500	6.190	MON		123	1,431	08/29/2011	10/01/2030
31386M-ZB-9	FANNIE MAE-POOL #567838			4	1	25,634	112.2691	25,308	22,542	25,082		(99)		6.500	3.059	MON		122	1,438	01/01/2013	10/01/2030
31386W-MA-7	FANNIE MAE-POOL #575579			4	1	578	107.3272	583	543	572		3		7.500	5.806	MON		3	38	11/17/2008	04/01/2031
31387N-WC-7	FANNIE MAE-POOL #589343			4	1	86,894	109.4576	79,606	72,727	82,137		(1,411)		7.000	3.169	MON		424	5,065	01/01/2013	06/01/2031
31387S-U6-1	FANNIE MAE-POOL #592905			4	1	5,286	107.3018	5,764	5,372	5,301		(3)		6.000	6.481	MON		27	309	12/06/2001	01/01/2029
31388S-W2-7	FANNIE MAE-POOL #613665			4	1	175,891	107.3174	190,068	177,109	176,286		105		6.000	6.163	MON		886	10,400	12/03/2001	10/01/2029
31388S-WZ-4	FANNIE MAE-POOL #613664			4	1	101,079	105.7996	110,605	104,542	101,922		327		5.500	6.390	MON		479	5,709	12/03/2001	10/01/2029
31388W-QJ-8	FANNIE MAE-POOL #617057			4	1	47,296	108.9127	43,593	40,026	46,128		549		6.500	2.172	MON		217	2,591	01/01/2013	11/01/2031
31389A-6A-6	FANNIE MAE-POOL #620165			4	1	94,032	108.6032	86,424	79,578	92,352		(2,005)		6.500	1.992	MON		431	5,152	01/01/2013	12/01/2031
31389C-HA-0	FANNIE MAE-POOL #621325			4	1	31,253	107.3859	29,513	27,483	29,983		(384)		6.500	3.797	MON		149	1,779	01/01/2013	12/01/2031
3138A2-BL-2	FANNIE MAE-POOL #AH0942			4	1	142,645	102.9705	131,851	128,048	142,832		1,032		4.000	2.305	MON		427	5,052	01/01/2013	12/01/2040
3138A5-BP-6	FANNIE MAE-FNMA			4	1	507,568	102.8252	492,477	478,945	499,254		(3,057)		4.000	3.214	MON	1,596	18,978	07/24/2017	02/01/2041	
3138AK-SA-8	FANNIE MAE-POOL #A15912			4	1	167,627	103.1256	155,177	150,473	168,751		675		4.000	2.218	MON		502	5,961	01/01/2013	08/01/2041
3138AR-X3-3	FANNIE MAE-POOL #AJ0697			4	1	249,593	103.1259	231,055	224,052	248,509		1,362		4.000	2.417	MON		747	8,881	01/01/2013	09/01/2041
3138AV-P7-4	FANNIE MAE-POOL #AJ4045			4	1	184,490	103.1248	170,786	165,611	185,581		1,568		4.000	2.281	MON		552	6,528	01/01/2013	10/01/2041
3138EO-M3-0	FANNIE MAE-POOL #AJ7577			4	1	583,413	100.7808	551,051	546,782	583,724		1,537		3.500	2.534	MON		1,595	18,987	01/01/2013	11/01/2041
3138EO-Q9-3	FANNIE MAE-POOL #AJ7679			4	1	41,213	100.7770	38,253	37,958	41,180		77		3.500	2.336	MON		11	1,314	01/01/2013	12/01/2041
3138E4-FF-3	FANNIE MAE-POOL #AK0165			4	1	811,085	100.3108	769,799	767,415	810,883		2,832		3.000	1.095	MON	1,919	22,061	01/01/2013	04/01/2027	
3138EB-PJ-8	FANNIE MAE-POOL #AK6724			4	1	200,893	98.3425	200,223	203,597	201,576		282		3.000	3.172	MON		509	6,054	07/24/2014	03/01/2042
3138EG-EI-0	FANNIE MAE-POOL #AL0148			4	1	432,504	102.9384	399,654	388,246	403,261		3,290		4.000	2.283	MON	1,294	15,320	01/01/2013	11/01/2040	
3138EH-G9-7	FANNIE MAE-POOL #AL1123			4	1	1,893,268	101.2221	1,805,499	1,783,701	1,859,733		(

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
3138EH-P3-0	FANNIE MAE-POOL #AL1341			4	1	615,611	100.7804	571,419	566,994	616,423		1,771			3.500	2.306	MON	1,654	19,607	01/01/2013	01/01/2042
3138EM-UX-7	FANNIE MAE-FNMA			4	1	338,264	104.7398	327,768	312,935	311,178		(2,481)			4.500	3.489	MON	1,174	13,878	07/15/2014	09/01/2043
3138LO-NB-0	FANNIE MAE-POOL #AM0414			4	1	493,167	97.3902	486,951	500,000	496,210		647			2.870	3.115	MON	1,236	14,549	01/01/2013	09/01/2027
3138LO-WN-7	FANNIE MAE-POOL #AM0652			4	1	1,197,806	99.7178	1,160,523	1,163,807	1,189,107		(898)			3.150	2.682	MON	3,055	36,502	01/01/2013	09/01/2032
3138L3-C5-2	FANNIE MAE AM2791			4	1	533,594	99.1502	534,868	539,452	536,036		814			3.170	3.389	MON	1,473	17,293	06/25/2014	03/01/2028
3138L8-NV-2	FANNIE MAE AM7603			6	1	511,668	100.9534	496,679	491,988	78,546					2.980	(46.010)	MON	1,263	(52,574)	01/28/2015	01/01/2025
3138L8-RN-6	FANNIE MAE AM7692			4	1	507,063	101.4142	501,348	494,357	498,081		(3,362)			3.070	2.405	MON	1,307	15,362	08/11/2015	01/01/2025
3138LA-CD-9	FANNIE MAE AM9067			4	1	908,073	100.9793	915,321	906,444	906,548		(686)			3.540	3.511	MON	2,763	32,485	07/21/2015	06/01/2045
3138LA-WD-7	FANNIE MAE AM9643			6	1	646,656	101.3314	638,432	630,043	167,759					3.170	(51.324)	MON	1,720	(125,006)	09/15/2015	08/01/2025
3138LK-P7-6	Fannie Mae Pool-POOL #AN6745			4	1	596,819	96.6343	559,637	579,129	594,298		(2,251)			3.500	3.073	MON	6,893	20,539	11/28/2017	09/01/2042
3138MO-ST-8	FANNIE MAE-POOL #A08629			4	1	572,485	100.7782	571,794	567,379	572,571		.385			3.500	3.365	MON	1,655	19,613	12/02/2013	07/01/2042
3138M6-KB-2	FANNIE MAE-POOL #AP2989			4	1	6,341,817	100.7806	5,977,764	5,931,466	6,313,581		1,209			3.500	2.464	MON	17,300	205,392	01/01/2013	08/01/2042
3138M7-5U-5	FANNIE MAE-POOL #AP4458			4	1	641,555	98.3966	601,852	611,680	639,116		759			3.000	2.400	MON	1,529	18,195	01/01/2013	08/01/2042
3138MA-KX-5	FANNIE MAE-POOL #AP6609			4	1	257,443	100.8737	257,376	255,147	255,147		143			3.500	3.370	MON	744	8,833	12/02/2013	09/01/2042
3138MB-KA-3	FANNIE MAE AP7488			4	1	791,126	100.7806	780,605	774,559	786,245		(1,692)			3.500	3.223	MON	2,259	24,472	08/23/2018	09/01/2042
3138NJ-AD-0	FANNIE MAE-POOL #FNO003 MEGA			4	1	212,997	102.7806	196,837	191,512	191,512		(5,347)			4.283	0.437	MON	1,412	8,290	07/17/2014	01/01/2021
3138WC-H6-3	FANNIE MAE AS2952			4	1	375,109	102.1525	362,509	354,870	369,426		(1,990)			4.000	3.294	MON	1,183	13,972	07/15/2014	07/01/2044
3138WIN-CN-7	FANNIE MAE-POOL #ATO976			4	1	453,820	98.2139	467,697	476,202	455,315		.972			3.000	3.781	MON	1,191	14,128	12/02/2013	04/01/2043
3138WQ-GV-8	FANNIE MAE-POOL #AT2911			4	1	614,496	98.2115	633,269	644,801	618,508		1,831			3.000	3.724	MON	1,612	19,171	12/02/2013	04/01/2043
31390P-GK-7	FANNIE MAE-POOL #651902			4	1	47,559	112.5725	47,014	41,764	47,097		(24)			6.500	2.901	MON	226	2,667	01/01/2013	08/01/2032
31391A-KD-0	FANNIE MAE-POOL #660992			4	1	138	101.1883	130	129	140		4			8.500	5.750	MON	1	9	08/29/2011	07/01/2032
31391B-N4-5	FANNIE MAE-POOL #662011			4	1	13,593	107.3859	12,354	11,504	12,943		(189)			6.500	2.907	MON	62	743	01/01/2013	02/01/2032
31391S-LS-7	FANNIE MAE-POOL #675437			4	1	23,513	105.7996	22,635	21,395	23,648		293			5.500	2.521	MON	98	1,110	01/01/2013	02/01/2033
31391U-J2-2	FANNIE MAE-POOL #677181			4	1	12,479	108.2968	11,421	10,546	12,598		(283)			6.500	1.347	MON	57	683	01/01/2013	01/01/2033
31391W-SH-0	FANNIE MAE-POOL #679548			4	1	81,467	106.2028	79,413	74,775	80,417		(296)			5.000	2.925	MON	37	3,667	01/01/2013	04/01/2033
313920-ZN-3	FANNIE MAE-SERIES 2001-46CLASS ZG			4	1	143,199	108.8044	154,934	142,397	142,630		(18)			6.000	5.937	MON	9,718	9,194	08/29/2011	09/01/2031
313921-A6-5	FANNIE MAE-SERIES 2001-65CLASS S			6	1	672	18.5995	953	5,125	645					5.394	11.283	MON	5	76	08/29/2011	11/25/2031
313921-N6-1	FANNIE MAE-SERIES 2001-61CLASS SE			6	1	17,147	16.9227	22,302	131,789	15,531					5.395	14.019	MON	1,538	1,447	08/29/2011	11/18/2031
313921-S8-8	FANNIE MAE-SERIES 2001-51CLASS OD			4	1	7,861	105.6702	8,116	7,681	7,731		(8)			6.500	6.114	MON	42	482	08/29/2011	10/01/2031
31392A-6Y-9	FANNIE MAE-SERIES 2001-82CLASS ZA			4	1	31,940	109.2351	33,859	30,996	31,372		(13)			6.500	6.024	MON	2,390	2,215	08/29/2011	01/01/2032
31392B-3D-6	FANNIE MAE-SERIES 2002-7 CLASS SK			6	1	373	14.2804	963	6,745	786					4.744	10.018	MON	5	78	08/29/2011	01/25/2032
31392B-J9-8	FANNIE MAE-SERIES 2002-9 CLASS M			6	1	329	18.7898	348	1,853	275					5.594	7.648	MON	2	19	08/29/2011	03/25/2032
31392B-HY-9	FANNIE MAE-SERIES 2001-81CLASS S			6	1	204	17.3380	218	1,256	159					5.444	12.323	MON	1	19	08/29/2011	01/25/2032
31392D-CP-5	FANNIE MAE-SERIES 2002-38CLASS SO			6	1	216	15.2907	376	2,460	140					4.494	45.461	MON	2	72	08/29/2011	04/25/2032
31392D-VZ-2	FANNIE MAE-SERIES 2002-47CLASS NS			6	1	563	18.1601	602	3,317	509					5.494	6.144	MON	3	24	08/29/2011	04/25/2032
31392D-WM-0	FANNIE MAE-SERIES 2002-51CLASS S			6	1	524	18.1604	553	3,047	457					5.494	6.981	MON	3	25	08/29/2011	08/25/2032
31392E-6P-9	FANNIE MAE-SERIES 2002-52CLASS SD			6	1	741	18.7297	907	4,845	516					5.494	21.534	MON	4	118	08/29/2011	09/25/2032
31392E-PB-8	FANNIE MAE-SERIES 2002-56 CLASS PE			4	1	490,087	109.9161	504,623	459,098	467,112		(274)			6.000	5.447	MON	2,295	27,073	05/20/2003	09/01/2032
31392E-VF-4	FANNIE MAE-SERIES 2002-60CLASS SY			6	1	5,901	3.4108	12,083	354,245	11,787					1.000	3.993	MON	59	(32)	08/29/2011	04/25/2032
31392E-WM-6	FANNIE MAE-SERIES 2002-60CLASS SM			6	1	2,100	13.3095	2,994	22,498	2,659					4.494	7.080	MON	17	184	08/29/2011	08/25/2032
31392F-6J-1	FANNIE MAE-SERIES 2002-77CLASS SH			6	1	312	15.9193	271	1,705	304					5.645	(5.410)	MON	21	(27)	08/29/2011	12/18/2032
31392F-BL-6	FANNIE MAE-SERIES 2002-77 CLASS SA			6	1	2,907	15.5773	3,328	21,362	4,741					5.545	(6.099)	MON	265	(407)	08/29/2011	12/18/2032
31392F-7E-1	FANNIE MAE-SERIES 2002-77CLASS JS			6	1	2,920	15.8194	3,629	22,942	3,059					5.545	11.065	MON	273	326	08/29/2011	12/18/2032
31392F-7F-8	FANNIE MAE-SERIES 2002-77CLASS BS			6	1	1,939	16.6883	2,588	15,509	1,953					5.545	13.803	MON	181	255	08/29/2011	12/18/2032
31392F-7G-6	FANNIE MAE-SERIES 2002-77CLASS IS			6	1	668	17.1900	720	4,186	636					5.645	6.898	MON	47	40	08/29/2011	12/18/2032
31392G-DI-2	FANNIE MAE-SERIES 2002-90CLASS SY			6	1	501	13.5177	748	5,536	556					4.494	13.495	MON	4	80	08/29/2011	09/25/2032
31392G-EE-1	FANNIE MAE-SERIES 2002-90CLASS SN			6	1	1,078	13.3094	1,545	11,605	1,364					4.494	7.299	MON	9	99	08/29/2011	08/25/2032
31392G-NE-1	FANNIE MAE-SERIES 2002-96CLASS SK			6	1	1,803	16.5621	2,366	14,287	1,672					5.494	17.260	MON	13	276	08/29/2011	04/25/2032
31392G-NQ-4	FANNIE MAE-SERIES 2002-89CLASS S			6	1	30,739	19.1322	37,900	198,096	29,850					5.694	10.680	MON	188	2,524	08/29/2011	01/25/2033
31392H-GU-1	FANNIE MAE-SERIES 2002-95 CLASS DB			4	1	3,881,387	110.9816	4,098,839	3,693,261	3,732,087					6.000	5.666	MON	18,466	218,734	01/26/2005	01/01/2033
31392H-MC-4	FANNIE MAE-SERIES 2003-11CLASS FA			4	1	11,889	110.8727	12,231	12,007												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31393U-NH-2	FANNIE MAE-SERIES 2003-118 CLASS S			6	1	1,350	19.8435	2,003	10,094	1,527					5.594	8.302	MON	9	103	08/29/2011	12/25/2033
31393U-VH-3	FANNIE MAE-SERIES 2003-130 CLASS CS			4	1	5,002	102.0092	5,389	5,283				21		9.088	9.409	MON	8	501	08/29/2011	12/25/2033
31393X-2K-2	FANNIE MAE-SERIES 2004-32 CLASS AY			4	1	59,475	99.8475	64,178	64,276	64,220			239		4.000	5.253	MON	214	148	01/28/2005	05/01/2019
31394A-2L-9	FANNIE MAE-SERIES 2004-73 CLASS MZ			4	1	661,782	103.8092	803,894	774,396	737,677		(1,361)			4.500	5.847	MON	19,694	35,120	03/15/2006	10/01/2034
31394A-HA-7	FANNIE MAE-SERIES 2004-54 CLASS DS			6	1	462	14.2472	520	3,649	401					4.594	7.536	MON	3	28	08/29/2011	11/25/2030
31394B-6Z-2	FANNIE MAE-SERIES 2005-6 CLASS SE			6	1	1,850	14.5163	2,889	19,900	1,377					4.194	28.352	MON	14	441	08/29/2011	02/25/2035
31394B-CE-2	FANNIE MAE-SERIES 2004-81 CLASS JG			4	1	177,274	102.4553	189,565	185,022	183,512		236			5.000	5.460	MON	771	8,986	01/23/2006	11/01/2024
31394B-CZ-5	FANNIE MAE-SERIES 2004-81 CLASS ML			4	1	331,865	102.6586	362,795	353,400	349,159		659			5.000	5.678	MON	1,473	17,164	03/22/2006	11/01/2024
31394B-LJ-1	FANNIE MAE-SERIES 2004-90 CLASS LH			4	1	18,191	100.0067	19,351	19,349						5.000	5.772	MON	81	562	04/11/2006	04/01/2034
31394C-A2-8	FANNIE MAE-SERIES 2005-14 CLASS MG			4	1	10,049,537	108.1561	11,742,540	10,857,029	10,620,787		(4,182)			5.000	5.639	MON	45,238	530,776	02/08/2006	03/01/2035
31394C-JG-8	FANNIE MAE-SERIES 2005-19 CLASS SA			6	1	3,984	15.1341	6,585	43,513	2,826					4.244	32.825	MON	31	1,046	08/29/2011	03/25/2035
31394C-TR-3	FANNIE MAE-SERIES 2005-21 CLASS ME			4	1	4,311,406	107.1355	4,966,717	4,635,921	4,552,969		4,707			5.000	5.554	MON	19,316	228,971	02/16/2006	03/01/2035
31394C-UC-4	FANNIE MAE-SERIES 2005-21 CLASS PE			4	1	3,468,075	106.4305	4,159,707	3,908,378	3,793,450		33,417			5.000	5.882	MON	16,285	190,936	06/21/2006	03/01/2035
31394C-VS-8	FANNIE MAE-SERIES 2005-20 CLASS GH			4	1	10,711,696	107.9521	12,810,528	11,866,861	11,543,952		(4,549)			5.000	5.815	MON	49,445	582,932	04/07/2006	03/01/2035
31394D-6T-2	FANNIE MAE-SERIES 2005-56CLASS TG			4	1	368,601	103.2270	402,447	389,866	385,096		520			5.000	5.596	MON	1,624	18,981	01/19/2006	07/01/2025
31394D-6B-7	FANNIE MAE-SERIES 2005-53CLASS LY			4	1	307,950	102.9589	335,626	325,981	321,976		500			5.000	5.622	MON	1,358	15,834	11/29/2005	06/01/2025
31394D-0F-0	FANNIE MAE-SERIES 2005-40 CLASS SA			6	1	1,038	14.7421	1,425	9,666	812					4.194	17.702	MON	7	162	08/29/2011	05/25/2035
31394D-RL-6	FANNIE MAE-SERIES 2005-40 CLASS YG			4	1	647,969	102.5515	712,820	695,085	684,522		1,268			5.000	5.762	MON	2,896	33,821	03/30/2006	05/01/2025
31394D-TZ-3	FANNIE MAE-SERIES 2005-39 CLASS TE			4	1	1,719,623	107.8812	1,932,920	1,791,712	1,770,200		(60)			5.000	5.360	MON	7,465	88,083	09/22/2005	05/01/2035
31394E-TR-9	FANNIE MAE-SERIES 2005-59 CLASS NQ			4	1	36,320	110.9764	40,798	36,762	36,762					10.609	9.205	MON	65	4,370	08/29/2011	05/25/2035
31394E-WB-0	FANNIE MAE-SERIES 2005-71 CLASS SI			6	1	616	6.6615	451	6,765	401					4.244	8.411	MON	5	19	08/29/2011	08/25/2025
31394F-CS-2	FANNIE MAE-SERIES 2005-81 CLASS PC			4	1	2,488,963	109.7830	2,712,117	2,470,435	2,469,969		4			5.500	5.506	MON	11,323	132,949	09/21/2005	09/01/2035
31394F-TV-7	FANNIE MAE-SERIES 2005-83 CLASS SL			6	1	19,458	13.6052	28,106	206,582	18,927					4.164	14.972	MON	143	2,947	08/29/2011	10/25/2035
31394F-U7-8	FANNIE MAE-SERIES 2005-87 CLASS SG			6	1	1,869	14.5166	2,922	20,130	1,928					4.194	13.204	MON	14	271	08/29/2011	10/25/2035
31394F-LJ-7	FANNIE MAE-SERIES 2005-94 CLASS YE			4	1	1,867,122	102.6530	2,261,124	2,202,688	2,074,338		(1,121)			4.500	6.082	MON	8,260	98,088	05/02/2006	10/01/2035
31394F-V6-9	FANNIE MAE-SERIES 2005-87 CLASS SE			6	1	39,744	13.0758	59,786	457,231	40,332					3.544	8.637	MON	270	3,925	08/29/2011	10/25/2035
31394J-2V-3	FANNIE MAE-SERIES 2005-104 CLASS MC			4	1	43,373	103.7428	48,184	46,445	45,350		183			5.500	6.992	MON	213	4,370	08/29/2011	12/01/2025
31394J-CA-8	FANNIE MAE-SERIES 2005-86 CLASS AI			6	1	15,990	17.8851	17,878	99,960	27,342					6.000	(14.254)	MON	500	(5,905)	08/29/2011	10/01/2035
31394J-D9-0	FANNIE MAE-SERIES 2005-105 CLASS S			6	1	9,946	12.3016	12,413	100,906	9,971					4.194	11.968	MON	71	1,205	08/29/2011	12/25/2035
31394J-JJ-7	FANNIE MAE-SERIES 2005-102 CLASS HY			4	1	346,213	102.7057	374,959	365,081	361,414		563			5.000	5.565	MON	1,521	17,737	11/29/2005	11/01/2025
31394J-RQ-7	FANNIE MAE-SERIES 2005-100 CLASS BQ			4	1	12,104	103.3552	13,396	12,961	12,702		43			5.500	6.759	MON	59	692	08/29/2011	11/01/2025
31394J-VF-6	FANNIE MAE-SERIES 2005-101 CLASS BY			4	1	1,046,173	107.8619	1,212,036	1,123,692	1,099,564		(254)			5.000	5.645	MON	4,682	55,212	01/27/2006	11/01/2035
31394J-ZH-8	FANNIE MAE-SERIES 2005-109 CLASS AH			4	1	62,437	102.6803	69,378	67,567	66,083		240			5.500	6.830	MON	310	3,613	08/29/2011	12/01/2025
31394V-7G-9	FANNIE MAE-SERIES 2006-11CLASS PS			4	1	52,943	142.9561	66,031	46,190	48,056			(1,746)		15.377	11.729	MON	118	7,973	08/29/2011	03/25/2036
31394V-AF-7	FANNIE MAE-SERIES 2005-121 CLASS Z			4	1	1,662,624	105.3046	2,043,000	1,940,087	1,856,080		(3,296)			4.500	5.710	MON	72,068	88,917	12/13/2005	01/01/2036
31394V-BA-7	FANNIE MAE-SERIES 2005-121 CLASS DX			4	1	467,121	104.0218	491,126	472,138	470,290		264			5.500	5.704	MON	2,164	25,325	01/03/2006	01/01/2026
31395B-6Z-1	FANNIE MAE-SERIES 2006-38 CLASS AH			4	1	218,698	102.6999	261,665	254,786	247,862		950			4.500	5.792	MON	955	11,238	04/13/2006	05/01/2026
31395B-XZ-1	FANNIE MAE-SERIES 2006-25 CLASS B			4	1	7,100,829	102.3370	7,481,882	7,311,021	7,264,409		7,276			5.500	5.860	MON	33,509	390,952	03/23/2006	04/01/2026
31395D-7F-0	FANNIE MAE-SERIES 2006-46 CLASS SW			4	1	32,256	137.7441	39,423	28,620	31,930		(1,714)			15.010	8.923	MON	702	4,840	08/29/2011	06/25/2036
31395D-FX-2	FANNIE MAE-SERIES 2006-39 CLASS PH			4	1	6,120,532	108.5895	6,811,839	6,272,442	6,214,393		722			5.500	5.785	MON	28,749	339,147	12/12/2007	05/01/2036
31395D-67-8	FANNIE MAE-SERIES 2006-43 CLASS DG			4	1	2,110,479	109.5793	2,376,516	2,168,764	2,152,015		5,492			6.000	6.263	MON	10,844	123,436	07/26/2006	06/01/2036
31395D-JE-0	FANNIE MAE-SERIES 2006-33CLASS SP			6	1	3,377	15.4095	3,897	25,288	6,555					4.694	(15.986)	MON	20	(1,575)	08/29/2011	05/25/2036
31395D-U3-1	FANNIE MAE-SERIES 2006-51CLASS SA			6	1	30,799	15.1242	56,514	373,667	52,015					4.064	(3.711)	MON	253	(4,876)	08/29/2011	06/25/2036
31395D-VI-6	FANNIE MAE-SERIES 2006-42CLASS CI			6	1	8,947	13.2455	15,647	118,127	16,143					4.044	(2.347)	MON	80	(1,289)	08/29/2011	06/25/2036
31395N-3R-6	FANNIE MAE-SERIES 2006-61CLASS NP			4	1	1,475,682	110.2651	1,620,074	1,469,254	1,469,107		39			6.000	6.003	MON	7,346	86,118	01/17/2007	07/01/2036
31395N-B5-5	FANNIE MAE-SERIES 2006-64 CLASS PD			4	1	3,411,484	108.6360	3,956,633	3,642,103	3,582,544		17,220			5.500	6.007	MON	16,693	196,670	07/25/2006	07/01/2036
31396H-AL-3	FREDDIE MAC REFERENCE RE-SERIES R005 CLA			4	1	6,529,679	107.8478	6,236,174	5,782,386	6,338,153		(5,071)			5.500	2.916	MON	26,503	312,264	01/01/2013	02/01/2036
31396K-FX-5	FANNIE MAE-SERIES 2006-73 CLASS PE			4	1	4,092,545	107.5652	4,551,500	4,231,388	4,193,254		12,596			6.000	6.308	MON	21,157	248,149	07/19/2006	08/01/2036
31396K-MT-6	FANNIE MAE-SERIES 2006-74CLASS PD			4	1	1,251,59															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31398S-F5-7	FANNIE MAE-SERIES 2010-135 CLASS CE			4	1	11,009,983	107.8682	12,367,083	11,465,000	10,530,807		69,418			4.500	5.509	MON	42,994	515,925	01/21/2011	12/01/2040
31400H-Y2-3	FANNIE MAE-POOL #688429			4	1	20,847	105.8013	19,938	18,845	21,236	(304)				5.500	2.030	MON	86	1,032	01/01/2013	02/01/2033
31400H-Y3-1	FANNIE MAE-POOL #688430			4	1	52,854	106.8104	51,124	47,865	51,786	(92)				5.500	3.180	MON	219	2,619	01/01/2013	03/01/2033
31400H-Y6-4	FANNIE MAE-POOL #688433			4	1	36,772	106.0117	35,240	33,242	35,852	(78)				5.500	3.262	MON	152	1,793	01/01/2013	03/01/2033
31400J-PF-0	FANNIE MAE-POOL #689022			4	1	3,295	106.1830	3,211	3,024	3,303	17				5.000	2.495	MON	13	148	01/01/2013	05/01/2033
31400J-RY-7	FANNIE MAE-POOL #689103			4	1	684,434	107.8886	649,720	602,214	668,564	(4,396)				5.500	2.442	MON	2,760	32,789	01/01/2013	02/01/2033
31400J-SJ-9	FANNIE MAE-POOL #689121			4	1	5,983	106.1954	5,832	5,492	5,952	10				5.000	2.734	MON	23	269	01/01/2013	02/01/2033
31400K-G2-6	FANNIE MAE-POOL #689717			4	1	17,644	105.7996	16,875	15,950	17,486	232				5.500	2.784	MON	73	873	01/01/2013	03/01/2033
31400K-G2-3	FANNIE MAE-POOL #689716			4	1	23,183	105.8286	22,179	20,957	22,984	39				5.500	2.782	MON	96	1,123	01/01/2013	03/01/2033
31400Q-TN-3	FANNIE MAE-POOL #694557			4	1	10,408	107.3843	10,170	9,470	10,373	(21)				5.500	2.836	MON	43	512	01/01/2013	04/01/2033
31400W-CW-8	FANNIE MAE-POOL #699485			4	1	7,613	106.6060	7,384	6,927	7,666	31				5.500	2.548	MON	32	374	01/01/2013	04/01/2033
31400W-DP-2	FANNIE MAE-POOL #699510			4	1	619	104.7532	637	608	615	(1)				5.000	4.681	MON	3	31	06/30/2003	05/01/2033
31401K-ZV-0	FANNIE MAE-POOL # 710956			4	1	50,134	105.7996	51,234	48,426	50,693		508			5.500	4.141	MON	222	2,440	06/30/2003	05/01/2033
31401N-4U-0	FANNIE MAE-POOL #713735			4	1	249,893	106.1940	243,572	229,365	249,099	334				5.000	2.745	MON	956	11,264	01/01/2013	09/01/2033
31401P-C7-7	FANNIE MAE-POOL # 713894			4	1	83,857	107.3713	86,971	81,000	82,845	(229)				5.500	4.828	MON	371	4,438	06/30/2003	06/01/2033
31401W-TK-5	FANNIE MAE-POOL #720654			4	1	18,519	106.1713	19,326	18,202	18,454	(9)				5.000	4.591	MON	76	897	06/30/2003	06/01/2033
31401X-H5-9	FANNIE MAE-POOL #721252			4	1	1,806	106.1707	1,885	1,775	1,803	(1)				5.000	4.537	MON	7	88	06/30/2003	06/01/2033
31402C-PL-0	FANNIE MAE-POOL #725027			4	1	904,010	106.5086	883,754	829,749	898,330	671				5.000	2.828	MON	3,457	40,779	01/01/2013	11/01/2033
31402C-U6-7	FANNIE MAE-POOL #725205			4	1	68,925	106.3713	67,421	63,383	68,493	25				5.000	2.869	MON	264	3,115	01/01/2013	03/01/2034
31402D-F9-6	FANNIE MAE-POOL #725692			4	1	3,686	104.9087	3,748	3,573	3,622	(17)				4.317	3.918	MON	13	130	11/28/2009	10/01/2033
31402E-AQ-1	FANNIE MAE-POOL #726415			4	1	8,087	106.1598	7,880	7,422	8,123	(4)				5.500	2.466	MON	31	365	01/01/2013	07/01/2033
31402H-KT-7	FANNIE MAE-POOL #729406			4	1	19,898	106.8036	19,337	18,105	19,857	69				5.500	2.819	MON	83	960	01/01/2013	08/01/2033
31402K-CE-2	FANNIE MAE-POOL #730969			4	1	5,562	106.1619	5,420	5,105	5,529	(17)				5.000	2.781	MON	21	251	01/01/2013	08/01/2033
31402L-PB-2	FANNIE MAE-POOL #732218			4	1	24,423	99.3509	23,583	23,737	24,092	(102)				3.357	2.903	MON	66	658	10/06/2014	06/01/2043
31402Q-R7-8	FANNIE MAE-POOL #735010			4	1	625	101.7430	635	624	624					5.000	5.154	MON	3	21	11/17/2008	11/01/2019
31402Q-VN-8	FANNIE MAE-POOL #735121			4	1	1,943,323	106.1490	2,070,582	1,950,638	1,943,535	1				5.000	5.102	MON	8,128	95,886	12/08/2004	01/01/2035
31402R-JN-7	FANNIE MAE-POOL #735989			4	1	1,519,385	107.4720	1,485,778	1,382,479	1,509,284	(778)				5.500	3.042	MON	6,336	74,647	01/01/2013	02/01/2035
31402W-3A-4	FANNIE MAE-POOL #740693			4	1	574,487	107.6239	562,574	522,722	557,766	(4,426)				5.500	3.606	MON	2,396	28,639	01/01/2013	10/01/2033
31403C-5V-9	FANNIE MAE-POOL #745260			4	1	13,046	115.5974	14,391	12,449	12,954	(15)				7.500	6.261	MON	78	918	08/29/2011	01/01/2033
31403D-D9-7	FANNIE MAE-POOL #745428			4	1	380,803	107.6639	375,179	348,472	378,887	(131)				5.500	3.185	MON	1,597	18,810	01/01/2013	01/01/2036
31403D-IH-8	FANNIE MAE-POOL #745948			4	1	521	112.9563	576	510	520					6.500	5.813	MON	3	33	11/17/2008	10/01/2036
31404H-TF-6	FANNIE MAE-POOL #769250			4	1	322,248	105.5067	343,807	325,863	323,410	337				5.500	5.715	MON	1,494	17,859	10/04/2005	12/01/2033
31404Q-S4-2	FANNIE MAE-POOL #775539			4	1	2,810	104.4158	2,833	2,713	2,746					4.179	3.835	MON	9	108	11/28/2009	05/01/2034
31406A-6R-8	FANNIE MAE-POOL #804680			4	1	263,680	107.4908	250,485	233,029	255,801	(2,759)				5.500	2.882	MON	1,068	12,772	01/01/2013	12/01/2034
31406B-6L-9	FANNIE MAE-POOL #805575			4	1	54,966	105.7996	52,319	49,451	53,201	(471)				5.500	3.420	MON	227	2,710	01/01/2013	11/01/2034
31406B-Y4-6	FANNIE MAE-POOL #805431			4	1	35,343	105.7996	33,978	32,115	34,571	(194)				5.500	3.378	MON	147	1,748	01/01/2013	11/01/2034
31406K-DP-2	FANNIE MAE-POOL #812010			4	1	232,002	105.7996	215,971	204,132	229,103	(2,891)				5.500	2.294	MON	936	11,182	01/01/2013	01/01/2035
31406K-VR-8	FANNIE MAE-POOL #812524			4	1	201,499	105.7996	195,085	184,391	208,135	(2,434)				5.500	2.159	MON	845	10,107	01/01/2013	02/01/2035
31406M-SH-5	Fannie Mae Pool-POOL #814548			4,5		458,440	103.5257	475,606	459,409	442,728	5,130				3.774	4.773	MON	1,445	15,721	10/23/2008	04/01/2035
31406N-4K-7	FANNIE MAE-POOL #815426			4	1	10,961	104.0907	12,093	11,617	11,033	6				4.500	5.930	MON	44	516	11/17/2008	02/01/2035
31407J-DD-1	FANNIE MAE-POOL #831800			4	1	525	112.0310	575	524	524					6.500	5.773	MON	3	3	11/17/2008	09/01/2036
31407K-KM-0	FANNIE MAE-POOL #832900			4	1	41,047	106.1365	44,551	41,975	41,158	16				5.000	5.552	MON	175	2,085	11/17/2008	09/01/2035
31407M-ZX-6	FANNIE MAE-POOL #835158			4	1	369,329	106.1556	396,775	373,767	369,596	(139)				5.000	5.311	MON	1,557	18,302	09/07/2005	08/01/2035
31407Y-5U-9	FANNIE MAE-POOL #845159			4	1	2,360	102.2312	2,471	2,417	2,398					4.500	5.452	MON	9	100	11/17/2008	01/01/2021
31408E-G5-5	FANNIE MAE-POOL #849020			4	1	35,888	106.6889	35,037	32,841	35,500	58				5.500	3.328	MON	151	1,752	01/01/2013	01/01/2036
31409F-KM-9	FANNIE MAE-POOL #869800			4	1	3,568	101.8493	3,721	3,654	3,624	10				4.500	5.404	MON	14	150	11/17/2008	03/01/2021
31409L-GT-6	FANNIE MAE-FANNIE MAE			4	1	469,400	103.6969	418,039	403,135	425,103		(14,525)			5.260	1.543	MON	1,767	21,155	07/08/2014	01/01/2025
31409V-K5-1	FANNIE MAE-POOL #879716			4	1	691	101.8493	720	702	702					4.500	5.219	MON	3	31	11/17/2008	02/01/2021
31409X-AP-4	FANNIE MAE-POOL #881214			4	1	7,416	99.7948	7,756	7,772	7,735	57				4.500	6.521	MON	29	88	08/31/2006	08/01/2019
31409X-AQ-2	FANNIE MAE-POOL #881215			4	1	40	99.7139	41	41	41					5.000	6.637	MON		(145)	08/31/2006	02/01/2019
31409X-AR-0	FANNIE MAE-POOL #881216			4	1	575,385	104.1585	630,233	605,071	582,298	(942)</										

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	Code	For Eig n	Bond Char	NAIC Designation and Admini- strative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor- tization) Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31410G-F3-2	FANNIE MAE-POOL #888586			4	1	48,902	104.9797	50,981	48,562	48,706		(49)			4.381	4.295	MON	595	1,792	08/29/2011	10/01/2034
31410G-RA-3	FANNIE MAE-POOL #888881			4	1	281,981	114.0931	286,545	251,150	279,577		(168)			6.500	3.045	MON	1,360	15,959	01/01/2013	12/01/2037
31410K-FF-6	FANNIE MAE-POOL #889466			4	1	2,563,497	109.4809	2,518,775	2,300,652	2,549,267		4,964			6.000	2.804	MON	11,503	134,790	01/01/2013	05/01/2038
31410K-JR-6	FANNIE MAE-POOL #889572			4	1	463,460	107.2967	457,610	426,490	462,064		429			5.500	3.102	MON	1,955	22,996	01/01/2013	06/01/2038
31410P-VR-1	FANNIE MAE-POOL #893524			4	1	4,270	111.1372	4,639	4,174	4,256		3			6.500	5.834	MON	23	258	11/17/2008	09/01/2036
31410T-UZ-6	FANNIE MAE-POOL #897100			4	1	11,932	113.4628	13,235	11,664	11,864		(18)			6.500	5.919	MON	63	750	11/17/2008	07/01/2036
31410U-RN-4	FANNIE MAE-POOL #897901			4	1	845	110.8651	916	826	843					6.500	5.800	MON	4	52	11/17/2008	01/01/2037
31410W-M9-6	FANNIE MAE-POOL #899584			4	1	205,973	108.3010	203,752	188,135	206,582		(673)			6.000	3.074	MON	941	11,096	01/01/2013	07/01/2037
31411C-C2-5	FANNIE MAE-POOL #903789			4	1	111	109.3334	118	108	110					6.500	5.886	MON	1	6	11/17/2008	11/01/2036
31411E-WB-9	FANNIE MAE-POOL #906142			4	1	9,670	107.3859	10,151	9,453	9,656		28			6.500	5.776	MON	51	571	11/17/2008	01/01/2037
31411F-SL-4	FANNIE MAE-POOL #907251			4	1	264	113.5922	293	262	262					6.500	5.913	MON	1	16	11/17/2008	12/01/2036
31411J-H6-6	FANNIE MAE-POOL #909353			4	1	30,069	102.3542	28,650	27,991	28,698		(200)			5.500	3.434	MON	128	1,488	11/28/2009	02/01/2022
31412B-2A-9	FANNIE MAE-POOL #920669			4	1	376	107.3859	394	367	372		(1)			6.500	6.033	MON	2	24	11/17/2008	08/01/2037
31412H-5H-5	FANNIE MAE-POOL #926161			4	1	468,108	102.8079	448,617	436,364	466,712		3,280			4.000	2.803	MON	1,455	17,138	01/01/2013	08/01/2039
31413F-F5-6	FANNIE MAE-POOL #943988			4	1	1,878	111.0388	2,039	1,836	1,880		2			6.500	5.720	MON	10	115	11/17/2008	08/01/2037
31413L-2G-3	FANNIE MAE-POOL #949075			4	1	23,160	105.4107	22,038	20,907	23,434		886			6.500	2.836	MON	113	1,176	01/01/2013	09/01/2037
31413L-QC-6	FANNIE MAE-POOL #948751			4	1	441	111.5310	481	431	438		(1)			6.500	5.973	MON	2	29	11/17/2008	09/01/2037
31413U-T0-2	FANNIE MAE-POOL #956059			4	1	228,142	109.1059	222,906	204,302	223,328		(833)			6.000	3.203	MON	1,022	12,061	01/01/2013	12/01/2037
31413Y-HL-8	FANNIE MAE-POOL #958335			4	1	290	109.3810	310	284	288		(1)			6.500	6.012	MON	2	19	11/17/2008	11/01/2037
31414A-QP-0	FANNIE MAE-POOL #960462			4	1	621,928	106.6691	610,485	572,317	622,611		2,982			5.500	2.937	MON	2,623	30,659	01/01/2013	01/01/2038
31414C-JJ-3	FANNIE MAE-POOL #962075			4	1	65,633	108.1008	63,224	58,486	66,784		1,686			6.500	2.278	MON	317	3,552	01/01/2013	03/01/2038
31414C-Z2-7	FANNIE MAE-POOL #962561			4	1	469	104.6578	522	498	470		(2)			4.500	5.925	MON	2	22	11/17/2008	04/01/2038
31414D-CB-0	FANNIE MAE-POOL #962766			4	1	9,100	104.7176	10,126	9,670	9,096		11			4.500	6.035	MON	36	434	11/17/2008	04/01/2038
31414F-HY-0	FANNIE MAE-POOL #964747			4	1	14,295	103.5508	15,731	15,191	14,485		(34)			4.500	5.619	MON	57	675	11/17/2008	07/01/2038
31414G-WK-1	FANNIE MAE-POOL #966050			4	1	192	109.0084	205	188	193		(1)			6.500	5.552	MON	1	12	11/17/2008	02/01/2038
31414Q-Y6-8	FANNIE MAE-POOL #973333			4	1	9,017	104.5281	10,016	9,582	9,106		(16)			4.500	5.802	MON	36	426	11/17/2008	02/01/2038
31415A-2M-2	FANNIE MAE-POOL #981480			4	1	21,952	104.4410	24,364	23,328	22,063		(20)			4.500	5.919	MON	87	1,047	11/17/2008	05/01/2038
31415C-A9-8	FANNIE MAE-POOL #982532			4	1	720	107.9143	759	704	729		(4)			6.500	5.317	MON	4	46	11/17/2008	09/01/2038
31415L-K4-8	FANNIE MAE-POOL #983315			4	1	8,663	108.8025	9,299	8,546	8,649		(1)			6.000	5.615	MON	43	504	11/17/2008	07/01/2038
31415T-JF-8	FANNIE MAE-POOL #988662			4	1	267	107.3859	281	261	268		(1)			6.500	5.616	MON	1	16	11/17/2008	09/01/2038
31415V-BP-9	FANNIE MAE-POOL #990246			4	1	2,951	113.1533	3,264	2,885	2,962		(8)			6.500	5.621	MON	16	186	11/17/2008	09/01/2038
31415W-BL-6	FANNIE MAE-POOL #991143			4	1	3,959	107.3859	4,156	3,870	3,965		(13)			6.500	5.694	MON	21	251	11/17/2008	10/01/2038
31416B-N6-1	FANNIE MAE-POOL #995113			4	1	1,824,338	107.6767	1,787,384	1,659,954	1,816,256		804			5.500	3.065	MON	7,608	89,642	01/01/2013	09/01/2036
31416B-VH-8	FANNIE MAE-POOL #995316			4	1	25,116	106.1787	24,477	23,053	24,982		24			5.000	2.835	MON	96	1,133	01/01/2013	12/01/2034
31416X-QT-0	FANNIE MAE-POOL #AB2265			4	1	8,306,599	103.1255	7,689,632	7,456,578	8,237,610		(16,901)			4.000	2.104	MON	24,855	294,570	01/01/2013	02/01/2041
31417B-KU-0	FANNIE MAE-POOL #AB4806			4	1	2,969,155	100.3113	2,818,034	2,809,289	2,920,436		(4,315)			3.000	1.649	MON	7,023	82,594	01/01/2013	04/01/2027
31417F-WIS-3	FANNIE MAE-POOL #AB8756			4	1	474,741	98.2127	489,200	498,102	476,410		680			3.000	3.776	MON	1,245	14,748	12/02/2013	03/01/2043
31417G-6A-9	FANNIE MAE-POOL #AB9864			4	1	525,830	100.7788	515,821	511,835	521,675		(1,437)			3.500	3.154	MON	1,493	17,651	07/14/2014	07/01/2043
31418M-SW-8	FANNIE MAE-POOL #AD0860			4	1	44,226	102.9913	42,327	41,097	43,493		(185)			4.500	1.923	MON	154	1,789	01/01/2013	04/01/2025
31418M-PU-0	FANNIE MAE-POOL #AD0434			4	1	1,175,584	109.0348	1,163,320	1,066,926	1,179,634		4,251			6.000	3.251	MON	5,335	62,467	01/01/2013	03/01/2037
31418N-AL-4	FANNIE MAE-POOL #AD0910			4	1	544,803	101.0691	492,422	487,213	487,213		(8,754)			4.596	0.116	MON	7,648	22,788	07/14/2014	04/01/2020
31418P-6N-0	FANNIE MAE-POOL #AD2676			4	1	105,733	102.3969	101,079	98,713	103,408		(189)			4.000	1.876	MON	329	3,780	01/01/2013	03/01/2025
31418T-XF-9	FANNIE MAE-POOL #AD6077			4	1	122,269	102.7640	116,440	113,308	119,065		(278)			4.500	2.250	MON	425	4,897	01/01/2013	05/01/2025
31418U-2M-5	FANNIE MAE-POOL #AD7079			4	1	313,670	103.2448	300,113	290,681	305,036		(1,278)			4.500	2.133	MON	1,090	12,669	01/01/2013	06/01/2025
31419A-BJ-5	FANNIE MAE-POOL #AE0040			4	1	108,072	102.3095	102,125	99,820	105,614		(513)			5.000	2.466	MON	416	4,835	01/01/2013	06/01/2025
31419A-HL-4	FANNIE MAE-POOL #AE0234			4	1	878,376	102.9412	837,944	814,002	857,415		(3,242)			4.500	2.204	MON	3,053	35,449	01/01/2013	08/01/2025
31419A-VB-0	FANNIE MAE-POOL #AE0609			4	1	1,526,979	107.6489	1,495,662	1,389,389	1,518,837		(1,311)			5.500	3.111	MON	6,368	75,148	01/01/2013	04/01/2037
31419H-2W-1	FANNIE MAE-POOL #AE7088			4	1	739,722	102.4179	707,308	690,610	723,587		(1,784)			4.000	1.956	MON	2,302	26,872	01/01/2013	12/01/2025
31283G-7M-3	FREDDIE MAC-POOL #G00900			4	1	27	100.6364	26	25	27					9.000	5.421	MON		2	08/29/2011	08/01/2022
31283G-DW-4	FREDDIE MAC-POOL #G00117			4	1	1,078	100.6097	1,035	1,029	1,068		(8)			8.500	6.040	MON	7	76	03/24/1998	03/01/2023
31283G-HD-2	FREDDIE MAC-POOL #G00228			4	1	23	100.6978	21	21	23					9.000	5.018	MON		3	08/29/2011	03/01/2024
31283G-HP-5	FREDDIE MAC-POOL #G00238			4	1	623	100.6020	593	590	624		6			8.500	5.519	MON	4	40	02/18/1998	06/01/2024
31283G-HU-4	FREDDIE MAC-POOL #G00243			4	1	95	108.5456	91	84	90		(1)			6.500	2.839	MON		6	01/01/2013	06/01/2024
31283G-KM-8	FREDDIE MAC-POOL #G00300			4	1	925	108.1928	953	881	911					9.500	7.850	MON	7	79	03/01/2000	04/01/2025
31283G-LF-2	FREDDIE MAC-POOL #G00326			4	1	6	100.5917	5	5	6					9.000	5.038	MON		1	08/29/2011	03/01/2024
31283G-NK-9	FREDDIE MAC-POOL #G00394			4	1	2	100.7613	2	2	2					9.000	7.656	MON			08/29/2011	06/01/2022
31283G-SC-2	FREDDIE MAC-POOL #G00515			4	1	11,726	107.5864	12,807	11,904	11,788		11									

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31283G-IJ-2	FREDDIE MAC-POOL #G00649			4	1	20,200	100.8464	19,094	18,934	19,603		(95)		9.000	7.333	MON	142	1,673		02/18/1998	06/01/2025
31283G-Y8-4	FREDDIE MAC-POOL #G00735			4	1	24	107.3723	24	22	23				9.000	6.695	MON		2		08/29/2011	05/01/2025
31283H-B2-0	FREDDIE MAC-POOL #G00957			4	1	2,939	108.5456	3,126	2,880	2,925		(3)		6.500	5.925	MON	16	183		08/29/2011	07/01/2028
31283H-BL-8	FREDDIE MAC-POOL #G00943			4	1	4,273	109.1250	4,584	4,200	4,252		(5)		6.000	5.552	MON	21	249		12/04/2002	07/01/2028
31283H-BU-8	FREDDIE MAC-POOL #G00951			4	1	51,907	109.1287	55,689	51,030	51,699		(30)		6.000	5.520	MON	255	2,991		12/04/2002	07/01/2028
31283H-H4-3	FREDDIE MAC-POOL #G01311			4	1	6,188	113.0839	6,740	5,960	6,141		(13)		7.000	6.035	MON	38	405		11/17/2008	09/01/2031
31283H-P7-4	FREDDIE MAC-POOL #G01346			4	1	77,171	109.2230	84,064	76,966	77,146		(2)		6.000	5.926	MON	385	4,520		08/29/2011	01/01/2032
31283H-VE-2	FREDDIE MAC-POOL #G01513			4	1	16,178	109.1709	17,630	16,149	16,174		(1)		6.000	5.952	MON	81	952		08/29/2011	03/01/2033
31283H-X8-3	FREDDIE MAC-POOL #G01603			4	1	237,156	109.2245	232,943	213,270	234,147		(1,036)		6.000	3.275	MON	1,066	12,602		01/01/2013	08/01/2033
31283H-Y5-8	FREDDIE MAC-POOL #G01632			4	1	49,652	111.4477	48,782	43,771	49,189		179		6.500	3.120	MON	237	2,766		01/01/2013	12/01/2033
31283K-4G-0	FREDDIE MAC-POOL #G11723			4	1	4,995	101.1764	5,004	4,946	4,955		(5)		5.500	5.226	MON	23	244		11/17/2008	07/01/2020
31283Y-LD-8	FREDDIE MAC-POOL #P20425			4	1	322,304	104.7274	338,811	323,517	322,691		105		5.500	5.576	MON	1,483	17,728		03/10/2005	04/01/2034
31287L-KS-0	FREDDIE MAC-POOL #C61205			4	1	595	108.9488	637	585	593		(1)		6.000	5.571	MON	3	35		12/04/2002	12/01/2031
31287P-6S-7	FREDDIE MAC-POOL #C64481			4	1	64,123	112.7347	62,631	55,556	62,051		(143)		6.500	3.134	MON	301	3,538		01/01/2013	03/01/2032
31287R-6C-8	FREDDIE MAC-POOL #C66267			4	1	47,446	107.5864	50,183	46,644	47,166		(65)		6.000	5.650	MON	233	2,782		12/04/2002	04/01/2032
31288B-M8-3	FREDDIE MAC-POOL #C73083			4	1	12,882	110.6452	14,013	12,664	12,838		(13)		6.000	5.580	MON	63	751		12/04/2002	10/01/2032
31288B-V6-5	FREDDIE MAC-POOL #C73315			4	1	796	107.5864	842	782	794		(2)		6.000	5.555	MON	4	48		12/04/2002	11/01/2032
31288C-2D-2	FREDDIE MAC-POOL #C74372			4	1	2,872	107.5864	3,038	2,824	2,882		(24)		6.000	5.374	MON	14	132		12/04/2002	12/01/2032
31288D-5T-2	FREDDIE MAC-POOL #C75358			4	1	6,674	107.5864	7,059	6,562	6,631		(10)		6.000	5.675	MON	33	393		12/04/2002	01/01/2033
31288D-NR-6	FREDDIE MAC-POOL #C74900			4	1	3,264	107.5864	3,452	3,209	3,266		6		6.000	5.457	MON	16	184		12/04/2002	12/01/2032
31288E-2E-6	FREDDIE MAC-POOL #C76173			4	1	14,225	107.5864	15,045	13,984	14,152		(24)		6.000	5.633	MON	70	836		12/04/2002	01/01/2033
31288F-R0-9	FREDDIE MAC-POOL #C76795			4	1	1,126	107.5864	1,191	1,107	1,129		9		6.000	5.389	MON	6	56		12/04/2002	02/01/2033
31288F-V2-7	FREDDIE MAC-POOL #C76933			4	1	6,040	107.5864	6,389	5,938	6,030		(11)		6.000	5.525	MON	30	354		12/04/2002	02/01/2033
3128C6-LG-2	FREDDIE MAC-POOL #P51227			4	1	532,918	104.0242	573,171	550,998	535,003		(1,587)		5.500	6.362	MON	2,525	29,061		04/05/2006	01/01/2036
3128F6-P8-3	FREDDIE MAC-POOL #D66747			4	1	9,502	100.1687	9,010	8,995	9,310		(23)		8.500	6.853	MON	64	740		02/17/1998	06/01/2025
3128FD-VU-2	FREDDIE MAC-POOL #D72427			4	1	10,047	100.1253	9,805	9,793	9,993		4		8.000	7.119	MON	65	744		12/06/2000	06/01/2026
3128FH-V7-4	FREDDIE MAC-POOL #D76038			4	1	26,333	101.0950	25,948	25,667	26,010		(62)		8.000	7.438	MON	529	2,038		12/06/2000	11/01/2026
3128HJ-AH-9	FREDDIE MAC-FG W30008			4	1	436,847	111.5278	400,138	358,779	392,540		(19,211)		7.645	2.039	MON	2,286	27,167		08/18/2016	05/01/2025
3128K2-7F-0	FREDDIE MAC-POOL #A42694			4	1	27,717	107.5864	29,634	27,545	27,648		(15)		6.000	5.875	MON	138	1,648		02/13/2006	02/01/2036
3128K3-BY-2	FREDDIE MAC-POOL #A42755			4	1	332,384	107.7602	362,539	336,431	332,606		(239)		5.500	5.828	MON	1,542	18,001		02/03/2006	02/01/2036
3128K3-GT-8	FREDDIE MAC-POOL #A42910			4	1	609,255	109.1274	658,078	603,036	609,146		405		6.000	5.707	MON	3,183	35,349		01/27/2006	02/01/2036
3128K3-T9-8	FREDDIE MAC-POOL #A43276			4	1	12,293	107.5864	13,143	12,216	12,315		40		6.000	5.764	MON	61	612		02/13/2006	02/01/2036
3128KJ-6M-9	FREDDIE MAC-POOL #A56276			4	1	7,845	105.5944	7,780	7,368	8,022		(84)		5.500	2.909	MON	34	404		11/28/2009	01/01/2037
3128KJ-C3-4	FREDDIE MAC-POOL #A55490			4	1	2,064	105.5944	2,045	1,937	2,067		(10)		5.500	3.556	MON	9	106		11/28/2009	12/01/2036
3128KR-WQ-3	FREDDIE MAC-POOL #A61555			4	1	336,515	109.3495	334,887	306,254	333,996		(40)		6.000	3.213	MON	1,531	17,945		01/01/2013	10/01/2036
3128LX-DP-2	FREDDIE MAC-POOL #G01910			4	1	496,305	106.1680	543,477	511,902	496,707		(565)		5.000	5.837	MON	2,133	25,026		10/14/2005	10/01/2035
3128LX-EM-8	FREDDIE MAC-POOL #G01940			4	1	867,749	106.2034	950,694	895,164	869,340		(393)		5.000	5.816	MON	3,730	43,992		10/13/2005	10/01/2035
3128M6-FN-3	FREDDIE MAC-POOL #G04373			4	1	32,504	113.8493	36,067	31,679	32,453		(17)		7.000	6.289	MON	185	2,177		08/29/2011	03/01/2035
3128M6-FW-3	FREDDIE MAC-POOL #G04381			4	1	65,228	107.2435	70,052	65,320	65,231				5.500	5.541	MON	299	3,528		11/17/2008	05/01/2038
3128M7-BX-3	FREDDIE MAC-POOL #G05154			4	1	71,439	108.5857	70,936	65,327	70,729		(98)		6.000	3.497	MON	327	3,839		01/01/2013	12/01/2038
3128MB-V5-3	FREDDIE MAC-POOL #G13136			4	1	1,061	103.1450	1,125	1,091	1,074		3		4.500	5.513	MON	4	47		11/17/2008	05/01/2023
3128MB-V6-1	FREDDIE MAC-POOL #G13137			4	1	5,258	103.1017	5,574	5,406	5,325		14		4.500	5.460	MON	20	234		11/17/2008	05/01/2023
3128MB-YT-8	FREDDIE MAC-POOL #G13222			4	1	4,971	103.1427	5,272	5,111	5,031		12		4.500	5.485	MON	19	222		11/17/2008	06/01/2023
3128MJ-FH-8	FREDDIE MAC-POOL #G08167			4	1	793	107.7901	802	744	791		1		5.500	3.603	MON	3	39		11/28/2009	12/01/2036
3128MJ-JV-7	FREDDIE MAC-POOL #G08278			4	1	6,706	106.8072	7,177	6,719	6,706				5.500	5.559	MON	31	362		11/17/2008	07/01/2038
3128PB-ZL-1	FREDDIE MAC-POOL #J00747			4	1	8,890	101.0026	8,897	8,808	8,829		(8)		5.500	5.215	MON	40	448		11/17/2008	01/01/2021
3128PC-BG-6	FREDDIE MAC-POOL #J00939			4	1	2,326	100.6453	2,319	2,304	2,309		(2)		5.500	5.251	MON	11	121		11/17/2008	01/01/2021
3128PC-G2-2	FREDDIE MAC-POOL #J01117			4	1	5,783	101.0024	5,786	5,728	5,741		(6)		5.500	5.240	MON	26	302		11/17/2008	02/01/2021
3128PG-NG-4	FREDDIE MAC-POOL #J04891			4	1	8,649	100.3096	8,618	8,592	8,617		1		6.000	5.767	MON	43	414		08/29/2011	05/01/2022
3128PL-A2-8	FREDDIE MAC-POOL #J08125			4	1	1,051	103.1207	1,114	1,080	1,065		3		4.500	5.399	MON	4	47		11/17/2008	06/01/2023
312903-KY-2	FREDDIE MAC-SERIES 117 CLASS G			4	1	3,918	101.8261	3,775	3,708	3,721		(17)		8.500	7.438	MON	293	356		02/02/1999	01/15/2021
312903-QQ-3	FREDDIE MAC-SERIES 129 CLASS I			4	1	79	190.3302	13		14		(11)		248,396	212,210	MON		27		01/01/2013	03/01/2021
312904-7P-4	FREDDIE MAC-SERIES 1046 CLASS I			4	1		427.2992	28						1,009,000	1,009,000	MON		24		01/21/1992	02/01/2021
312904-EY-7	FREDDIE MAC-SERIES 188 CLASS H			4	1	3,419	101.4018	3,449	3,402	3,401		1		7.000	7.052	MON	228	275		12/05/1997	09/15/2021
312905-3M-2	FREDDIE MAC-SERIES 1096 CLASS H			4	1	56	480.7173	14	3	12		(5)		1,031,000	30,398	MON	2	22		01/01/2013	06/01/2021
312905-H6-2	FREDDIE MAC-SERIES 1083 CLASS Z			4	1	45,417	104.9132	45,678	43,539	43,980		(148)		8.500	7.373	MON	308	3,522		05/13/1999	05/01/2021
312905-L3-4	FREDDIE MAC-SERIES 1078 CLASS GZ			4	1	1,770	101.0705	1,809	1,790	1,788		3		6.500	6.884	MON	10	104		05/15/1998	05/01/2021

E10.46

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
312905-VE-9	FREDDIE MAC-SERIES 197 CLASS Z			4	1	10,094	103.0125	10,376	10,072	10,049			9		8.500	8.827	MON	777	955	10/13/1992	07/15/2022
312908-IM-0	FREDDIE MAC-SERIES 1222 CLASS Q			4	1	19,667	117.3545	36,508	31,109	31,109					19.286	18.500	MON	2,046	6,170	02/28/1992	03/15/2022
312909-D5-0	FREDDIE MAC-SERIES 1256 CLASS A			4	1	1,048	96.9890	1,087	1,121	1,102			8		0.000	2.144	N/A			01/01/2013	04/01/2022
312909-V5-0	FREDDIE MAC-SERIES 1273 CLASS Z			4	1	31,980	104.0021	35,316	33,521	33,521			130		7.500	8.633	MON	212	2,466	01/01/1998	05/01/2022
312911-NY-2	FREDDIE MAC-SERIES 1346 CLASS PS			4	1	131,540	106.2090	137,284	129,258	129,744			(111)		8.000	7.697	MON	862	16,044	10/04/2000	08/01/2022
312915-PK-1	FREDDIE MAC-SERIES 1494 CLASS PZ			4	1	82,341	106.1155	90,594	85,373	84,563			176		7.500	8.193	MON	906	6,198	08/07/2000	04/01/2023
312915-VY-4	FREDDIE MAC-SERIES 1507 CLASS JZ			4	1	282,445	106.8448	305,642	286,062	284,990			185		7.000	7.268	MON	1,669	19,174	01/01/1998	05/01/2023
312916-T8-2	FREDDIE MAC-SERIES 1543 CLASS PZ			4	1	794,769	106.0122	849,215	801,054	798,986			368		7.000	7.172	MON	4,673	54,136	01/01/1998	07/01/2023
312916-YZ-6	FREDDIE MAC-SERIES 1546 CLASS J			4	1	271,556	106.1722	278,063	261,898	263,212			(263)		7.500	7.162	MON	1,637	19,148	05/19/1999	07/01/2023
312929-V8-2	FREDDIE MAC-POOL #A83339			4	1	10,591	105.5944	10,505	9,949	10,633			143		5.500	3.475	MON	46	506	11/28/2009	11/01/2038
312929-SP-7	FREDDIE MAC-POOL #C00854			4	1	3,425	113.8556	3,341	2,935	3,328			(1)		7.500	3.176	MON	18	214	01/01/2013	07/01/2029
312929-A6-3	FREDDIE MAC-POOL #C00029			4	1	1,107	102.9111	1,103	1,072	1,083			(3)		9.000	7.784	MON	8	84	02/11/2000	03/01/2021
312929-D7-8	FREDDIE MAC-POOL #C00126			4	1	586	105.1667	586	557	568			(3)		8.500	6.989	MON	4	46	03/24/1998	06/01/2022
312929-HM-1	FREDDIE MAC-POOL #C00236			4	1	1,167	103.3678	1,042	1,008	1,104			(25)		7.000	1.173	MON	6	69	01/01/2013	02/01/2023
312929-JM-9	FREDDIE MAC-POOL #C00268			4	1	313	108.5456	295	272	296			(3)		6.500	1.756	MON	1	17	01/01/2013	11/01/2023
312929-K5-4	FREDDIE MAC-POOL #C00316			4	1	620	106.9580	590	552	592			(7)		7.000	3.224	MON	3	38	01/01/2013	04/01/2024
312929-LM-6	FREDDIE MAC-POOL #C00332			4	1	2,689	105.1319	2,510	2,388	2,583			(29)		7.000	2.892	MON	14	163	01/01/2013	06/01/2024
312929-NA-0	FREDDIE MAC-POOL #C00385			4	1	114	109.6597	115	105	110			(1)		9.000	6.703	MON	1	10	08/29/2011	01/01/2025
312929-SD-9	FREDDIE MAC-POOL #C00516			4	1	6,315	112.3053	7,042	6,271	6,300			(1)		8.000	7.810	MON	42	487	07/27/2000	05/01/2027
312929-ST-4	FREDDIE MAC-POOL #C00530			4	1	82	112.0239	86	77	80					7.500	5.543	MON	6	6	11/17/2008	07/01/2027
312929-TU-0	FREDDIE MAC-POOL #C00563			4	1	287	112.3917	303	269	282			(1)		7.500	5.663	MON	2	20	11/17/2008	11/01/2027
312929-VD-5	FREDDIE MAC-POOL #C00612			4	1	10	106.8049	10	10	10					7.500	5.782	MON	1	1	11/17/2008	04/01/2028
312929-VM-4	FREDDIE MAC-POOL #C00652			4	1	28,735	109.1227	30,172	27,649	28,473			(47)		6.000	4.935	MON	138	1,621	06/30/2003	09/01/2028
312929-XT-8	FREDDIE MAC-POOL #C00690			4	1	1,047	109.1251	1,123	1,029	1,043			(1)		6.000	5.533	MON	5	60	12/04/2002	12/01/2028
312929-YF-7	FREDDIE MAC-POOL #C00710			4	1	16,450	105.5944	17,971	17,019	16,455			16		5.500	6.744	MON	78	912	11/29/2001	11/01/2028
312929-YM-2	FREDDIE MAC-POOL #C00716			4	1	28,812	109.1217	31,886	29,220	28,904			23		6.000	6.393	MON	146	1,720	01/04/1999	02/01/2029
312929-Z5-8	FREDDIE MAC-POOL #C00764			4	1	472	109.1381	507	464	470					6.000	5.553	MON	2	27	12/04/2002	05/01/2029
31292H-JR-6	FREDDIE MAC-POOL #C01172			4	1	3,538	110.2654	3,363	3,050	3,469			(20)		6.500	2.483	MON	17	195	01/01/2013	05/01/2031
31292H-K9-4	FREDDIE MAC-POOL #C01220			4	1	4,267	114.1673	4,200	3,679	4,147			(30)		6.500	2.792	MON	20	236	01/01/2013	09/01/2031
31292H-M8-4	FREDDIE MAC-POOL #C01283			4	1	581	107.2039	622	581	581					5.500	5.479	MON	3	31	11/17/2008	11/01/2031
31292H-N9-1	FREDDIE MAC-POOL #C01316			4	1	1,557	109.2249	1,671	1,530	1,551			(1)		6.000	5.575	MON	8	91	12/04/2002	03/01/2032
31292H-W4-2	FREDDIE MAC-POOL #C01567			4	1	1,169,281	106.1678	1,143,030	1,076,626	1,159,713			(1,181)		5.000	2.891	MON	4,486	52,958	01/01/2013	05/01/2033
31292H-XN-9	FREDDIE MAC-POOL #C01585			4	1	258,273	106.1628	280,636	264,345	259,030			(47)		5.000	5.590	MON	1,382	12,973	07/28/2003	07/01/2033
31293H-3D-3	FREDDIE MAC-POOL #C20796			4	1	18,112	107.5864	19,770	18,376	18,188			30		6.000	6.372	MON	92	1,097	01/04/1999	01/01/2029
31293H-AB-9	FREDDIE MAC-POOL #C20002			4	1	1,361	107.5864	1,440	1,338	1,352			(2)		6.000	5.635	MON	7	79	12/04/2002	01/01/2029
31293H-E9-0	FREDDIE MAC-POOL #C20160			4	1	464	107.5864	506	471	460			(5)		6.000	6.825	MON	2	11	01/04/1999	01/01/2029
31293H-GX-5	FREDDIE MAC-POOL #C20214			4	1	3,796	107.5864	4,144	3,852	3,810			4		6.000	6.389	MON	19	229	01/04/1999	01/01/2029
31293J-A6-6	FREDDIE MAC-POOL #C20929			4	1	6,638	107.5864	7,021	6,526	6,592			(10)		6.000	5.638	MON	33	389	12/04/2002	01/01/2029
31293J-DF-3	FREDDIE MAC-POOL #C21002			4	1	5,107	108.9822	5,472	5,021	5,090			(5)		6.000	5.511	MON	25	296	12/04/2002	01/01/2029
31293J-NI-5	FREDDIE MAC-POOL #C21305			4	1	2,232	107.5864	2,360	2,194	2,216			(3)		6.000	5.637	MON	11	131	12/04/2002	02/01/2029
31293J-R4-3	FREDDIE MAC-POOL #C21407			4	1	85,675	107.5864	93,482	86,890	85,836			(173)		6.000	6.440	MON	434	4,838	01/04/1999	02/01/2029
31293K-6N-1	FREDDIE MAC-POOL #C22677			4	1	41,924	107.5864	44,343	41,216	41,637			(65)		6.000	5.637	MON	206	2,458	12/04/2002	03/01/2029
31293K-BJ-4	FREDDIE MAC-POOL #C21841			4	1	30,927	107.5864	33,745	31,366	31,090			38		6.000	6.318	MON	157	1,866	01/04/1999	02/01/2029
31293K-DN-3	FREDDIE MAC-POOL #C21909			4	1	3,416	107.5864	3,614	3,359	3,394			(5)		6.000	5.629	MON	17	200	12/04/2002	02/01/2029
31293K-GE-0	FREDDIE MAC-POOL #C21997			4	1	45,541	107.5864	49,710	46,205	45,805			65		6.000	6.315	MON	231	2,757	01/04/1999	01/01/2029
31293K-LV-6	FREDDIE MAC-POOL #C22140			4	1	4,261	107.5864	4,507	4,189	4,234			(7)		6.000	5.621	MON	21	249	12/04/2002	02/01/2029
31293K-OH-2	FREDDIE MAC-POOL #C22256			4	1	7,274	107.5864	7,694	7,151	7,223			(12)		6.000	5.646	MON	36	427	12/04/2002	02/01/2029
31293K-TC-0	FREDDIE MAC-POOL #C22347			4	1	1,789	109.0466	1,979	1,815	1,795			2		6.000	6.408	MON	9	107	01/04/1999	02/01/2029
31293L-ZM-9	FREDDIE MAC-POOL #C23448			4	1	8,876	107.5864	9,388	8,726	8,884			(18)		6.000	5.361	MON	44	519	12/04/2002	03/01/2029
31293M-20-4	FREDDIE MAC-POOL #C24383			4	1	2,962	107.5864	3,133	2,912	2,940			(5)		6.000	5.656	MON	15	174	12/04/2002	04/01/2029
31293M-CX-8	FREDDIE MAC-POOL #C23686			4	1	8,615	107.5864	9,111	8,469	8,555			(11)		6.000	5.637	MON	42	505	12/04/2002	03/01/2029
31293M-CZ-3	FREDDIE MAC-POOL #C23688			4	1	2,694	107.5864	2,850	2,649	2,676			(4)		6.000	5.642	MON	13	158	12/04/2002	03/01/2029
31293M-GZ-9	FREDDIE MAC-POOL #C23816			4	1	1,912	107.5864	2,022	1,880	1,912			9		6.000	5.396	MON	9	100	12/04/2002	03/01/2029
31293N-ZV-5	FREDDIE MAC-POOL #C25256			4	1	4,435	107.5864	4,690	4,360	4,411			(7)		6.000	5.581	MON	22	259	12/04/2002	04/01/2029
31293P-HU-2	FREDDIE MAC-POOL #C25643			4	1	6,347	107.5864	6,713	6,240	6,303			(10)		6.000	5.645	MON	31	372	12/04/2002	04/01/2029
31293P-KC-8	FREDDIE MAC-POOL #C25691			4	1	1,004	107.5864	1,062	987	999			(1)		6.000	5.579	MON	5	58	12/04/2002	04/01/2029
31293Q-FQ-1	FREDDIE MAC-POOL #C26475			4	1	597	107.5864	632	587	596			(1)		6.000	5.447	MON	3	35	12/04/2002	05/01/2029

E10.47

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
312930-1P-5	FREDDIE MAC-POOL #C26666			4	1	3,776	107.5864	3,994	3,712	3,778			21		6.000	5.382	MON	19	196	12/04/2002	05/01/2029
31293R-J4-4	FREDDIE MAC-POOL #C27483			4	1	2,111	107.5864	2,098	2,075			(3)		6.000	5.624	MON	10	123	12/04/2002	06/01/2029	
31293X-4S-4	FREDDIE MAC-POOL #C32633			4	1	23,052	100.2140	22,504	22,456	22,845		(34)		9.000	8.381	MON	168	1,993	07/19/2000	11/01/2029	
31294B-J8-9	FREDDIE MAC-POOL #C34787			4	1	4,383	101.6570	4,341	4,270	4,349		(9)		9.000	8.342	MON	32	381	07/19/2000	12/01/2029	
31294K-YK-6	FREDDIE MAC-POOL #E01582			4	1	4	99.8344	4	4	4				6.000	6.000	MON		(2)	08/29/2011	01/01/2019	
31295V-3V-0	FREDDIE MAC-POOL #A00812			4	1	3	100.4215	3	3	3				8.500	3.814	MON			03/24/1998	05/01/2021	
312967-CV-2	FREDDIE MAC-POOL #B14584			4	1	585	100.4745	588	585	585				5.000	5.101	MON	2	26	11/17/2008	01/01/2020	
31296B-VB-3	FREDDIE MAC-POOL #B16010			4	1	6	100.4745	6	6	6				5.000	5.363	MON		1	11/17/2008	08/01/2019	
312969-ZX-9	FREDDIE MAC-POOL #B17058			4	1	18	100.4745	18	18	18				5.000	5.071	MON		1	11/17/2008	09/01/2019	
31296L-HD-6	FREDDIE MAC-POOL # A12028			4	1	78,828	104.9043	84,638	80,681	79,028		149		5.000	5.611	MON	336	4,011	07/28/2003	08/01/2033	
31296L-HP-9	FREDDIE MAC-POOL # A12038			4	1	115,898	105.3599	124,981	118,623	115,635		268		5.000	5.746	MON	639	5,904	07/28/2003	08/01/2033	
31296Q-2G-4	FREDDIE MAC-POOL #A16175			4	1	13,384	108.5456	14,240	13,119	13,323		(30)		6.500	5.958	MON	71	848	08/29/2011	08/01/2029	
31296X-JA-4	FREDDIE MAC-POOL #A21157			4	1	3,896	108.5456	4,163	3,836	3,885		(6)		6.500	6.115	MON	21	248	08/29/2011	04/01/2034	
312971-UA-0	FREDDIE MAC-POOL #B18677			4	1	7	100.4779	7	7	7				5.000	5.589	MON		1	11/17/2008	01/01/2020	
31297A-5J-9	FREDDIE MAC-POOL #A23549			4	1	44,125	106.5462	42,215	39,622	43,395		131		5.000	2.627	MON	165	1,958	01/01/2013	06/01/2034	
31297B-AK-8	FREDDIE MAC-POOL #A23610			4	1	115,213	104.7114	107,613	102,771	111,835		(609)		5.000	2.788	MON	428	5,110	01/01/2013	06/01/2034	
31297B-TP-7	FREDDIE MAC-POOL #A24158			4	1	3,105	109.0450	3,308	3,034	3,103				7.000	6.266	MON	18	207	08/29/2011	10/01/2031	
31298F-2A-9	FREDDIE MAC-POOL #C47069			4	1	13,950	102.2043	12,096	11,835	13,184		(221)		7.000	3.527	MON	69	825	01/01/2013	01/01/2031	
31298L-ET-2	FREDDIE MAC-POOL #C50146			4	1	1,211	107.5864	1,281	1,191	1,204		(1)		6.000	5.635	MON	6	71	12/04/2002	04/01/2031	
31298S-QU-1	FREDDIE MAC-POOL #C55867			4	1	343	106.4123	342	322	338				7.500	5.794	MON	2	23	11/17/2008	02/01/2030	
31298Y-GA-3	FREDDIE MAC-POOL #C60193			4	1	795	107.5864	841	781	795		(2)		4.000	5.450	MON	4	48	12/04/2002	11/01/2031	
3132GF-RD-1	FREDDIE MAC-POOL #Q02284			4	1	124,991	102.8945	115,826	112,567	125,221		1,055		4.000	2.345	MON	375	4,432	01/01/2013	07/01/2041	
3132GG-A7-0	FREDDIE MAC-POOL #Q02730			4	1	86,990	102.8378	80,567	78,343	88,813		1,289		4.000	2.144	MON	261	3,067	01/01/2013	08/01/2041	
3132GG-BD-6	FREDDIE MAC-POOL #Q02736			4	1	96,144	102.9230	89,119	86,588	97,664		1,355		4.000	2.148	MON	289	3,362	01/01/2013	08/01/2041	
3132GG-BZ-7	FREDDIE MAC-POOL #Q02756			4	1	472,926	102.9532	438,496	425,918	473,263		3,581		4.000	2.374	MON	1,420	16,832	01/01/2013	08/01/2041	
3132GG-DA-0	FREDDIE MAC-POOL #Q02797			4	1	619,203	102.9533	574,124	557,655	619,565		2,618		4.000	2.372	MON	1,859	22,045	01/01/2013	08/01/2041	
3132GJ-EE-5	FREDDIE MAC-POOL #Q03133			4	1	56,483	102.1265	51,950	50,869	58,063		1,291		4.000	1.976	MON	170	1,985	01/01/2013	09/01/2041	
3132GJ-MJ-5	FREDDIE MAC-POOL #Q03361			4	1	179,569	102.9531	166,496	161,720	181,631		888		4.000	2.207	MON	539	6,419	01/01/2013	09/01/2041	
3132GJ-OG-7	FREDDIE MAC-POOL #Q03455			4	1	219,445	102.9531	203,468	197,632	222,319		3,923		4.000	2.219	MON	659	7,694	01/01/2013	09/01/2041	
3132GJ-QQ-5	FREDDIE MAC-POOL #Q03463			4	1	96,665	102.9240	89,602	87,057	100,746		1,688		4.000	1.814	MON	290	3,443	01/01/2013	09/01/2041	
3132GK-BW-5	FREDDIE MAC-POOL #Q03953			4	1	73,195	102.3251	67,452	65,920	73,495		1,504		4.000	2.298	MON	220	2,548	01/01/2013	10/01/2041	
3132GK-DE-3	FREDDIE MAC-POOL #Q04001			4	1	324,872	102.9530	301,220	292,580	325,891		2,628		4.000	2.372	MON	975	11,534	01/01/2013	10/01/2041	
3132GK-DR-4	FREDDIE MAC-POOL #Q04012			4	1	210,105	102.9532	194,809	189,221	214,822		2,561		4.000	2.105	MON	631	7,438	01/01/2013	10/01/2041	
3132GK-EN-2	FREDDIE MAC-POOL #Q04041			4	1	764,694	102.9531	709,022	688,685	768,694		8,923		4.000	2.369	MON	2,296	27,075	01/01/2013	10/01/2041	
3132J6-5B-6	FREDDIE MAC-POOL #Q15841			4	1	928,165	98.3152	948,573	964,828	928,656		(881)		3.000	3.535	MON	2,412	28,629	12/02/2013	02/01/2043	
31335G-C4-5	FREDDIE MAC-POOL #C80091			4	1	367	108.5456	347	320	351		(4)		6.500	1.407	MON	2	20	01/01/2013	01/01/2024	
31335G-GO-2	FREDDIE MAC-POOL #C80207			4	1	79	101.0254	75	74	77				7.500	5.703	MON		6	11/17/2008	09/01/2024	
31335G-HK-4	FREDDIE MAC-POOL #C80234			4	1	103	100.0112	91	91	104				7.000	0.418	MON	1	2	01/01/2013	09/01/2024	
313398-SD-2	FREDDIE MAC-SERIES 2335 CLASS CZ			4	1	508,566	111.8205	536,470	479,760	488,019		(794)		7.000	6.406	MON	2,799	33,147	01/08/2003	07/01/2031	
313398-TZ-2	FREDDIE MAC-SERIES 2337 CLASS PZ			4	1	284,849	109.5123	287,761	262,766	270,433		(415)		6.500	5.518	MON	1,423	16,759	05/21/2003	07/01/2031	
313370-UJ-8	FREDDIE MAC-SERIES 1585 CLASS K			4	1	314,425	105.4231	329,686	312,727	312,527		31		6.500	6.542	MON	1,684	19,468	01/12/1999	09/01/2023	
313374-EL-6	FREDDIE MAC-SERIES 1686 CLASS PJ			4	1	46,333	102.0915	64,749	63,422	61,038		341		5.000	8.031	MON	264	2,483	12/23/1997	02/01/2024	
313374-IV-4	FREDDIE MAC-SERIES 1711 CLASS PG			4	1	199,346	106.9568	193,405	180,826	183,239		(383)		7.000	6.189	MON	1,055	12,113	01/31/2003	03/01/2024	
313375-J2-0	FREDDIE MAC-SERIES 1754 CLASS Z			4	1	322,831	111.0601	335,168	307,789	307,296		(1,022)		8.500	7.468	MON	2,138	25,136	05/20/1999	09/01/2024	
313377-BC-2	FREDDIE MAC-SERIES 1856 CLASS ZG			4	1	107,131	110.0927	117,719	106,927	106,834		13		8.000	8.043	MON	1,078	8,411	08/04/2000	06/01/2026	
31337A-A2-8	FREDDIE MAC-SERIES 1963 CLASS Z			4	1	49,143	111.5253	56,948	50,194	50,194		107		7.500	8.279	MON	319	3,758	08/04/2000	01/01/2027	
31337B-BH-2	FREDDIE MAC-SERIES 1988 CLASS GZ			4	1	53,103	106.5157	50,677	47,577	50,366		(287)		6.500	3.799	MON	258	3,009	01/01/2013	09/01/2027	
31337C-FX-1	FREDDIE MAC-SERIES 2024 CLASS Z			4	1	143,461	108.2786	163,624	151,114	147,333		373		6.500	7.555	MON	819	9,641	01/17/2001	01/01/2028	
31337C-LJ-5	FREDDIE MAC-SERIES 2022 CLASS PE			4	1	128,002	108.2872	131,423	121,365	124,023		(179)		6.500	5.605	MON	657	7,726	01/31/2003	01/01/2028	
31337C-V7-0	FREDDIE MAC-SERIES 2034 CLASS Z			4	1	2,397	108.2966	2,539	2,344	2,361		(1)		6.500	6.188	MON	13	149	08/29/2011	02/01/2028	
31337D-CL-8	FREDDIE MAC-SERIES 2046 CLASS G			4	1	9,292	110.2089	10,054	9,122	9,203		(3)		6.500	6.138	MON	49	566	08/29/2011	04/01/2028	
31337D-E6-9	FREDDIE MAC-SERIES 2053 CLASS Z			4	1	2,219	110.5244	2,409	2,179	2,192		(1)		6.500	6.263	MON	12	139	08/29/2011	04/01/2028	
31337D-HP-4	FREDDIE MAC-SERIES 2044 CLASS PL			4	1	489,865	108.4951	469,776	432,993	466,996		(3,119)		6.500	3.498	MON	2,345	27,468	01/01/2013	04/01/2028	
31337D-PP-5	FREDDIE MAC-SERIES 2043 CLASS ZP			4	1	107,579	110.2107	115,955	105,212	105,981		(72)		6.500	6.198	MON	570	6,705	08/29/2011	04/01/2028	
31337D-YT-8	FREDDIE MAC-SERIES 2055 CLASS ZM			4	1	3,181	109.4106	3,411	3,117	3,142		(21)		6.500	6.190	MON	17	198	08/29/2011	05/01/2028	
31337E-R5-5	FREDDIE MAC-SERIES 2073 CLASS PH			4	1	261,921	112.8970	289,456	256,389	259,223		(240)		6.500	6.067	MON	1,389	16,336	08/29/2011	07/01/2028	
31337G-3U-1	FREDDIE MAC-SERIES 2080 CLASS Z			4	1	1,877	108.4870	2,000	1,843	1,857		(1)		6.500	6.217	MON	10	117	08/29/2011	08/01/2028	

E10.48

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31337G-BL-2	FREDDIE MAC-SERIES 2075 CLASS D			4	1	7,445	108.7951	7,947	7,304	7,359		(4)			6.500	6.196	MON	40	463	08/29/2011	08/01/2028
31337H-QV-2	FREDDIE MAC-SERIES 2117 CLASS HG			4	1	35,722	108.8965	37,248	34,205	35,043		(47)			6.500	5.568	MON	185	2,174	12/11/2002	01/01/2029
31337J-GF-4	FREDDIE MAC-SERIES 2129 CLASS S			6	1	22,205	15.0417	26,858	178,558	21,490					5.195	5.860	MON	3,107	1,071	08/29/2011	02/15/2029
31337K-PC-1	FREDDIE MAC-SERIES 2130 CLASS SC			6	1	244	12.8604	261	2,032	246					5.195	4.805	MON	5	6	08/29/2011	03/15/2029
31337L-4H-8	FREDDIE MAC-SERIES 2155 CLASS SE			6	1	24,787	14.1009	27,910	197,933	21,975					5.145	9.709	MON	3,474	2,178	08/29/2011	05/15/2029
31337M-6-2	FREDDIE MAC-SERIES 2173 CLASS Z			4	1	14,910	111.6256	16,599	14,870	14,872					6.500	6.495	MON	81	952	08/29/2011	07/01/2029
31337N-PR-3	FREDDIE MAC-SERIES 2177 CLASS PB			4	1	358,228	106.1290	376,828	355,066	359,051		(1,455)			6.000	5.583	MON	1,775	19,787	11/01/2006	08/01/2029
31337O-UH-9	FREDDIE MAC-SERIES 2178 CLASS PB			4	1	380,015	111.2944	386,096	346,914	361,119		(1,262)			7.000	5.434	MON	2,024	23,975	11/17/2008	08/01/2029
31337P-7G-5	FREDDIE MAC-SERIES 2182 CLASS ZC			4	1	666,085	112.9995	691,975	612,371	631,725		(2,001)			7.500	6.202	MON	3,827	44,983	11/01/2002	09/01/2029
31337Q-HI-7	FREDDIE MAC-SERIES 2215 CLASS PH			4	1	478,477	108.4966	475,721	438,466	449,257		(808)			6.500	5.596	MON	2,375	28,099	06/04/2003	02/01/2030
31337R-XO-2	FREDDIE MAC-SERIES 2234 CLASS ZB			4	1	330,962	120.0688	381,318	317,583	321,303		(216)			9.000	8.575	MON	2,382	28,137	06/22/2000	05/01/2030
31337S-4V-8	FREDDIE MAC-SERIES 2240 CLASS Z			4	1	187,049	112.9454	204,862	181,382	184,161		(128)			9.000	8.392	MON	1,360	15,920	06/01/2000	06/01/2030
31337T-NT-2	FREDDIE MAC-SERIES 2253 CLASS PH			4	1	127,988	114.3177	123,930	108,408	119,614		(727)			7.500	3.991	MON	678	7,945	01/01/2013	09/01/2030
31337U-X3-0	FREDDIE MAC-SERIES 2326 CLASS ZP			4	1	2,218	108.3425	2,371	2,189	2,201		(1)			6.500	6.314	MON	12	140	08/29/2011	06/01/2031
31337V-S4-1	FREDDIE MAC-SERIES 2357 CLASS PZ			4	1	627,173	112.3272	647,967	576,857	595,449		(459)			6.500	5.455	MON	3,125	36,676	05/22/2003	09/01/2031
31337W-2O-8	FREDDIE MAC-SERIES 2353 CLASS KZ			4	1	260,188	114.3979	275,286	240,639	246,512		(560)			6.500	5.697	MON	1,303	15,467	05/22/2003	09/01/2031
31340Y-S2-6	FREDDIE MAC-SERIES 81 CLASS E			4	1		415.4770	10	2					1,122.500	1,122.500	MON	3	20	08/03/1989	11/15/2020	
31340Y-S4-2	FREDDIE MAC-SERIES 81 CLASS A			4	1	5,275	101.1972	4,860	4,802	4,849		(72)			8.125	4.214	MON	116	310	01/01/2013	11/15/2020
31356F-N7-2	FREDDIE MAC-POOL #D53114			4	1	9,656	100.0747	8,286	8,280	8,978		(167)			7.000	2.735	MON	48	572	01/01/2013	05/01/2024
31356G-DV-8	FREDDIE MAC-POOL #D53716			4	1	170	99.9559	152	152	164					7.000	2.980	MON	1	10	01/01/2013	06/01/2024
31356G-JE-0	FREDDIE MAC-POOL #D53861			4	1	751	100.3114	671	669	736		(16)			7.000	2.082	MON	4	46	01/01/2013	06/01/2024
31356G-JF-7	FREDDIE MAC-POOL #D53862			4	1	14,999	101.2100	13,459	13,298	14,177		(204)			7.000	3.647	MON	78	919	01/01/2013	06/01/2024
31356J-V7-5	FREDDIE MAC-POOL #D56038			4	1	5,311	108.5456	4,989	4,596	4,961		(87)			6.500	2.570	MON	25	295	01/01/2013	07/01/2024
31356L-N9-5	FREDDIE MAC-POOL #D57616			4	1	5,450	100.6137	4,902	4,872	5,187		(64)			7.000	3.881	MON	28	336	01/01/2013	11/01/2024
3137A4-ER-4	FREDDIE MAC-SERIES 3779 CLASS DN			4	1	4,064,285	106.7665	4,377,425	4,100,000	4,080,567		2,748			4.500	4.590	MON	15,375	184,500	01/24/2011	12/01/2040
3137AC-ZB-8	FREDDIE MAC-SERIES 3892 CLASS QM			4	1	2,530,187	103.5721	2,525,088	2,438,000	2,484,543		(4,358)			4.000	3.705	MON	8,127	97,520	09/29/2011	07/01/2041
3137AJ-XB-5	FREDDIE MAC-SERIES 3966 CLASS PE			4	1	14,559,027	103.3572	14,397,657	13,930,000	14,288,290		(24,315)			4.000	3.709	MON	46,433	557,200	11/25/2011	12/01/2041
3137AP-IB-3	FREDDIE MAC-SERIES 4030 CLASS ME			4	1	16,993,520	102.4876	17,431,229	17,008,136	16,993,054		893			3.500	3.509	MON	49,607	595,285	04/25/2012	04/01/2042
3137AQ-HA-9	FREDDIE MAC-SERIES 4046 CLASS LY			4	1	5,626,105	97.1785	5,114,659	5,263,158	5,448,647		(26,757)			3.000	2.397	MON	13,158	157,895	01/01/2013	05/01/2027
31392P-AB-1	FREDDIE MAC-SERIES 2458 CLASS ZB			4	1	413,626	113.5738	441,584	388,808	396,516		(548)			7.000	6.335	MON	2,268	26,797	01/30/2003	06/01/2032
31392R-TM-3	FREDDIE MAC-SERIES 2490 CLASS ZD			4	1	902,956	110.8916	930,549	839,153	861,501		(1,444)			6.500	5.637	MON	4,545	53,725	05/29/2003	08/01/2032
31392U-VK-7	FREDDIE MAC-SERIES 2500 CLASS FD			4	1	1,503	100.5144	1,530	1,522	1,540		6			2.955	3.243	MON	2	37	08/29/2011	03/15/2032
31392V-S3-5	FREDDIE MAC-SERIES 2517 CLASS GS			6	1	9,636	15.1142	10,898	72,105	9,725					5.545	10.096	MON	1,357	953	08/29/2011	02/15/2032
31393F-GJ-9	FREDDIE MAC-SERIES 2526 CLASS FE			4	1	1,635	100.0921	1,665	1,664	1,664					2.855	3.482	MON	2	39	08/29/2011	06/15/2029
31393R-IG-1	FREDDIE MAC-SERIES 2631 CLASS MD			4	1	520,590	107.8502	607,905	563,657	549,699		(210)			5.000	5.769	MON	2,349	27,589	02/09/2006	06/01/2033
31393V-ZB-0	FREDDIE MAC-SERIES 2646 CLASS HE			4	1	2,886,082	106.4080	3,298,018	3,099,409	3,036,391		(866)			5.000	5.618	MON	12,914	151,985	12/12/2005	07/01/2033
31394H-FZ-9	FREDDIE MAC-SERIES 2660 CLASS PE			4	1	5,189,240	106.0617	5,910,117	5,572,338	5,468,081		693			5.000	5.564	MON	23,218	275,413	02/08/2006	08/01/2033
31394J-VX-9	FREDDIE MAC-SERIES 2685 CLASS AT			4	1	87,775	102.0088	95,238	93,362	92,343		118			4.500	5.171	MON	350	4,061	01/19/2006	10/01/2023
31394K-K7-8	FREDDIE MAC-SERIES 2682 CLASS LD			4	1	13,248,318	106.0251	15,772,242	14,875,957	14,497,378		(17,027)			4.500	5.205	MON	55,785	658,670	02/01/2006	10/01/2033
31394L-4D-1	FREDDIE MAC-SERIES 2684 CLASS PG			4	1	16,464,060	107.9617	19,074,754	17,668,083	17,362,989		(5,104)			5.000	5.515	MON	73,617	867,707	02/27/2006	10/01/2033
31394L-E0-3	FREDDIE MAC-SERIES 2691 CLASS MG			4	1	8,289,304	104.8630	9,735,987	9,284,484	9,024,246		(13,242)			4.500	5.277	MON	34,817	409,902	02/01/2006	10/01/2033
31394L-KP-6	FREDDIE MAC-SERIES 2694 CLASS LB			4	1	174,982	101.8142	190,332	186,941	184,725		246			4.500	5.225	MON	701	8,115	01/17/2006	10/01/2023
31394L-S9-4	FREDDIE MAC-SERIES 2704 CLASS BD			4	1	251,210	101.6002	276,836	272,476	269,058		421			4.500	5.273	MON	1,022	11,899	01/11/2006	11/01/2023
31394N-EZ-7	FREDDIE MAC-SERIES 2718 CLASS TG			4	1	2,097,560	107.9065	2,429,279	2,251,281	2,207,381		(967)			5.000	5.578	MON	9,380	110,050	02/08/2006	12/01/2033
31394N-N4-6	FREDDIE MAC-SERIES 2727 CLASS PM			4	1	5,810,447	105.0089	7,069,064	6,731,872	6,498,947		(8,347)			4.500	5.477	MON	25,245	296,519	04/07/2006	01/01/2034
31394N-ZK-7	FREDDIE MAC-SERIES 2737 CLASS YE			4	1	3,626,380	106.0297	4,163,831	3,927,044	3,847,733		587			5.000	5.598	MON	16,363	193,828	03/21/2006	01/01/2034
31394P-DZ-3	FREDDIE MAC-SERIES 2738 CLASS OG			4	1	8,638,918	108.0314	10,038,579	9,292,282	9,107,949		(4,563)			5.000	5.578	MON	38,718	455,799	02/14/2006	01/01/2034
31394X-JP-2	FREDDIE MAC-SERIES 2772 CLASS KW			4	1	185,588	103.1594	199,298	193,195	191,771		187			5.000	5.432	MON	805	9,416	01/23/2006	04/01/2024
31394X-NC-6	FREDDIE MAC-SERIES 2780 CLASS GK			4	1	202,614	101.7907	216,563	212,753	210,919		244			5.000	5.527	MON	886	10,324	10/28/2005	04/01/2024

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
31395L-CZ-2	FREDDIE MAC-SERIES 2915 CLASS DY			4	1	158,587	99.9893	163,619	163,637	163,582		281			4.500	5.034	MON	614	3,001	01/28/2005	01/01/2020
31395L-MA-6	FREDDIE MAC-SERIES 2920 CLASS S			6	1	2,467	14.0774	2,707	1,959	1,959					4.245	9.416	MON	36	178	08/29/2011	01/15/2035
31395M-DZ-9	FREDDIE MAC-SERIES 2934 CLASS NG			4	1	2,325,315	108.2034	2,631,615	2,432,099	2,402,302		32			5.000	5.358	MON	10,134	119,141	09/21/2005	02/01/2035
31395M-FZ-7	FREDDIE MAC-SERIES 2935 CLASS HY			4	1	703	100.3341	708	706	705					5.000	5.296	MON	3	(657)	03/07/2005	02/01/2020
31395M-W7-0	FREDDIE MAC-SERIES 2938 CLASS EB			4	1	124,528	102.3047	135,620	132,565	130,657		158			5.000	5.751	MON	552	6,448	03/28/2006	02/01/2025
31395P-D8-2	FREDDIE MAC-SERIES 2943 CLASS CA			4	1	84,873	103.2352	92,106	89,219	88,376		82			5.000	5.487	MON	372	4,335	01/24/2006	03/01/2025
31395R-F6-0	FREDDIE MAC-SERIES 2959 CLASS JK			4	1	123,261	103.4533	132,615	128,189	127,127		108			5.000	5.444	MON	534	6,236	01/24/2006	04/01/2025
31395R-G9-3	FREDDIE MAC-SERIES 2966 CLASS NE			4	1	6,317,638	105.6239	7,268,003	6,881,022	6,709,352		500			5.000	5.727	MON	28,671	338,895	03/28/2006	04/01/2035
31395T-LN-2	FREDDIE MAC-SERIES 2957 CLASS ZA			4	1	649,849	106.9541	770,852	720,732	695,036		(543)			5.000	6.055	MON	3,003	35,308	08/22/2006	03/01/2035
31395T-XR-0	FREDDIE MAC-SERIES 2974 CLASS ZM			4	1	1,278,820	106.1896	1,425,470	1,342,382	1,318,677		(704)			5.000	5.531	MON	5,593	65,542	09/12/2005	05/01/2035
31395U-60-9	FREDDIE MAC-SERIES 2981 CLASS NE			4	1	591,311	106.7626	682,312	639,093	623,559		251			5.000	5.714	MON	2,663	31,421	02/14/2006	05/01/2035
31395U-GL-9	FREDDIE MAC-SERIES 2971 CLASS EX			4	1	547,733	103.4358	601,215	581,245	574,840		674			5.000	5.561	MON	2,422	28,343	11/30/2005	05/01/2025
31395U-N5-6	FREDDIE MAC-SERIES 2979 CLASS QK			4	1	898,652	106.6532	999,352	937,011	924,075		646			5.000	5.406	MON	3,904	46,537	09/21/2005	05/01/2035
31395U-QC-8	FREDDIE MAC-SERIES 2982 CLASS NT			4	1	1,249,721	103.5931	1,231,102	1,188,402	1,221,978		(2,536)			5.000	4.222	MON	4,952	59,116	01/01/2013	05/01/2035
31395V-O6-0	FREDDIE MAC-SERIES 2989 CLASS TG			4	1	777,587	102.7991	846,891	823,831	814,264		1,193			5.000	5.626	MON	3,433	40,131	03/22/2006	06/01/2025
31395V-OP-7	FREDDIE MAC-SERIES 2986 CLASS JH			4	1	123,326	102.3894	133,204	130,095	128,657		182			5.000	5.592	MON	542	6,335	12/08/2005	06/01/2025
31395V-QA-8	FREDDIE MAC-SERIES 3000 CLASS S			6	1	793	5.6466	485	8,598	509					3.695	(6.991)	MON	120	(91)	08/29/2011	07/15/2025
31395W-RA-7	FREDDIE MAC-SERIES 3006 CLASS BK			4	1	366,103	103.8301	409,493	394,388	387,972		468			5.000	5.804	MON	1,643	19,212	03/29/2006	07/01/2025
31395W-XL-6	FREDDIE MAC-SERIES 3016 CLASS HR			4	1	912,343	101.3649	999,568	986,109	973,720		2,066			4.500	5.222	MON	3,698	43,263	01/06/2006	08/01/2025
31395X-LV-5	FREDDIE MAC-SERIES 3025 CLASS SJ			4	1	7,457	142.2561	9,279	6,523	6,799		(250)			15.748	11.877	MON	349	1,157	08/29/2011	08/15/2035
31396B-3F-4	FREDDIE MAC-POOL #D30798			4	1	12,929	100.0263	12,294	12,291	12,613		9			8.500	6.790	MON	87	919	03/24/1998	02/01/2023
31396A-4P-6	FREDDIE MAC-SERIES 3042 CLASS EX			4	1	424,452	103.8513	467,750	450,403	444,974		539			5.000	5.583	MON	1,877	22,073	11/30/2005	09/01/2025
31396C-7M-6	FREDDIE MAC-SERIES 3057 CLASS DJ			4	1	100,573	102.7682	113,765	110,700	108,597		102			4.500	5.427	MON	415	4,850	01/12/2006	10/01/2025
31396C-AR-1	FREDDIE MAC-SERIES 3057 CLASS ME			4	1	6,972,839	104.0349	8,290,867	7,969,315	7,702,589		(93)			4.500	5.420	MON	29,885	354,784	11/08/2007	10/01/2035
31396C-NH-9	FREDDIE MAC-SERIES 3057 CLASS NA			4	1	337,850	102.8682	377,121	366,606	360,464		661			5.000	5.827	MON	1,528	17,908	03/31/2006	10/01/2025
31396C-SU-5	FREDDIE MAC-SERIES 3048 CLASS QJ			4	1	396,428	103.9829	453,103	435,748	427,935		744			5.000	5.877	MON	1,816	21,319	04/10/2006	10/01/2025
31396E-4L-7	FREDDIE MAC-SERIES 3044 CLASS EX			4	1	721,254	104.2198	796,690	764,433	755,282		891			5.000	5.581	MON	3,185	37,202	11/30/2005	10/01/2025
31396E-LG-9	FREDDIE MAC-SERIES 3076 CLASS BM			4	1	138,950	102.8422	159,024	154,629	151,274		31			4.500	5.539	MON	580	6,718	02/02/2006	11/01/2025
31396F-FR-9	FREDDIE MAC-SERIES 3068 CLASS OC			4	1	195,446	102.4969	210,015	204,899	202,804		139			5.000	5.507	MON	854	9,884	02/01/2006	11/01/2025
31396F-ZE-6	FREDDIE MAC-SERIES 3083 CLASS BX			4	1	416,618	103.8633	451,790	434,986	430,537		390			5.000	5.493	MON	1,812	21,219	01/12/2006	12/01/2025
31396G-K4-2	FREDDIE MAC-SERIES 3104 CLASS OE			4	1	5,893,016	106.0161	6,898,604	6,507,127	6,314,728		(5,589)			5.000	5.854	MON	27,113	319,646	03/30/2006	01/01/2036
31396H-56-0	FREDDIE MAC-SERIES 3102 CLASS CE			4	1	265,211	102.4052	273,771	267,341	266,679		83			5.500	5.636	MON	1,225	14,336	01/06/2006	01/01/2026
31396H-E6-0	FREDDIE MAC-SERIES 3113 CLASS WB			4	1	756,648	102.8812	873,894	849,420	831,414		932			4.500	5.488	MON	3,185	37,349	02/09/2006	02/01/2026
31396H-NL-9	FREDDIE MAC-SERIES 3110 CLASS SL			6	1	2,343	4.0057	1,085	27,097	2,020					3.695	(11.242)	MON	363	(406)	08/29/2011	02/15/2026
31396J-ND-3	FREDDIE MAC-SERIES 3131 CLASS ME			4	1	4,420,093	109.1928	5,059,640	4,633,677	4,565,212		(766)			5.500	5.940	MON	21,238	249,076	03/31/2006	03/01/2036
31396N-5T-9	FREDDIE MAC-SERIES 3138 CLASS GH			4	1	578,505	103.2508	649,776	629,318	620,049		1,008			5.000	5.812	MON	2,622	30,669	04/12/2006	04/01/2026
313970-CA-1	FREDDIE MAC-POOL #D31865			4	1	7,465	100.1776	7,109	7,097	7,223		(35)			5.500	7.344	MON	50	594	03/24/1998	03/01/2023
31397B-CM-1	FREDDIE MAC-SERIES 3212 CLASS PE			4	1	4,557,018	110.9588	4,931,205	4,444,178	4,467,324		(7,690)			6.000	5.823	MON	22,221	263,811	12/11/2006	09/01/2036
31397H-M8-8	FREDDIE MAC-SERIES 3322 CLASS NG			4	1	1,566,057	108.6029	1,749,441	1,610,859	1,589,581		(406)			5.500	5.925	MON	7,383	87,112	12/11/2007	05/01/2037
31397J-K4-5	FREDDIE MAC-SERIES 3326 CLASS PE			4	1	1,582,694	108.4838	1,765,803	1,627,711	1,608,040		(426)			5.500	5.885	MON	7,460	87,405	02/21/2008	06/01/2037
31397T-LJ-9	FREDDIE MAC-SERIES 3452 CLASS B			4	1	401,268	105.8665	471,702	445,563	424,005		(1,013)			5.000	6.432	MON	1,857	21,805	07/03/2008	05/01/2038
313986-Z7-9	FREDDIE MAC-POOL #D46166			4	1	3,167	108.5456	2,992	2,756	2,966		(50)			6.500	2.448	MON	15	177	01/01/2013	01/01/2024
313987-GK-9	FREDDIE MAC-POOL #D46502			4	1	14,281	108.5456	13,492	12,429	13,368		(229)			6.500	2.431	MON	67	795	01/01/2013	12/01/2023
313987-LK-3	FREDDIE MAC-POOL #D46630			4	1	4,490	108.5456	4,242	3,908	4,200		(73)			6.500	2.531	MON	21	250	01/01/2013	01/01/2024
313987-VU-0	FREDDIE MAC-POOL #D46927			4	1	8,679	108.5456	8,367	7,708	8,352		(162)			6.500	2.082	MON	42	494	01/01/2013	01/01/2024
313988-N2-9	FREDDIE MAC-POOL #D47609			4	1	488	108.5456	472	435	474		5			6.500	1.767	MON	2	24	01/01/2013	01/01/2024
313988-RD-1	FREDDIE MAC-POOL #D47684			4	1	23,294	108.5456	21,881	20,159	22,079		(485)			6.500	1.505	MON	109	1,293	01/01/2013	01/01/2024
313988-VC-8	FREDDIE MAC-POOL #D47811			4	1	6,286	108.5456	5,905	5,440	5,862		(1,05)			6.500	2.383	MON	29	348	01/01/2013	01/01/2024
313990-E6-0	FREDDIE MAC-SERIES 3672 CLASS EP			4	1	9,274,031	107.7301	10,072,762	9,350,000	9,308,683		3,934			4.500	4.575	MON	35,063	420,750	06/09/2010	05/01/2040

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
3137AH-6D-5	FHLMC MULTIFAMILY STRUCT-SERIES K015 CLA			5,6	1	5,068,055	3.3530	1,508,534	44,990,989	1,457,994					1.574	2.652	MON	563,778	(22,900)	01/01/2013	07/01/2021
3137AP-PA-2	FHLMC MULTIFAMILY STRUCT-SERIES K018 CLA			5,6	1	4,718,240	3.2361	1,518,541	46,925,481	1,495,071					1.348	2.813	MON	505,286	(23,037)	01/01/2013	01/01/2022
3137AS-NK-6	FHLMC MULTIFAMILY STRUCT-SERIES K019 CLA			5,6	1	199,141	4.3958	70,630	1,606,738	71,795					1.627	0.315	MON	9,184	(1,448)	01/01/2013	03/01/2022
31397U-PF-0	FANNINGMAE-ACES-SERIES 2011-M1 CLASS A3 R			4	1	4,617,937	101.8257	4,246,787	4,170,644	4,321,929		(34,154)			3.763	1.999	MON	54,972	159,776	01/01/2013	06/01/2021
2799999. Subtotal - Bonds - U.S. Special Revenues - Commercial Mortgage-Backed Securities						45,153,080	XXX	32,310,530	164,131,229	32,727,360					XXX	XXX	XXX	1,696,066	1,256,986	XXX	XXX
3199999. Total - U.S. Special Revenues Bonds						5,261,802,692	XXX	6,420,868,455	6,892,559,488	5,927,223,718	977	69,708,640	2,065,302		XXX	XXX	XXX	59,459,417	192,590,029	XXX	XXX
00003F-AB-9	A&E Television Networks, Senior Note Ser			1	1	39,600,000	98.4782	38,997,367	39,600,000	39,600,000					3.630	3.629	FA	515,097	1,437,480	08/22/2012	08/22/2022
00036A-AB-1	AARP-BOND			1FE		9,917,700	132.0511	13,205,106	10,000,000	9,942,936		2,650			7.500	7.570	MN	125,000	750,000	05/01/2001	05/01/2031
00037B-AB-8	ABB FINANCE USA INC-SR UNSECURED			1	1FE	147,961	98.4667	147,700	150,000	148,876		312			2.875	3.111	MN	635	4,313	12/15/2015	05/08/2022
00037B-AC-6	ABB FINANCE USA INC-SENIOR UNSECURED			1	1FE	13,180,382	101.4393	12,857,425	12,675,000	13,159,021		(10,032)			4.375	4.117	MN	81,639	420,255	06/25/2018	05/08/2042
00038A-AB-9	ABB TREASURY CENTER USA-SENIOR UNSECURED			1	1FE	12,912,368	102.1463	12,247,339	11,990,000	12,325,133		(128,451)			4.000	2.813	JD	21,316	467,267	10/29/2018	06/15/2021
001055-AF-9	AFLAC INC-SENIOR UNSECURED NOTE			1	1FE	248,108	120.5576	236,293	196,000	243,220		(1,244)			6.450	4.668	FA	4,776	12,642	10/06/2014	08/15/2040
001055-AL-6	AFLAC INC-SENIOR UNSECURED NOTE			1	1FE	309,842	100.3320	300,996	300,000	306,133		(1,264)			3.625	3.130	JD	483	10,875	12/15/2015	06/15/2023
001055-AP-7	AFLAC INC-SENIOR UNSECURED			1	1FE	256,975	97.5641	243,910	250,000	255,893		(857)			3.250	2.833	MS	2,392	8,125	09/25/2017	03/17/2025
001055-AR-3	Aflac Inc-SENIOR UNSECURED			1	1FE	9,579,300	92.2809	9,228,091	10,000,000	9,582,959		3,659			4.000	4.257	AO	84,444	200,000	07/11/2018	10/15/2046
001055-AY-8	Aflac Inc-SENIOR UNSECURED			1	1FE	11,920,800	102.0445	12,245,341	12,000,000	11,918,690		(2,110)			4.750	4.793	JJ	96,583	40,243	10/29/2018	01/15/2049
001055-AY-8	Aflac Inc-SENIOR UNSECURED			1	1FE	5,176,600	102.0445	5,102,225	5,000,000	5,176,526		(74)			4.750	4.532	JJ	40,243	96,583	12/20/2018	01/15/2049
001050-AA-4	AES US Generation Holdin Senior Note			1	2FE	744,467	100.3854	744,337	744,467	744,467					4.170	4.168	MN	2,673	29,523	12/18/2014	11/30/2023
00108W-AF-7	AEP Texas Inc-SENIOR UNSECURED			1	1FE	149,247	90.1406	144,225	160,000	149,323		76			3.800	4.202	AO	1,520	929	08/01/2018	10/01/2047
00108W-AG-5	AEP Texas Inc-SENIOR UNSECURED			1	1FE	5,944,718	100.1491	5,988,917	5,980,000	5,946,383		1,665			3.950	4.022	JD	19,684	127,291	06/13/2018	06/01/2028
0010EP-AN-8	AEP TEXAS CENTRAL CO-SR UNSECURED			1	1FE	8,392,030	99.7472	8,453,572	8,475,000	8,415,371		7,513			3.850	3.969	AO	81,572	326,288	09/15/2015	10/01/2025
0010EP-B*-8	AEP Texas Central Compan Senior Note Ser			1	1	38,200,000	106.2710	40,595,522	38,200,000	38,200,000					4.770	4.770	AO	308,752	1,822,140	10/30/2014	10/30/2044
0010EQ-C*-5	AEP TEXAS NORTH CO SR NT SER G			1	1	22,000,000	104.6688	23,027,136	22,000,000	22,000,000					4.710	4.709	JD	46,053	1,036,200	12/15/2015	12/15/2035
00114*-AA-1	AEP TRANSMISSION CO LLC SR NT SER A			1	1	18,502,581	98.3776	18,003,101	18,300,000	18,421,723		(29,889)			3.300	3.112	AO	122,458	603,900	03/24/2016	10/18/2022
00114*-AC-7	AEP Transmission Company Senior Note Ser			1	1	7,500,000	105.5638	7,917,285	7,500,000	7,500,000					4.730	4.730	AO	71,935	354,750	10/18/2012	10/18/2042
00114*-AE-3	AEP Transmission Company Senior Note Ser			1	1	18,750,000	107.0428	20,070,525	18,750,000	18,750,000					4.830	4.830	MS	259,109	905,625	03/18/2013	03/18/2043
00114*-AJ-2	AEP Transmission Company Senior Note Ser			1	1	29,400,000	115.9043	34,075,864	29,400,000	29,400,000					5.420	5.420	AO	270,006	1,593,480	04/30/2014	04/30/2044
00114*-AR-4	AEP Transmission Company Senior Note Ser			1	1	28,000,000	99.8448	27,956,544	28,000,000	28,000,000					3.760	3.759	JD	46,791	1,052,800	06/15/2015	06/15/2025
00115A-AF-6	AEP TRANSMISSION CO LLC-SENIOR UNSECURED			1	1FE	6,777,171	95.4803	6,578,591	6,890,000	6,780,404		2,069			4.000	4.096	JD	22,967	275,600	05/17/2017	12/01/2046
00115A-AJ-8	AEP Transmission Co LLC-SENIOR UNSECURED			1	1FE	10,098,182	100.7604	10,176,801	10,100,000	10,097,665		(517)			4.250	4.251	MS	135,929		09/05/2018	09/15/2048
00116*-AA-9	AFC-Dell Holding Corp. Senior Sub Note			2	5	1,294,532	98.2150	1,271,498	1,294,608	1,294,537		4			12.500	12.500	FMAN	90,074		11/16/2018	02/28/2022
00116*-AA-9	AFC-Dell Holding Corp. Senior Sub Note			2	5	1,365,192	98.2150	1,340,382	1,364,743	1,364,958		131			12.500	12.490	FMAN	94,877	226,792	06/30/2018	02/28/2022
001192-AH-6	SOUTHERN CO GAS CAPITAL-SENIOR UNSECURED			1	2FE	694,567	113.0140	661,132	585,000	690,151		(2,792)			5.875	4.561	MS	10,120	34,369	05/16/2017	03/15/2041
001192-AK-9	AGL CAPITAL CORP-SR UNSECURED			1	2FE	128,286	94.8840	132,838	140,000	128,947		229			4.400	4.961	JD	513	6,160	12/09/2015	06/01/2043
001228-AA-9	AES Southland Energy LLC Senior Secured			2	2PL	44,550,902	101.3626	45,157,952	44,550,902	44,550,902					4.500	4.500	FMAN	172,635	1,401,065	11/30/2018	02/29/2040
00128P-AA-9	AHFS Finance I LLC Senior Secured			1	2FE	16,120,880	99.1035	15,976,356	16,120,880	16,120,880					5.250	5.250	MON	192,220	819,806	11/23/2015	01/15/2024
00139P-AA-6	AIG SUNAMERICA GLOBAL FI-SECURED			5	1FE	668,920	127.1291	634,374	499,000	658,400		(9,147)			6.900	3.800	MS	10,138	34,431	10/30/2017	03/15/2032
00165C-AD-6	AMC ENTERTAINMENT HOLDING-AMC			1	4FE	680,748	85.5000	598,500	700,000	682,858		1,493			6.125	6.507	MN	5,478	42,875	08/22/2017	05/15/2027
00165C-AD-6	AMC ENTERTAINMENT HOLDING-AMC			1	4FE	6,025,000	85.5000	5,151,375	6,025,000	6,025,000					6.125	6.120	MN	47,120	369,031	07/12/2017	05/15/2027
001698-AB-1	AM Conservation Holding Corp.			2	5G1	5,026,702	99.5962	5,006,404	5,026,702	5,026,702					11.750	11.916	JAJO	559,387	599,240	10/31/2016	04/30/2023
001698-AB-1	AM Conservation Holding Corp.			2	5G1	38,757	99.5962	38,247	38,402	38,641		(116)			11.750	11.111	JAJO	4,431		09/30/2018	04/30/2023
001698-AC-9	AM Conservation Holding Incremental Sen			2	5G1	4,059	99.3950	4,001	4,026	4,050		(9)			11.500	11.119	JAJO	341	61,123	06/30/2018	04/30/2023
001698-AC-9	AM Conservation Holding Incremental Sen			2	5G1	662,490	99.3950	658,505	662,513	662,492		3			11.500	11.510	JAJO	72,199	15,353	03/31/2018	04/30/2023
00184A-AC-9	Time Warner Inc-BOND			1	2FE	3,588,442	124.7872	3,229,493	2,588,000	3,420,591		(50,816)			7.625	4.236	AO	41,660	197,335	08/02/2016	04/15/2031
001957-BD-0	AT&T CORP USD SR NT			1,5	2FE	1,069,096	132.5190	964,738	728,000	1,019,288		(13,892)			8.750	4.189	MN	37,259	59,615	08/02/2016	11/15/2031
00206R-AZ-5	AT&T Inc-SENIOR UNSECURED NOTE			1	2FE	166,785	100.9955	151,493	150,000	155,665					3.875	2.380	FA	2,196	5,813	04/24/2013	08/15/2021
00206R-BA-9	AT&T Inc-SENIOR UNSECURED NOTE			1	2FE	11,693,491	98.0478	10,658,774	10,871,000	11,634,751		(18,929)			5.550	5.017	FA	227,929	603,341	08/02/2016	08/15/2041
00206R-BH-4	AT&T Inc-SENIOR UNSECURED BOND			1	2FE	2,061,166	84.9146	1,831,608	2,157,000	2,067,735		1,984			4.300	4.585	JD	4,122	92,751	08/02/2016	12/15/2042
00206R-BK-7																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
00206R-DE-9	AT&T INC GLOBAL NT			1	2FE	5,224,856		107,2335	5,250,000	5,225,212			372		6.350	6.387	MS	98,160	333,375	03/22/2016	03/15/2040
00206R-DF-6	AT&T INC GLOBAL NT			1	2FE	2,181,395		101,0288	1,910,000	2,165,979			(6,663)		6.000	4.972	FA	43,293	114,600	10/30/2017	08/15/2040
00206R-DG-4	AT&T INC GLOBAL NT			1	2FE	2,880,800		108,2919	2,340,000	2,850,537			(12,855)		6.375	4.766	MS	49,725	149,175	08/02/2016	03/01/2041
00206R-DH-2	AT&T INC GLOBAL NT			1	2FE	7,601,454		93,4113	7,279,000	7,583,597			(7,088)		5.150	4.846	MS	110,378	374,869	05/16/2017	03/15/2042
00206R-DJ-8	AT&T INC-SENIOR UNSECURED			1	2FE	7,389,975		85,5707	8,079,000	7,404,608			9,973		4.500	5.049	MS	113,106	363,555	10/30/2017	03/09/2048
00206R-DK-5	AT&T INC-SENIOR UNSECURED			1	2FE	2,235,157		86,0795	2,440,000	2,239,521			2,761		4.550	5.085	MS	34,540	111,020	05/16/2017	03/09/2049
00206R-DR-0	AT&T INC-SENIOR UNSECURED			1	2FE	1,261,913		98,2228	1,220,000	1,259,789			(1,384)		5.250	4.970	MS	21,350	64,050	05/16/2017	03/01/2037
00206R-ER-9	AT&T Inc-SENIOR UNSECURED			1,5	2FE	14,683,359		96,1576	15,134,000	14,720,459			34,962		4.100	4.467	FA	234,409	625,419	12/05/2017	02/15/2028
00206R-ER-9	AT&T Inc-SENIOR UNSECURED			1,5	2FE	408,973		96,1576	408,000	408,855			(102)		4.100	4.072	FA	6,319	11,803	12/05/2017	02/15/2028
00206R-FM-9	AT&T Inc-SENIOR UNSECURED			1,5	2FE	19,314,956		93,3726	17,476,606	19,276,502			(38,454)		5.150	4.483	MN	115,006	1,168,908	12/05/2017	11/15/2046
00206R-GG-9	AT&T Inc-SENIOR UNSECURED			1	2FE	194,650		94,4986	205,000	194,674			25		4.300	4.892	FA	3,330		12/17/2018	02/15/2030
00209A-AF-3	NEW CINGULAR WIRELESS SV-SR UNSECURED			1	2FE	4,321,096		131,9380	3,030,000	4,165,558			(68,027)		8.750	4.674	MS	88,375	265,125	05/16/2017	03/01/2031
00209T-AB-1	AT&T BROADBAND CORP/COMCAST CORP NT			1	1FE	153,496		121,4944	100,000	123,529			(5,653)		9.455	2.975	MN	1,208	9,455	04/24/2013	11/15/2022
002474-AF-1	AZZ incorporated Senior Note Ser			1	2	16,200,000		102,0344	16,200,000	16,200,000					5.425	5.418	JJ	392,679	878,040	01/20/2011	01/20/2021
002819-AC-4	ABBOTT LABORATORIES-SR UNSECURED			1	2FE	12,177,338		120,5142	10,125,000	11,912,775			(57,495)		6.150	4.727	MN	53,620	622,688	12/11/2013	11/30/2037
002824-AI-6	ABBOTT LABORATORIES-SR UNSECURED			1	2FE	12,937,040		110,2678	10,000,000	12,514,503			(76,858)		5.300	3.604	MN	50,056	530,000	01/01/2013	05/27/2040
002824-BA-7	ABBOTT LABORATORIES-SR UNSECURED			1	2FE	298,484		97,4206	300,000	299,186			238		2.550	2.638	MS	2,253	7,650	12/15/2015	03/15/2022
002824-BB-5	ABBOTT LABORATORIES-SR UNSECURED			1	2FE	512,568		96,1967	500,000	514,769			751		2.950	3.129	MS	4,517	15,340	12/15/2015	03/15/2025
002824-BD-1	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	2,541,100		99,1313	2,500,000	2,528,865			(9,727)		2.900	2.475	MN	6,243	72,500	09/22/2017	11/30/2021
002824-BF-6	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	157,406		98,7596	158,000	157,433			27		3.750	3.803	MN	510	4,635	08/01/2018	11/30/2026
002824-BG-4	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	2,723,177		104,3936	2,600,000	2,717,101			(3,922)		4.750	4.377	MN	10,635	115,415	08/01/2018	11/30/2036
002824-BG-4	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	18,232,560		104,3936	18,350,000	18,239,838			3,786		4.750	4.800	MN	75,057	871,625	11/17/2016	11/30/2036
002824-BH-2	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	27,956,064		104,9724	26,632,000	27,287,022			(10,408)		4.900	4.766	MN	112,372	1,261,164	10/04/2018	11/30/2046
002824-BH-2	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	19,189,341		104,9724	19,340,000	19,193,670			2,382		4.900	4.950	MN	81,604	947,660	11/17/2016	11/30/2046
002824-BM-1	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	231,759		101,2586	230,000	231,417			(191)		3.875	3.766	MS	2,624	8,913	03/22/2017	09/15/2025
002824-BM-1	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	8,301,001		101,2586	8,350,000	8,309,619			5,115		3.875	3.957	MS	95,271	323,563	03/22/2017	09/15/2025
002824-BN-9	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	1,932,401		103,7011	1,843,000	1,928,876			(2,049)		4.750	4.429	AO	18,481	87,543	05/16/2017	04/15/2043
002824-BN-9	ABBOTT LABORATORIES-SENIOR UNSECURED			1	2FE	4,274,917		103,7011	4,355,000	4,277,595			1,631		4.750	4.671	AO	43,671	206,863	03/22/2017	04/15/2043
00287Y-AL-3	AbbVie Inc-SENIOR UNSECURED BOND			1	2FE	30,016,481		97,3030	30,455,000	30,177,734			66,582		2.900	3.152	MN	134,933	883,195	12/13/2016	11/06/2022
00287Y-AM-1	AbbVie Inc-SENIOR UNSECURED NOTE			1	2FE	12,986,172		87,9410	13,050,000	12,983,761			1,199		4.400	4.429	MN	87,725	575,544	04/10/2018	11/06/2042
00287Y-AQ-2	AbbVie Inc-SR UNSECURED			1	2FE	20,189,606		95,9185	20,225,000	20,200,386			3,292		3.600	3.621	MN	95,058	727,489	05/05/2015	05/14/2025
00287Y-AR-0	ABBVIE INC-SR UNSECURED			1	2FE	5,052,629		92,5107	4,845,000	5,041,224			(8,715)		4.500	4.147	MN	28,464	212,359	10/30/2017	05/14/2035
00287Y-AR-0	ABBVIE INC-SR UNSECURED			1	2FE	2,560,438		92,5107	2,615,000	2,564,619			1,637		4.500	4.669	MN	15,363	88,538	08/01/2018	05/14/2035
00287Y-AS-8	AbbVie Inc-SR UNSECURED			1	2FE	6,213,861		90,9412	6,150,000	6,210,770			(1,254)		4.700	4.633	MN	37,737	287,930	10/30/2017	05/14/2045
00287Y-AS-8	AbbVie Inc-SR UNSECURED			1	2FE	20,892,709		90,9412	20,920,000	20,893,079			452		4.700	4.708	MN	128,367	977,483	08/01/2018	05/14/2045
00287Y-AT-6	AbbVie Inc-SR UNSECURED			1	2FE	2,528,400		99,0509	2,476,273	2,514,488			(11,013)		2.500	2.041	MN	8,160	62,500	09/21/2017	05/14/2020
00287Y-AT-6	AbbVie Inc-SR UNSECURED			1	2FE	17,575,143		99,0509	17,420,083	17,581,935			3,402		2.500	2.520	MN	439,675	1,250,000	12/13/2016	05/14/2020
00287Y-AV-1	ABBVIE INC-SENIOR UNSECURED			1	2FE	15,893,128		89,2173	15,980,000	15,899,952			3,009		4.300	4.341	MN	89,710	687,140	05/16/2017	05/14/2036
00287Y-AW-9	ABBVIE INC-SENIOR UNSECURED			1	2FE	7,111,307		87,4739	7,100,000	7,100,824			(215)		4.450	4.440	MN	41,249	314,738	10/20/2016	05/14/2046
00287Y-AW-9	ABBVIE INC-SENIOR UNSECURED			1	2FE	11,409,192		87,4739	11,515,000	11,412,471			1,735		4.450	4.507	MN	66,899	506,188	08/01/2018	05/14/2046
003009-AA-4	Aberdeen Asia-Pacific In Senior Secured			1	1FE	48,500,000		99,9775	48,489,088	48,500,000					3.870	3.870	FA	745,566	1,876,950	02/08/2017	02/08/2032
003009-AA-8	Aberdeen Asia-Pacific In Senior Secured			1	1FE	15,800,000		99,2559	15,682,432	15,800,000					3.050	3.049	JD	25,434	481,900	06/12/2013	06/12/2020
003009-AA-6	Aberdeen Asia-Pacific In Senior Secured			1	1FE	10,750,000		100,2922	10,750,000	10,750,000					3.690	3.689	JD	20,936	396,675	06/12/2013	06/12/2023
00440E-AH-0	CHUBB INA HOLDINGS INC-SENIOR UNSECURED			1	1FE	435,458		128,3701	300,000	423,496			(5,085)		6.700	3.514	MN	2,568	20,100	08/02/2016	05/15/2036
00440E-AP-2	ACE INA HOLDINGS-SR UNSECURED			1	1FE	195,595		97,7201	200,000	197,321			588		2.700	3.041	MS	1,620	5,400	12/15/2015	03/13/2023
00440E-AQ-0	ACE INA HOLDINGS-SR UNSECURED			1	1FE	6,683,176		99,1877	6,633,000	6,679,474			(1,439)		4.150	4.103	MS	82,581	199,128	10/04/2018	03/13/2043
00440E-AR-8	ACE INA HOLDINGS-SR UNSECURED			1	1FE	354,097		99,3587	350,000	352,741			(462)		3.350	3.190	MN	1,498	11,725	12/15/2015	05/15/2024
00440E-AU-1	ACE INA HOLDINGS-SR UNSECURED			1	1FE	248,279		99,1532	250,000	248,992			243		2.875	2.986	MN	1,158	7,188	12/15/2015	11/03/2022
00440E-AV-9	ACE INA HOLDINGS-SR UNSECURED			1	1FE	535,358		97,8222	500,000	527,163			(3,460)		3.350	2.509	MN	2,699	16,750	08/02/2016	05/03/2026

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
00817Y-AF-5	Aetna Inc-SENIOR UNSUBORDINATED NOTE	1		2FE	23,623,345	117,2822		22,471,265	19,160,000	23,391,921			(166,498)		6.625	4.693	JD	56,416	1,269,350	04/12/2017	06/15/2036
00817Y-AG-3	Aetna Inc-SENIOR UNSECURED NOTE	1		2FE	11,671,623	120,8275		11,197,233	11,750,000	11,677,269			565		6.750	6.798	JD	793,125	35,250	03/31/2010	12/15/2037
00817Y-AJ-7	Aetna Inc-SR UNSECURED	1		2FE	1,349,964	92,8340		1,218,910	1,313,000	1,347,007			(895)		4.500	4.318	MN	7,550	59,085	12/09/2015	05/15/2042
00817Y-AM-0	Aetna Inc-SR UNSECURED	1		2FE	538,678	86,5687		443,665	512,500	536,498			(627)		4.125	3.820	MN	2,701	21,141	04/27/2015	11/15/2042
00817Y-AM-0	Aetna Inc-SR UNSECURED	1		2FE	38,569	86,5687		35,060	40,500	38,691			42		4.125	4.430	MN	213	1,671	12/09/2015	11/15/2042
00817Y-AP-3	Aetna Inc-SR UNSECURED	1		2FE	652,302	95,4115		556,249	583,000	648,524			(1,534)		4.750	4.026	MS	8,154	27,693	05/16/2017	03/15/2044
00817Y-AQ-1	AETNA INC-SR UNSECURED	1		2FE	350,699	96,6856		338,400	350,000	350,479			(75)		3.500	3.473	MN	1,565	12,250	12/15/2015	11/15/2024
008252-AM-0	Affiliated Managers Group-SENIOR UNSECURE	1		1FE	1,279,405	102,0229		1,285,488	1,260,000	1,278,280			(1,575)		4.250	3.933	FA	20,230	47,810	06/25/2018	02/15/2024
008252-AN-8	Affiliated Managers Group-SR UNSECURED	1		1FE	20,023,799	97,1749		19,663,344	20,235,000	20,071,475			16,231		3.500	3.638	FA	295,094	700,350	07/16/2018	08/01/2025
00846U-AG-6	Agilent Technologies Inc-SENIOR NOTE	1		2FE	2,140,003	102,6684		2,207,370	2,150,000	2,148,065			1,151		5.000	5.060	JJ	49,569	107,500	07/13/2010	07/15/2020
008685-AB-5	Ahold Finance USA LLC-SENIOR NOTE	1		2FE	32,397,748	118,1464		34,735,052	29,400,000	31,416,702			(137,971)		6.875	5.974	MN	336,875	2,021,250	06/03/2010	05/01/2029
009098-AA-5	Air Cargo Logistics Ft W Lease-Collatera	2		1Z	6,938,750	105,9388		7,350,828	6,938,750	6,938,750					4.494	4.485	MON	20,789		12/07/2018	11/10/2039
00912X-AB-0	Air Lease Corp. Senior Note	1		2	7,378,788	100,2589		7,745,485	7,725,483	7,725,483			61,087		7.375	8.386	JJ	298,980	539,963	01/20/2012	01/30/2019
00912X-AL-8	Air Lease Corp-SENIOR UNSECURED NOTE	1,5		2FE	5,292,474	99,9911		5,299,526	5,300,000	5,299,883			1,595		3.375	3.406	JJ	178,875	178,875	11/12/2013	01/15/2019
00912X-AM-6	AIR LEASE CORP-SENIOR UNSECURED NOTE	1		2FE	7,006,430	100,1273		7,013,921	7,005,000	7,005,237			(235)		3.875	3.871	AO	67,861	271,444	03/05/2014	04/01/2021
00912X-AN-6	AIR LEASE CORP-SENIOR UNSECURED NOTE	1		2FE	7,669,688	100,1273		7,584,646	7,575,000	7,613,501			(16,847)		3.875	3.628	AO	73,383	293,531	07/02/2015	04/01/2021
00912X-AS-3	AIR LEASE CORP-SENIOR UNSECURED	1		2FE	208,024	99,0459		207,996	210,000	209,027			377		3.375	3.576	JD	591	7,088	04/04/2016	06/01/2021
00912X-AT-1	AIR LEASE CORP-SENIOR UNSECURED	1		2FE	177,584	93,9019		169,023	180,000	178,333			322		3.000	3.213	MS	1,590	5,400	08/08/2016	09/15/2023
009158-AV-8	AIR PRODUCTS & CHEMICALS-SR UNSECURED	1		1FE	250,013	100,6486		251,622	250,000	250,008			(2)		3.350	3.349	JJ	3,513	8,375	12/15/2015	07/31/2024
009158-AV-8	AIR PRODUCTS & CHEMICALS-SR UNSECURED	1		1FE	597,723	100,6486		553,567	550,000	583,687			(5,906)		3.350	2.129	JJ	7,728	18,425	08/02/2016	07/31/2024
009363-AP-7	AIRGAS INC-SENIOR UNSECURED NOTE	1		1FE	3,499,746	99,5956		3,490,865	3,495,000	3,495,788			(751)		2.375	2.353	FA	31,358	83,006	05/17/2013	02/15/2020
009363-AP-7	AIRGAS INC-SENIOR UNSECURED NOTE	1		1FE	10,761,218	99,5956		10,731,423	10,775,000	10,772,471			2,075		2.375	2.395	FA	96,676	255,906	05/17/2013	02/15/2020
009363-AQ-5	AIRGAS INC-SENIOR UNSECURED NOTE	1		1FE	9,506,426	100,7512		9,596,549	9,525,000	9,514,008			1,741		3.650	3.732	JJ	160,311	347,663	06/12/2014	07/15/2024
010392-EB-0	ALABAMA POWER CO-SENIOR NOTE	1		1FE	4,225,662	109,6747		4,606,337	4,200,000	4,207,299			(1,669)		5.875	5.823	JD	20,563	246,750	12/06/2002	12/01/2022
010392-EC-8	ALABAMA POWER CO-SENIOR UNSECURED	1		1FE	726,519	116,1523		679,491	585,000	710,837			(6,666)		5.700	3.727	FA	12,597	33,345	08/02/2016	02/15/2033
010392-EZ-7	ALABAMA POWER CO-SENIOR UNSECURED	1		1FE	2,019,189	122,4397		1,848,839	1,510,000	1,981,245			(16,169)		6.125	3.828	MN	11,818	92,488	08/02/2016	05/15/2038
010392-FB-9	ALABAMA POWER CO-SENIOR UNSECURED NOTE	1		1FE	711,760	119,9487		653,720	545,000	694,100			(4,806)		6.000	3.998	MS	10,900	32,700	04/27/2015	03/01/2039
010392-FC-7	ALABAMA POWER CO-SENIOR UNSECURED NOTE	1		1FE	14,185,194	100,0478		13,053,235	13,047,000	13,320,495			(151,918)		3.375	2.147	AO	110,084	440,336	01/01/2013	10/01/2020
010392-FD-5	ALABAMA POWER CO-SR UNSECURED	1		1FE	302,682	112,9030		268,709	238,000	297,259			(1,670)		5.500	3.825	MS	3,854	13,090	08/02/2016	03/15/2041
010392-FF-0	ALABAMA POWER CO-SR UNSECURED	1		1FE	131,651	107,9916		129,590	120,000	130,852			(274)		5.200	4.552	JD	520	6,240	12/09/2015	06/01/2041
010392-FG-8	ALABAMA POWER CO-SR UNSECURED	1		1FE	223,064	95,1359		198,834	209,000	221,849			(349)		4.100	3.701	JJ	3,951	8,569	05/11/2015	01/15/2042
010392-FL-7	ALABAMA POWER CO-SENIOR UNSECURED NOTE	1		1FE	9,151,569	97,8339		9,025,176	9,225,000	9,156,976			1,450		4.150	4.197	FA	144,627	382,838	08/20/2014	08/15/2044
010392-FL-7	ALABAMA POWER CO-SENIOR UNSECURED NOTE	1		1FE	869,498	97,8339		807,130	825,000	866,056			(975)		4.150	3.837	FA	12,934	34,238	04/27/2015	08/15/2044
010392-FM-5	ALABAMA POWER CO-SR UNSECURED	1		1FE	731,319	92,2304		645,613	700,000	729,651			(705)		3.750	3.498	MS	8,750	26,250	08/02/2016	03/01/2045
010392-FM-5	ALABAMA POWER CO-SR UNSECURED	1		1FE	2,127,095	92,2304		2,102,853	2,280,000	2,134,215			3,013		3.750	4.152	MS	28,500	85,500	05/16/2017	03/01/2045
010392-FN-3	ALABAMA POWER CO-SR UNSECURED	1		1FE	336,066	95,3289		333,651	350,000	340,151			1,396		2.800	3.301	AO	2,450	9,800	12/15/2015	04/01/2025
010392-FP-8	ALABAMA POWER CO-SENIOR UNSECURED	1		1FE	361,751	100,9660		353,381	350,000	361,392			(235)		4.300	4.098	JJ	7,483	15,050	05/16/2017	01/02/2046
010392-FS-2	Alabama Power Co-SENIOR UNSECURED	1		1FE	26,131,735	100,1613		26,372,465	26,330,000	26,133,480			1,745		4.300	4.345	JJ	575,530		06/21/2018	07/15/2048
01126#-AA-1	Alamo 6 LLC Senior Secured	1		2	31,933,295	98,9853		31,609,268	31,933,295	31,933,295					4.170	4.170	MS	336,604	1,320,512	05/11/2017	03/31/2042
012725-AC-1	ALBEMARLE CORP-SENIOR UNSECURED	1		2FE	97,829	101,2932		96,229	95,000	97,025			(315)		4.150	3.729	JD	329	3,943	05/06/2016	12/01/2024
012725-AD-9	ALBEMARLE CORP-SENIOR UNSECURED	1		2FE	26,218,987	99,9640		22,566,862	22,575,000	26,056,988			(72,974)		5.450	4.432	JD	102,528	1,230,338	09/12/2016	12/01/2044
013078-AA-8	NEW ALBERTO-CULVER LLC-SENIOR UNSECURED	1		1FE	8,246,618	102,9508		8,493,441	8,250,000	8,249,064			373		5.150	5.155	JD	35,406	424,875	05/18/2010	06/01/2020
016900-AC-6	ALLEGHENY LUDLUM CORP-SENIOR UNSECURED N	1		4FE	4,925,000	97,5000		4,875,000	5,000,000	4,956,128			4,705		6.950	7.111	JD	15,444	347,500	09/16/2010	12/15/2025
018490-AN-2	ALLERGAN INC-SENIOR UNSECURED NOTE	1		2FE	2,163,216	99,9096		1,998,192	2,000,000	2,038,518			(21,945)		3.375	2.217	MS	19,875	(78,452)	01/01/2013	09/15/2020
018522-DF-6	ALLETE Inc. First Mortgage	1		1	17,100,000	127,2219		21,754,945	17,100,000	17,100,000					6.000	6.000	AO	216,600	1,026,000	02/17/2010	04/15/2040
018522-DE-8	ALLETE Inc. First Mortgage	1		1	4,400,000	108,4253		4,770,713	4,400,000	4,400,000					5.100	5.100	AO	47,373	224,400	02/17/2010	04/15/2025
018522-EF-9	ALLETE Inc. First Mortgage	1		1	3,372,030	107,7707		3,233,121	3,000,000	3,218,801			(27,919)		4.900	3.675	AO	31,033	147,000	01/01/2013	10/15/2025
020002-BA-8	Allstate Corp/The-SR UNSECURED	1		1FE	1,580,061	101,9353		1,478,061	1,450,000												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
023135-BF-2	Amazon.com Inc-SENIOR UNSECURED			1	1FE	254,602	.96	241,439	250,000	254,507			(94)		3.875	3.737	FA	3,471	1,911	06/11/2018	08/22/2037
023135-BJ-4	Amazon.com Inc-SENIOR UNSECURED			1	1FE	50,067	.97	48,855	50,000	50,065			(2)		4.050	4.042	FA	726	265,140	07/27/2018	08/22/2047
023135-BJ-4	Amazon.com Inc-SENIOR UNSECURED			1	1FE	17,798,053	.97	17,783,203	18,200,000	17,801,666			3,813		4.050	4.181	FA	264,128	1,738	06/21/2018	08/22/2047
023135-BM-7	Amazon.com Inc-SENIOR UNSECURED			1	1FE	14,011,282	.97	13,307,595	13,696,000	14,009,601			(1,681)		4.250	4.130	FA	208,579	365,651	07/12/2018	08/22/2057
023135-BM-7	Amazon.com Inc-SENIOR UNSECURED			1	1FE	31,341,814	.97	30,703,855	31,600,000	31,343,497			1,683		4.250	4.293	FA	481,242	92,988	06/11/2018	08/22/2057
02343*-AC-6	Amcor Finance (USA) Inc. Gtd Senior Note			1	2	10,750,000	.104	11,239,566	10,750,000	10,750,000					5.950	5.948	JD	28,428	639,625	12/15/2009	12/15/2021
02343U-AA-3	AMCOR FINANCE USA INC-SENIOR UNSECURED			1,5	2FE	8,807,798	.94	8,342,758	8,810,000	8,807,985			198		3.625	3.628	AO	55,888	319,363	04/19/2016	04/28/2026
02343U-AA-3	AMCOR FINANCE USA INC-SENIOR UNSECURED			1,5	2FE	146,270	.94	137,310	145,000	145,960			(118)		3.625	3.518	AO	920	5,256	04/25/2016	04/28/2026
023608-AG-7	AMEREN CORPORATION-SR SUBORDINATED			1	2FE	44,960	.98	44,192	45,000	44,968			4		3.650	3.661	FA	621	1,643	11/17/2015	02/15/2026
02361D-AC-4	AMEREN ILLINOIS CO-SECURED NOTE			1	1FE	11,933,880	.123	14,845,393	12,000,000	11,946,967			1,544		6.700	6.743	JD	35,733	804,000	06/08/2006	06/15/2036
02361D-AL-4	AMEREN ILLINOIS CO SR SECD NT			1	1FE	569,705	.98	549,938	560,000	564,923			(1,365)		2.700	2.430	MS	5,040	15,120	04/27/2015	09/01/2022
02361D-AL-4	AMEREN ILLINOIS CO SR SECD NT			1	1FE	147,922	.98	147,305	150,000	148,810			302		2.700	2.929	MS	1,350	4,050	12/15/2015	09/01/2022
02361D-AM-2	AMEREN ILLINOIS CO-SECURED			1	1FE	510,526	.107	463,667	430,000	504,181			(1,835)		4.800	3.720	JD	917	20,640	04/27/2015	12/15/2043
02361D-AQ-3	Ameren Illinois Co-SECURED			1	1FE	323,781	100	325,355	325,000	325,785			4		4.150	4.173	MS	3,971	1,461	08/01/2018	03/15/2046
02361D-AR-1	Ameren Illinois Co-SECURED			1	1FE	37,873,662	.91	35,199,338	38,600,000	37,881,721			8,443		3.700	3.806	JD	119,017	1,266,325	07/09/2018	12/01/2047
02361D-AT-7	Ameren Illinois Co-SECURED			1	1FE	5,316,850	.105	5,286,895	5,000,000	5,316,758			(92)		4.500	4.128	MS	28,750	69,000	12/21/2018	03/15/2049
02361D-AT-7	Ameren Illinois Co-SECURED			1	1FE	11,988,840	.105	12,688,548	12,000,000	11,988,296			(544)		4.500	4.506	MS	69,000	28,750	11/05/2018	03/15/2049
02376*-AA-0	American Airlines Group Senior Secured			2	1PL	27,532,929	100	27,627,670	27,532,929	27,532,929					4.140	4.139	JD	50,661	642,756	05/22/2018	06/15/2027
02377*-AA-5	American Airlines Group Senior Secured			2	2FE	37,584,579	.99	37,364,897	37,584,579	37,584,579					4.700	4.699	JD	78,510	996,096	05/22/2018	12/15/2024
02377*-AA-7	American Airlines Group Series 2011-1B(R)			2	2FE	8,754,000	.99	8,745,351	8,754,000	8,754,000					4.870	4.870	AO	86,448		10/18/2018	10/22/2023
02378*-AA-8	American Airlines Group Series 2017-2C P			2	2FE	34,925,455	.99	34,727,951	34,925,455	34,925,455					5.180	5.183	AO	381,929	407,056	07/24/2018	10/15/2023
02378L-AA-1	American Airlines Group Series 2017-1C P			2	2FE	24,000,000	.99	23,860,680	24,000,000	24,000,000					5.180	5.181	FA	469,653	72,520	07/24/2018	08/15/2023
02401*-AB-5	American Assets Trust LP Gtd Senior Note			1	2	26,650,000	.99	26,459,772	26,650,000	26,650,000					4.450	4.450	FMAN	200,948	1,185,925	02/02/2015	02/02/2025
02401*-AC-3	American Assets Trust LP Gtd Senior Note			1	2	32,200,000	.99	32,042,896	32,200,000	32,200,000					4.500	4.500	JAJO	245,525	1,449,000	04/02/2015	04/01/2025
02401*-AE-9	American Assets Trust LP Senior Unsecur			1	2FE	32,150,000	.93	30,105,356	32,150,000	32,150,000					4.240	4.240	MN	374,969	1,363,160	05/23/2017	05/23/2029
025644-AA-3	Ascent Resources - Utica LLC Subordinate			5,8	5	254,457	.137	17,462,085	12,722,831	254,457					4.000	4.000	MS	618,826	665,037	03/01/2016	03/01/2021
025816-BD-0	American Express Co-SENIOR UNSECURED BON			1	1FE	549,511	.96	546,582	565,000	556,503			1,654		2.650	3.059	JD	1,206	14,528	11/27/2018	12/02/2022
025816-BF-5	American Express Co-SENIOR UNSECURED BON			1	1FE	2,302,489	.94	2,219,053	2,355,000	2,306,345			1,143		4.050	4.187	JD	7,418	95,378	12/09/2015	12/03/2042
025816-BK-4	American Express Co-SUBORDINATED NOTE			1	1FE	5,732,755	.97	5,630,835	5,760,000	5,742,549			2,572		3.625	3.682	JD	15,800	208,800	12/02/2014	12/05/2024
025816-DP-1	AMERICAN EXPRESS CREDIT-SR UNSECURED			2	1FE	449,103	.99	447,956	450,000	449,837			248		2.250	2.307	FA	3,825	10,125	12/15/2015	08/15/2019
025816-DT-3	AMERICAN EXPRESS CREDIT-SR UNSECURED			2	1FE	646,250	.98	643,184	650,000	648,761			852		2.375	2.513	MN	1,501	15,438	12/15/2015	05/26/2020
025816-EJ-4	American Express Credit -SENIOR UNSECURE			2	1FE	494,469	.99	493,980	494,000	494,230			(239)		2.912	2.700	FMAN	2,277	3,455	10/22/2018	05/03/2019
02665H-AH-4	AMERICAN HONDA FINANCE-SR UNSECURED			1	1FE	201,962	.99	199,060	200,000	200,343			(546)		2.250	1.970	FA	1,700	4,500	12/15/2015	08/15/2019
026874-AZ-0	AMERICAN INTL GROUP-NOTE			1	2FE	180,763	.108	168,540	155,000	178,341			(836)		6.250	4.946	MN	1,615	9,688	12/09/2015	05/01/2036
026874-CJ-9	AMERICAN INTERNATIONAL G-SENIOR UNSECURE			1	2FE	4,949,995	.103	4,668,870	4,500,000	4,834,682			(92,553)		4.875	2.586	JD	18,281	219,375	09/29/2017	06/01/2022
026874-CW-5	AMERICAN INTL GROUP-SR UNSECURED			1	2FE	194,006	.113	181,555	160,000	191,235			(958)		6.820	5.185	MN	1,394	10,912	12/09/2015	11/15/2037
026874-CY-1	AMERICAN INTERNATIONAL G-SENIOR UNSECURE			1	2FE	437,129	.100	409,494	410,000	432,514			(4,016)		4.125	2.961	FA	6,389	16,913	10/30/2017	02/15/2024
026874-DA-2	AMERICAN INTL GROUP-SR UNSECURED			1	2FE	2,109,255	.89	2,029,249	2,102,707	2,107,097			(1,942)		4.500	4.219	JJ	41,663	125,002	10/30/2017	07/16/2044
026874-DA-2	AMERICAN INTL GROUP-SR UNSECURED			1	2FE	2,467,838	.89	2,325,670	2,606,000	2,468,937			911		4.500	4.861	JJ	53,749	4,725	10/04/2018	07/16/2044
026874-DB-0	AMERICAN INTL GROUP-SENIOR UNSECURED			1	2FE	379,732	.83	332,065	400,000	380,194			209		4.375	4.660	JJ	8,069	17,500	10/20/2016	01/15/2055
026874-DC-8	AMERICAN INTL GROUP-SENIOR UNSECURED			1	2FE	491,872	.85	429,434	500,000	492,581			324		3.875	4.001	JJ	8,934	19,375	10/20/2016	01/15/2035
026874-DE-4	AMERICAN INTL GROUP-SENIOR UNSECURED			1	2FE	323,976	.94	284,605	300,000	321,952			(955)		4.700	4.074	JJ	6,698	14,100	10/20/2016	07/10/2035
026874-DK-0	American International G-SENIOR UNSECURE			1	2FE	7,722,063	.96	7,555,660	7,843,000	7,727,302			5,239		4.200	4.395	AO	82,352	165,865	08/01/2018	04/01/2028
026874-DL-8	American International G-SENIOR UNSECURE			1	2FE	800,247	.91	732,098	800,000	800,241			(7)		4.750	4.748	AO	9,500	16,542	08/01/2018	04/01/2048
026874-DL-8	American International G-SENIOR UNSECURE			1	2FE	997,413	.91	942,576	1,030,000	997,464			51		4.750	4.955	AO	12,231	13,811	10/04/2018	04/01/2048
02752F-AA-0	American Midstream Midla Senior Secured			2	2	52,723,534	.97	51,548,907	52,723,534	52,723,534					3.770	3.770	MJSD	1,010,780	1,960,757	09/30/2016	06/30/2031
029163-AD-4	MUNICH RE AMERICA CORP-SR UNSECURED			1	1FE	874,017	.121	817,286	675,000	827,503			(15,923)		7.450	4.093	JD	2,235	50,288	12/09/2015	12/15/2026
029912-BC-5	AMERICAN TOWER CORP-SENIOR UNSECURED NOT			1	2FE	16,958,355	.102	17,348,979	16,943,000	16,945,711			(2,208)		5.050	5.035	MS	285,207	855,622	12/02/2013	09/01/2020
029912-BE-1	AMERICAN TOWER CORP-SENIOR UNSECURED			1	2FE	583,681	.105	568,339	500,000	546,540			(15,673)		5.900	2.476	MN	4,917	29,500	08/02/2016	11/01/2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
03028P-D*-4	American Transmission Co Senior Note				1	10,969,420		11,043,670	11,000,000	10,972,892		643			4.370	4.387	AO	97,475	480,700	01/01/2013	04/18/2042
030360-AC-5	AMERICAN UNIVERSITY/THE-UNSECURED				1	7,300,000		6,810,832	7,300,000	7,300,000					3.855	3.855	AO	70,354	281,415	10/12/2017	10/01/2047
03040#-AE-2	American Water Capital C Senior Note Ser				1	8,526,000		9,043,818	8,526,000	8,526,000					5.770	5.768	JD	13,665	491,950	01/31/2021	12/21/2021
03040W-AD-7	AMERICAN WATER CAP CORP-SENIOR UNSECURED				1	6,322,814		127,1005	6,036,003	6,105,958		(46,112)			6.593	4.348	AO	66,099	313,102	08/02/2016	10/15/2037
03040W-AJ-4	AMERICAN WATER CAP CORP-SENIOR UNSECURED				1	3,793,084		3,769,477	3,800,000	3,793,687		146			4.300	4.311	JD	13,617	163,400	12/12/2012	12/01/2042
03040W-AJ-4	AMERICAN WATER CAP CORP-SENIOR UNSECURED				1	458,681		396,787	400,000	455,126		(1,513)			4.300	3.438	JD	1,433	17,200	08/02/2016	12/01/2042
03040W-AK-1	AMERICAN WATER CAPITAL C-SR UNSECURED				1	210,456		204,335	200,000	206,772					3.850	3.102	MS	2,567	7,700	12/15/2015	03/01/2024
03040W-AL-9	AMERICAN WATER CAPITAL C-SR UNSECURED				1	6,543,996		98,7981	6,639,000	6,551,108		7,112			3.400	3.641	MS	75,242	112,863	06/06/2018	03/01/2025
03040W-AR-6	American Water Capital C-SENIOR UNSECURE				1	13,225,595		12,736,922	14,175,000	13,235,257		9,662			3.750	4.147	MS	177,188	265,781	06/07/2018	09/01/2047
03040W-AT-2	American Water Capital C-SENIOR UNSECURE				1	10,094,546		9,824,852	10,100,000	10,094,207		(339)			4.200	4.203	MS	167,323		08/06/2018	09/01/2048
03063#-AA-2	Americold Realty Trust Senior Unsecured				2	34,200,000		33,712,000	34,200,000	34,200,000					4.860	4.859	JJ	124,659		12/04/2018	01/08/2029
03073E-AL-9	AmerisourceBergen Corp-SR UNSECURED				1,5	842,229		833,928	855,000	846,397		1,423			3.400	3.607	MM	3,715	29,070	12/09/2015	05/15/2024
03073E-AM-7	AmerisourceBergen Corp-SENIOR UNSECURED				1	8,514,204		95,5033	8,175,083	8,529,878		4,298			3.250	3.313	MS	92,733	278,200	02/17/2015	03/01/2025
03073E-AM-7	AmerisourceBergen Corp-SENIOR UNSECURED				1	12,735,591		95,5033	12,719,369	12,719,016		(4,381)			3.250	3.207	MS	137,475	412,425	02/19/2015	03/01/2025
03073E-AQ-8	AmerisourceBergen Corp-SENIOR UNSECURED				1	5,247,494		85,5483	4,954,957	5,792,000		5,251,437			4.300	4.907	JD	11,069	124,528	07/13/2018	12/15/2047
03076C-AD-8	Ameriprise Financial Inc-SENIOR UNSECURE				1,5	5,864,048		102,0102	5,967,600	5,850,910		(1,877)			7.300	7.265	JD	3,559	427,050	06/03/2009	06/28/2019
03076C-AF-3	AMERIPRISE FINANCIAL INC-SR UNSECURED				1	258,765		102,8623	250,000	255,645					4.000	3.483	AO	2,111	10,000	12/15/2015	10/15/2023
03076C-AG-1	AMERIPRISE FINANCIAL INC-SR UNSECURED				1	153,811		149,936	150,000	152,625		(1,067)			3.700	3.364	AO	1,172	5,550	12/15/2015	10/15/2024
031100-F4-2	Ametek, Inc. Senior Note Ser				2	22,700,000		96,3236	21,865,457	22,700,000					4.450	4.450	FA	384,418	1,010,150	08/14/2015	08/14/2035
031100-F8-4	Ametek, Inc. Senior Note Ser				2	6,000,000		99,1388	5,948,328	6,000,000					3.960	3.959	FA	90,420	237,600	08/14/2015	08/14/2025
031100-G*-5	AMETEK, Inc. Senior Note				2	43,852,000		95,9868	43,969,633	45,808,000				(2,280,000)	1.340	1.340	AO	103,257	633,114	10/31/2016	10/31/2026
031100-N*-7	AMETEK, Inc. Senior Secured Series T				2Z	28,442,500		97,4500	27,899,935	28,630,000				187,500	1.710	1.710	JD	24,340		12/13/2018	12/13/2027
031162-AI-0	AMGEN INC-SR UNSECURED				2FE	586,537		118,4741	500,000	579,160		(2,560)			6.375	5.045	JD	2,656	31,875	12/15/2015	06/01/2037
031162-AZ-3	Amgen Inc-SENIOR NOTE				1	9,687,281		100,2000	8,667,300	8,650,000		(179,488)			5.700	3.587	FA	205,438	493,050	01/01/2013	02/01/2019
031162-BA-7	Amgen Inc-SENIOR UNSECURED NOTE				1	22,059,337		119,4447	23,381,304	19,575,000		(59,647)			6.400	5.485	FA	522,000	1,252,800	05/11/2015	02/01/2039
031162-BB-5	Amgen Inc-SENIOR UNSECURED NOTE				1	4,191,073		101,6051	3,743,133	3,684,000		(73,569)			4.500	2.407	MS	48,813	165,780	01/01/2013	03/15/2020
031162-BC-3	Amgen Inc-SENIOR NOTE				1	30,977,277		113,8909	32,988,504	28,965,000		(48,141)			5.750	5.266	MS	490,394	1,665,488	12/09/2015	03/15/2040
031162-BE-9	AMGEN INC-SENIOR UNSECURED				1	1,725,131		101,8717	1,625,415	1,721,338		(2,386)			4.950	4.529	AO	20,109	80,438	05/16/2017	10/01/2041
031162-BH-2	Amgen Inc-SR UNSECURED				1	1,462,408		112,1656	1,351,596	1,205,000		(5,960)			5.650	4.295	JD	3,026	68,083	04/27/2015	06/15/2042
031162-BK-5	Amgen Inc-SENIOR UNSECURED NOTE				1	8,403,644		103,0151	8,663,566	8,410,000		116			5.150	5.155	MM	55,342	433,115	01/08/2014	11/15/2041
031162-BK-5	Amgen Inc-SENIOR UNSECURED NOTE				1	5,218,124		103,0151	4,921,029	4,777,000		(10,477)			5.150	4.538	MM	31,435	246,016	05/16/2017	11/15/2041
031162-BN-9	AMGEN INC-SENIOR UNSECURED				1	20,319,560		100,6863	19,734,521	19,600,000		(20,475,527)			3.625	2.855	MM	90,786	710,500	12/13/2016	05/15/2022
031162-BP-4	Amgen Inc-SR UNSECURED				1	2,737,004		109,5503	2,533,899	2,313,000		(9,339)			5.375	4.240	MM	15,886	124,324	05/11/2015	05/15/2043
031162-BZ-2	AMGEN INC-SENIOR UNSECURED				1	1,189,761		93,5188	1,122,226	1,189,983		166			4.400	4.454	MM	8,800	47,019	08/01/2018	05/01/2045
031162-BZ-2	AMGEN INC-SENIOR UNSECURED				1	24,860,714		93,5188	21,556,084	23,050,000		(37,987)			4.400	3.936	MM	169,033	1,014,200	10/30/2017	05/01/2045
031162-CF-5	AMGEN INC-SENIOR UNSECURED				1,5	1,885,121		94,2188	1,860,821	1,975,000		1,079			4.663	4.939	JD	4,093	92,105	01/10/2017	06/15/2051
031162-CF-5	AMGEN INC-SENIOR UNSECURED				1,5	1,723,973		94,2188	1,545,188	1,640,000		(1,040)			4.663	4.367	JD	3,399	55,839	08/01/2018	06/15/2051
031162-CJ-7	AMGEN INC-SENIOR UNSECURED				1	31,378,943		90,8700	31,000,288	34,115,000		31,880,626			2.600	3.588	FA	325,230	886,990	12/13/2016	08/19/2026
032095-AB-7	Amphenol Corp-SENIOR UNSECURED NOTE				1,5	10,099,673		102,4510	10,142,645	9,900,000		(9,900,851)			4.000	3.861	FA	165,000	396,000	03/28/2012	02/01/2022
032095-AB-7	Amphenol Corp-SENIOR UNSECURED NOTE				1,5	4,641,519		102,4510	4,769,092	4,650,012		1,451			4.000	4.036	FA	77,583	186,200	12/02/2013	02/01/2022
032095-AC-5	AMPHENOL CORP-SENIOR UNSECURED NOTE				1,5	22,465,350		99,9343	22,485,217	22,500,000		22,499,157			2.550	2.583	JJ	240,656	573,750	01/23/2014	01/30/2019
032095-AE-1	AMPHENOL CORP-SR UNSECURED				1,5	4,924,314		99,1035	4,732,193	4,775,000		4,839,741			3.125	2.586	MS	43,937	149,219	04/14/2015	09/15/2021
032510-AC-3	ANADARKO PETROLEUM CORP-SENIOR UNSECURED				1	3,728,565		103,3244	3,301,215	3,195,000		3,658,696			6.200	5.074	MS	58,327	198,090	04/18/2012	03/15/2040
032511-AL-1	ANADARKO PETROLEUM CORP-SENIOR UNSECURED				2FE	223,391		107,9842	200,000	219,814		(11,975)			7.000	5.568	MM	1,789	14,000	10/20/2016	11/15/2027
032511-AY-3	ANADARKO PETROLEUM CORP-SENIOR UNSECURED				1	17,326,673		107,9996	17,236,732	15,960,000		17,326,673			6.450	6.450	MS	303,107	1,029,420	05/11/2015	09/15/2036
032511-BB-2	ANADARKO PETROLEUM CORP-SR UNSECURED				2FE	396,488		41,7049	454,584	1,090,000		21,800			0.000	4.921	N/A			12/15/2015	10/10/2036
032511-BF-3	ANADARKO PETROLEUM CORP-SENIOR UNSECURED				1	1,516,580		101,3947	1,216,736	1,200,000		(51,836)			6.950	2.499	JD	3,707	83,400	01/01/2013	06/15/2019
032511-BG-1	ANADARKO PETROLEUM CORP-SENIOR UNSECURED				1	4,080,641		117,6094	3,463,597	2,945,000		(4,016,732)			7.950	5.070	JD	10,406	234,128	10/30/2017	06/15/2039
032511-BN-6	ANADARKO PETROLEUM CORP-SENIOR UNSECURED				1	59,814		104,7339	62,840	60,000		59,850			5.550	5.591	MS	981	3,330	03/14/2016	03/15/2026
032511-BN-6	ANADARKO PETROLEUM CORP-SENIOR UNSECURED																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
034446-AA-4	Andrew Solar LLC Senior Secured	2		2	2	3,248,177	102.7525	3,337,583	3,248,177	3,248,177					4.080	4.139	JAJO	247,051	138,454	11/12/2015	10/05/2030
034626-AA-1	Angel Solar LLC Senior Secured	2		2	2	3,147,951	102.7537	3,234,636	3,147,951	3,147,951					4.080	4.139	JAJO	239,737	134,325	11/12/2015	10/05/2030
035229-BP-7	ANHEUSER-BUSCH COS LLC-NOTE	1		2FE	2FE	5,043,100	114.3721	5,718,606	5,000,000	5,022,056		(1,788)			6.750	6.683	JD	15,000	337,500	12/15/2027	12/15/2027
035229-BO-5	ANHEUSER-BUSCH COS LLC-DEBENTURE	1		2FE	2FE	3,720,895	112.2316	4,444,372	3,960,000	3,831,979		9,932			6.500	6.990	JJ	128,700	257,400	05/18/1999	01/01/2028
035229-CG-6	ANHEUSER-BUSCH COS LLC-BOND	1		2FE	2FE	4,558,387	117.8216	4,934,367	4,188,000	4,456,259		(14,807)			6.800	6.043	JJ	131,317	284,784	06/03/2010	01/15/2031
035229-CJ-0	ANHEUSER-BUSCH COS LLC-SR UNSECURED	1		2FE	2FE	1,202,952	118.9531	1,141,950	960,000	1,173,159		(11,135)			6.800	4.583	FA	27,200	65,280	08/02/2016	08/20/2032
035229-CN-1	ANHEUSER-BUSCH COS LLC-BOND	1		2FE	2FE	20,785,269	113.0662	19,978,792	17,670,000	20,399,467		(60,809)			6.500	5.322	FA	478,562	1,148,550	05/10/2012	02/01/2043
035229-CQ-4	ANHEUSER-BUSCH COS LLC-DEBENTURE	1		2FE	2FE	3,661,076	110.2463	3,748,376	3,400,000	3,610,958		(10,750)			5.950	5.295	JJ	93,283	202,300	08/02/2016	01/15/2033
035229-DC-4	ANHEUSER-BUSCH COS LLC-SR UNSECURED	1		2FE	2FE	1,466,308	111.3799	1,269,731	1,140,000	1,440,620		(10,385)			6.450	4.360	MS	24,510	73,530	08/02/2016	09/01/2037
03522A-AD-2	Anheuser-Busch Cos LLC /-SENIOR UNSECURE	1,5		2FE	2FE	636,485	94.5548	581,512	615,000	636,124		(361)			3.650	3.088	FA	9,353	182,269	11/13/2018	02/01/2026
03522A-AD-2	Anheuser-Busch Cos LLC /-SENIOR UNSECURE	1,5		2FE	2FE	38,067,298	94.5548	36,096,304	38,175,000	38,069,556		2,259			3.650	3.694	FA	580,578		12/10/2018	02/01/2026
03522A-AE-0	Anheuser-Busch Cos LLC /-SENIOR UNSECURE	1,5		2FE	2FE	5,708,089	92.7398	4,845,653	5,225,000	5,705,443		(2,645)			4.700	3.935	FA	102,323		11/13/2018	02/01/2036
03522A-AF-7	Anheuser-Busch Cos LLC /-SENIOR UNSECURE	1,5		2FE	2FE	34,745,179	92.7385	32,347,206	34,880,000	34,746,597		1,418			4.900	4.925	FA	712,133		11/13/2018	02/01/2046
03522A-AF-7	Anheuser-Busch Cos LLC /-SENIOR UNSECURE	1,5		2FE	2FE	58,924,104	92.7385	48,678,464	52,490,000	58,907,654		(16,451)			4.900	4.136	FA	1,071,671		11/13/2018	02/01/2046
03523T-AP-3	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1		2FE	2FE	9,904,153	107.2602	9,442,112	8,803,000	9,783,518		(26,063)			6.375	5.460	JJ	258,772	561,191	08/02/2016	01/15/2040
03523T-BF-4	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1,5		2FE	2FE	7,864,334	128.5771	8,079,782	6,284,000	7,720,027		(42,024)			8.200	6.111	JJ	237,605	515,288	08/02/2016	01/15/2039
03523T-BJ-6	ANHEUSER-BUSCH INBEV WOR-SR UNSECURED	1,5		2FE	2FE	998,430	126.6943	924,868	730,000	996,844		(1,586)			8.000	5.127	MN	7,462	5,354	10/04/2018	11/15/2039
03523T-BP-2	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1		2FE	2FE	4,440,174	95.4971	4,224,948	4,425,000	4,439,428		(3,922)			2.500	2.402	JJ	51,010	108,896	09/21/2017	07/15/2022
03523T-BO-0	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1		2FE	2FE	7,151,718	78.3905	5,722,510	7,300,000	7,164,429		3,220			3.750	3.867	JJ	126,229	273,750	08/02/2016	07/15/2042
03523T-BT-4	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1		2FE	2FE	1,853,288	86.3561	1,645,505	1,905,487	1,854,225		885			4.439	4.602	AO	19,971	92,578	08/21/2017	10/06/2048
03523T-BT-4	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1		2FE	2FE	333,577	86.3561	320,237	324,513	333,370		(208)			4.439	4.274	AO	3,401	21,608	08/21/2017	10/06/2048
035240-AD-2	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1		2FE	2FE	262,578	100.0737	250,184	250,000	257,727		(2,410)			3.750	2.684	JJ	4,323	9,375	12/16/2016	01/15/2022
035240-AE-0	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1		2FE	2FE	7,656,648	117.5071	8,031,608	6,835,000	7,575,871		(40,270)			6.625	5.433	FA	171,065	452,819	12/16/2016	08/15/2033
035240-AG-5	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE	1		2FE	2FE	2,680,372	93.3307	2,169,940	2,325,000	2,663,035		(8,871)			4.950	3.979	JJ	53,068	115,088	05/16/2017	01/15/2042
035240-AM-2	Anheuser-Busch InBev Wor-SENIOR UNSECURE	1		2FE	2FE	706,726	89.2197	633,460	710,000	706,775		49			4.375	4.410	AO	6,558	5,953	08/01/2018	04/15/2038
035240-AN-0	Anheuser-Busch InBev Wor-SENIOR UNSECURE	1		2FE	2FE	784,064	89.6260	699,083	780,000	784,044		(20)			4.600	4.567	AO	7,575		08/01/2018	04/15/2048
035240-AN-0	Anheuser-Busch InBev Wor-SENIOR UNSECURE	1		2FE	2FE	794,865	89.6260	752,858	840,000	794,965		100			4.600	4.948	AO	8,157	12,344	10/04/2018	04/15/2048
035240-AP-5	Anheuser-Busch InBev WOR-SENIOR UNSECURE	1		2FE	2FE	188,397	87.0229	174,046	200,000	188,404		7			4.750	5.092	AO	2,006	79	10/04/2018	04/15/2058
035242-AA-4	ANHEUSER-BUSCH INBEV FIN-SR UNSECURED	1		2FE	2FE	192,055	95.1784	190,357	200,000	195,234		1,085			2.625	3.258	JJ	2,392	5,250	12/15/2015	01/17/2023
035242-AB-2	ANHEUSER-BUSCH INBEV FIN-SR UNSECURED	1		2FE	2FE	2,208,770	81.7064	1,914,381	2,343,000	2,216,951		2,843			4.000	4.360	JJ	42,695	93,720	12/09/2015	01/17/2043
035242-AB-3	ANHEUSER-BUSCH INBEV FIN-SR UNSECURED	1		2FE	2FE	324,373	88.9597	256,204	288,000	321,650		(781)			4.625	3.891	FA	5,550	13,320	05/11/2015	02/01/2044
03666H-AA-9	Antares Holdings LP-SENIOR UNSECURED	1		2FE	2FE	25,373,731	98.8543	25,084,288	25,375,000	25,372,347		(1,384)			6.000	6.000	FA	655,521		07/19/2018	08/15/2023
03674P-AL-7	ANTERO RESOURCES CORP-SENIOR UNSECURED N	1		3FE	3FE	200,000	96.5000	193,000	200,000	200,000					5.375	5.373	MN	1,792	(10,347)	05/23/2014	11/01/2021
036752-AB-9	Anthem Inc-SENIOR UNSECURED	1		2FE	2FE	319,831	95.5427	320,068	335,000	320,377		546			3.650	4.243	JD	1,019	3,906	08/01/2018	12/01/2027
036752-AF-0	Anthem Inc-SENIOR UNSECURED	1		2FE	2FE	321,178	97.5238	321,828	330,000	321,948		769			2.950	3.623	JD	811	3,110	08/01/2018	12/01/2022
036752-AH-6	Anthem Inc-SENIOR UNSECURED	1		2FE	2FE	370,127	95.3832	357,687	375,000	370,148		21			4.550	4.631	MS	5,688	1,184	08/01/2018	03/01/2048
037389-AU-7	AON CORP-SENIOR UNSECURED	1		2FE	2FE	4,434,181	116.5325	4,220,806	3,622,000	4,422,795		(10,350)			6.250	4.626	MS	57,223	175,355	07/19/2018	09/30/2040
037389-AW-3	AON CORP-SENIOR UNSECURED NOTE	1		2FE	2FE	9,547,348	102.9172	8,850,883	8,600,000	8,865,205		(145,651)			5.000	3.169	MS	108,694	430,000	07/02/2015	09/30/2020
037411-AP-0	Apache Corp-SENIOR UNSECURED NOTE	1		2FE	2FE	5,897,934	101.8554	4,583,491	4,500,000	4,615,495		(226,848)			7.625	2.430	JJ	171,563	343,125	01/01/2013	07/01/2019
037411-AR-6	Apache Corp-SENIOR UNSECURED NOTE	1		2FE	2FE	11,862,233	102.4617	9,933,666	9,695,000	11,495,790		(63,817)			6.000	4.486	JJ	268,228	581,700	08/02/2016	01/15/2037
037411-AW-5	Apache Corp-SENIOR UNSECURED NOTE	1		2FE	2FE	1,787,381	90.5735	1,574,168	1,738,000	1,783,161		(1,250)			5.100	4.898	MS	29,546	92,522	08/02/2016	09/01/2040
037411-AW-5	Apache Corp-SENIOR UNSECURED NOTE	1		2FE	2FE	339,051	90.5735	314,290	347,000	339,088		37			5.100	5.277	MS	5,899		10/04/2018	09/01/2040
037411-AY-1	Apache Corp-SR UNSECURED	1		2FE	2FE	262,503	92.3998	226,380	245,000	261,166		(395)			5.250	4.765	FA	5,359	9,884	08/01/2018	02/01/2042
037411-BA-2	Apache Corp-SR UNSECURED	1		2FE	2FE	1,352,793	85.7760	1,106,511	1,290,000	1,348,413		(1,369)			4.750	4.439	AO	12,936	60,790	10/30/2017	04/15/2043
037411-BA-2	Apache Corp-SR UNSECURED	1		2FE	2FE	1,901,329	85.7760	1,681,210	1,960,000	1,904,069		1,105			4.750	4.952	AO	19,654	90,606	08/01/2018	04/15/2043
037411-BC-8	Apache Corp-SR UNSECURED	1		2FE	2FE	3,891,610	80.5145	3,252,787	4,040,000	3,896,249		2,072			4.250	4.485	JJ	179,173	154,476	10/04/2018	01/15/2044
037411-BD-6	Apache Corp-SENIOR UNSECURED NOTE	1		2FE	2FE	295,893	94.4604	283,381	300,000	298,153		426			2.625						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
037833-AR-1	APPLE INC-SR UNSECURED			1	1FE	356,856	100.1222	350,428	350,000	353,103		(1,271)			2.850	2.458	MM	1,524	9,975	12/15/2015	05/06/2021
037833-AS-9	APPLE INC-SR UNSECURED			1	1FE	1,102,912	100.4740	1,063,015	1,058,000	1,086,973		(4,954)			3.450	2.892	MM	5,577	36,501	12/15/2015	05/06/2024
037833-AT-7	APPLE INC-SR UNSECURED			1	1FE	1,845,819	103.2931	1,771,476	1,715,000	1,840,332		(2,827)			4.450	3.989	MM	11,660	76,318	05/16/2017	05/06/2044
037833-AZ-3	APPLE INC-SR UNSECURED			1	1FE	142,761	94.4360	141,654	150,000	144,937		742			2.500	3.111	FA	1,479	3,750	12/15/2015	02/09/2025
037833-BA-7	APPLE INC-SR UNSECURED			1	1FE	2,993,257	88.5474	3,032,747	3,425,000	3,016,781		8,352			3.450	4.202	FA	46,609	118,163	10/20/2016	02/09/2045
037833-BF-6	APPLE INC-SR UNSECURED			1	1FE	4,081,720	98.8857	3,955,429	4,000,000	4,060,192		(17,046)			2.700	2.233	MM	14,400	108,000	09/21/2017	05/13/2022
037833-BG-4	APPLE INC-SR UNSECURED			1	1FE	522,256	98.3476	506,490	515,000	520,125		(722)			3.200	3.027	MM	2,197	16,480	12/15/2015	05/13/2025
037833-BH-2	APPLE INC-SR UNSECURED			1	1FE	3,364,479	101.5568	3,209,195	3,160,000	3,355,484		(4,154)			4.375	3.992	MM	18,433	138,250	05/16/2017	05/13/2045
037833-BI-9	APPLE INC-SENIOR UNSECURED			1	1FE	6,105,565	105.1607	5,683,938	5,405,000	6,042,813		(27,507)			4.500	3.554	FA	86,480	239,713	10/04/2018	02/23/2036
037833-BJ-7	APPLE INC-SENIOR UNSECURED			1	1FE	56,003,725	105.8538	54,293,489	51,291,000	55,789,452		(90,662)			4.650	4.105	FA	848,011	2,345,977	10/04/2018	02/23/2046
037833-BK-5	APPLE INC-SENIOR UNSECURED			1	1FE	194,858	97.6127	195,225	200,000	194,880		22			3.250	3.660	FA	2,311	2,311	12/17/2018	02/23/2026
037833-BL-2	APPLE INC-SENIOR UNSECURED			1	1FE	1,793,542	92.4231	1,663,616	1,800,000	1,794,858		606			2.450	2.491	FA	18,008	40,849	10/20/2016	08/04/2026
037833-CO-0	APPLE INC-SENIOR UNSECURED			1	1FE	25,904,697	92.9983	23,171,444	24,916,000	25,858,086		(20,191)			3.850	3.629	FA	391,700	959,266	10/30/2017	08/04/2046
037833-CH-1	APPLE INC-SENIOR UNSECURED			1	1FE	1,042,204	99.6512	1,005,480	1,009,000	1,041,230		(626)			4.250	4.056	FA	16,915	42,883	05/16/2017	02/09/2047
037833-DG-2	Apple Inc-Senior Unsecured			1	1FE	25,248,700	91.8935	24,443,670	26,600,000	25,260,484		11,784			3.750	4.047	MM	133,000	498,750	07/20/2018	11/13/2047
03784*-AA-4	Apple One LLC Senior Secured			2	2	3,321,374	102.7545	3,412,861	3,321,374	3,321,374					4.080	4.139	JAJJ	252,687	141,613	11/12/2015	10/05/2030
038222-AF-2	APPLIED MATERIALS INC-NOTE			1	1FE	106,799	102.9465	102,947	100,000	103,180		(1,232)			4.300	2.947	JD	191	4,167	12/15/2015	06/15/2021
038222-AG-0	APPLIED MATERIALS INC-SENIOR UNSECURED			1	1FE	60,483,681	117.9764	62,433,116	52,920,000	60,280,139		(146,683)			5.850	4.809	JD	137,592	3,147,820	06/01/2018	06/15/2041
038222-AM-7	APPLIED MATERIALS INC-SENIOR UNSECURED			1	1FE	9,680,415	97.7689	9,087,616	9,295,000	9,688,316		(7,128)			4.350	4.106	AO	101,083	458,708	05/16/2017	04/01/2047
038222-AM-7	APPLIED MATERIALS INC-SENIOR UNSECURED			1	1FE	24,922,100	97.7689	24,442,217	25,000,000	24,919,728		682			4.350	4.370	AO	271,875	870,000	12/20/2018	04/01/2047
038336-DF-7	AptarGroup, Inc. Senior Note Ser			2	2	10,000,000	97.3457	9,734,570	10,000,000	10,000,000					3.490	3.490	FA	121,181	354,000	02/26/2015	02/26/2024
038336-D8-9	AptarGroup, Inc. Senior Note Ser			2	2	8,000,000	97.4536	7,796,288	8,000,000	8,000,000					3.490	3.489	JD	11,633	283,200	12/16/2014	12/16/2023
038336-E*-0	AptarGroup, Inc. Senior Note Ser			2	2	12,000,000	96.9745	11,636,940	12,000,000	12,000,000					3.610	3.609	JD	18,050	439,188	12/16/2014	12/16/2025
038336-E8-8	AptarGroup, Inc. Senior Note Ser			1	2	21,400,000	96.2214	20,591,380	21,400,000	21,400,000					3.610	3.610	FA	268,236	783,230	02/26/2015	02/26/2026
03840#-AD-6	Aquarion Water Company O Senior Note			1	1	23,150,000	99.8514	23,115,599	23,150,000	23,150,000					4.290	4.290	FA	375,194	993,135	08/15/2012	08/15/2032
038522-A0-1	Aramark Services Inc-SENIOR UNSECURED			1	3FE	2,220,000	93.2500	2,070,150	2,220,000	2,220,000					5.000	5.000	FA	46,250	59,508	01/10/2018	02/01/2028
038790-AD-6	Vereit Operating Partner-SR UNSECURED			1	2FE	9,067,331	99.9398	9,094,520	9,100,000	9,099,056		7,883			3.000	3.089	FA	109,958	273,000	10/14/2014	02/06/2019
03938J-AA-7	ARCH CAPITAL GRP US INC-SENIOR UNSECURED			1	2FE	605,862	104.7415	576,078	550,000	603,158		(1,158)			5.144	4.492	MM	28,292		08/02/2016	11/01/2043
03939C-AA-1	ARCH CAPITAL FINANCE LLC-SENIOR UNSECURE			1	2FE	125,000	99.8552	124,819	125,000	125,000					4.011	4.011	JD	223	5,014	11/29/2016	12/15/2026
03939C-AB-9	ARCH CAPITAL FINANCE LLC-SENIOR UNSECURE			1	2FE	880,986	104.4240	835,392	800,000	878,694		(1,453)			5.031	4.409	JD	1,789	40,248	05/16/2017	12/15/2046
039483-AN-2	Archer-Daniels-Midland C-NOTE			1	1FE	10,371,000	118.5116	11,851,160	10,000,000	10,191,035		(15,370)			6.750	6.465	JD	30,000	675,000	09/02/1998	12/15/2027
039483-AT-9	Archer-Daniels-Midland C-NOTE			1	1FE	3,893,330	116.7191	4,085,169	3,500,000	3,791,024		(14,345)			5.935	5.086	AO	51,931	207,725	06/08/2010	10/01/2032
039483-BB-7	Archer-Daniels-Midland C-SENIOR UNSECURE			1	1FE	17,460,084	103.1891	15,958,192	15,465,000	16,041,089		(255,049)			4.479	2.696	MS	230,892	692,677	12/15/2015	03/01/2021
039483-BC-5	Archer-Daniels-Midland C-SENIOR UNSECURE			1,5	1FE	14,162,142	119.1250	13,581,439	11,401,000	14,064,554		(15,798)			5.765	4.143	MS	219,089	657,268	02/21/2017	03/01/2041
039483-BE-1	Archer-Daniels-Midland C-SR UNSECURED			1	1FE	1,271,679	101.0269	1,136,553	1,125,000	1,259,168		(3,566)			4.535	3.760	MS	13,463	51,019	04/27/2015	03/26/2042
039483-BH-4	Archer-Daniels-Midland C-SR UNSECURED			1	1FE	12,504,708	94.2641	11,692,514	12,404,000	12,497,992		(3,392)			4.016	3.966	AO	103,780	467,299	10/04/2018	04/16/2043
039483-BM-3	ARCHER-DANIELS-MIDLAND C-SENIOR UNSECURE			1	1FE	38,162,302	90.3019	35,154,548	38,930,000	38,170,912		9,090			3.750	3.862	MS	429,852	1,374,852	06/06/2018	09/15/2047
039688-AJ-1	Arctic Slope Regional Co Senior Note Ser			2	2	51,150,000	92.2119	47,166,387	51,150,000	51,150,000					3.620	3.620	JD	51,434	1,851,630	12/21/2016	12/21/2026
04010L-AP-8	ARES CAPITAL CORP-UNSECURED NOTE			1	2FE	89,640	100.2098	90,189	90,000	89,922		71			3.875	3.875	JJ	1,608	3,488	11/18/2014	01/15/2020
04010L-AP-8	ARES CAPITAL CORP-UNSECURED NOTE			1	2FE	248,136	100.2098	245,514	245,000	246,542		(1,521)			3.875	3.202	JJ	4,378	(32,050)	01/10/2018	01/15/2020
04015C-AA-6	ARES FINANCE CO LLC-UNSECURED NOTE			1	2FE	103,181	95.5510	100,329	105,000	103,854		171			4.000	4.214	AO	968	4,200	10/01/2014	10/08/2024
042735-AK-6	Arrow Electronics Inc-DEBTURE			1	2FE	15,961,104	115.5073	17,454,315	15,111,000	15,782,327		(70,640)			7.500	6.720	JJ	522,589	1,133,325	08/02/2016	01/15/2027
042735-BA-7	Arrow Electronics Inc-SENIOR UNSECURED N			1	2FE	14,578,131	102.8277	14,277,625	13,885,000	13,999,157		(87,548)			6.000	5.302	AO	208,275	833,100	12/02/2013	04/01/2020
042735-BC-3	Arrow Electronics Inc-SENIOR UNSECURED N			1	2FE	127,464	101.2753	131,658	130,000	128,721		270			4.500	4.761	MS	1,950	5,850	12/02/2013	03/01/2023
042735-BD-1	Arrow Electronics Inc-SR UNSECURED			1	2FE	79,393	98.6560	78,925	80,000	79,700		85			3.500	3.622	AO	700	2,800	02/23/2015	04/01/2022
042735-BF-6	ARROW ELECTRONICS INC-SENIOR UNSECURED			1	2FE	7,313,784	91.0917	6,690,685	7,345,000	7,317,752		2,491			3.875	3.924	JJ	133,613	284,619	06/01/2017	01/12/2028
042735-BG-4	ARROW ELECTRONICS INC-SENIOR UNSECURED			1	2FE	7,415,570	93.1110	6,950,735	7,423,311	7,423,311		6,158			3.250	3.358	MS	76,153	242,219	07/27/2018	09/08/2024
04317#-AM-0	Arthur J. Gallagher & Co Senior Note Ser			2	2	54,100,000	98.2768														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
045487-AB-1	ASSOC BANC-CORP-SUBORDINATED NOTE			2	2FE	224,206		100,5523	226,243	225,000		224,499			4.250	4.292	JJ	4,409	9,563	11/05/2014	01/15/2025
04650N-AB-0	AT&T Inc-SENIOR UNSECURED NOTE			1	2FE	14,576,055		97,1470	13,392,000	14,486,798		14,486,798			5.350	4.739	MS	238,824	716,472	08/02/2016	09/01/2040
04685A-2B-6	ATHENE GLOBAL FUNDING-SECURED			1	1FE	581,567		101,0240	585,939	580,000		581,323			4.000	3.919	JJ	10,053	22,667	05/02/2018	01/25/2022
048770-AB-0	Atlantic Oklahoma Wind, Senior Secured N			1	2Z	26,918,000		101,8441	27,414,395	26,918,000		26,918,000			4.780	4.782	MJSD	35,741		12/21/2018	12/31/2037
049560-AK-1	ATMOS ENERGY CORP-SENIOR UNSECURED BOND			1	1FE	2,725,538		113,7895	2,503,369	2,200,000		2,656,514			5.500	4.062	JD	5,378	121,000	01/01/2013	06/15/2041
049560-AM-7	ATMOS ENERGY CORP-SR UNSECURED			1	1FE	485,421		96,4649	477,501	495,000		485,971			4.125	4.242	AO	4,311	20,419	12/09/2015	10/15/2044
049560-AP-0	Atmos Energy Corp-SENIOR UNSECURED			1	1FE	28,755,211		100,4761	29,037,594	28,900,000		28,754,127			4.300	4.330	AO	300,319		10/01/2018	10/01/2048
05205#-AA-6	Aurora Parts & Accessori Senior Sub Note			2	5Z	3,952,600		96,0634	3,797,002	3,952,600		3,952,600			11.000	11.001	FMAN	111,930	436,812	08/17/2015	02/17/2022
05205#-AD-0	Aurora Parts & Accessori Junior Sub Note			2	5Z	27,034		98,1675	26,539	27,034		27,034			14.000	14.018	FMAN	1,161		08/30/2018	08/17/2022
05237*-AF-1	Austin Powder Holdings C Senior Note Ser			1	2PL	23,400,000		103,5013	24,219,304	23,400,000		23,400,000			4.750	4.749	MN	741,000	1,111,500	05/01/2013	05/01/2025
05237*-AG-9	Austin Powder Holdings C Senior Note Ser			1	2PL	9,770,000		102,4462	10,008,994	9,770,000		9,770,000			4.600	4.599	MN	282,136	449,420	05/14/2015	05/15/2024
05237*-AH-7	Austin Powder Holdings C Senior Note Ser			1	2PL	14,850,000		102,4204	15,209,429	14,850,000		14,850,000			4.640	4.639	FA	260,304	689,040	02/12/2015	02/13/2026
053015-AD-5	Automatic Data Processin-SR UNSECURED			1	1FE	150,605		99,4521	149,178	150,000		150,217			2.250	2.158	MS	994	3,375	12/15/2015	09/15/2020
053015-AE-3	AUTOMATIC DATA PROCESSING-SR UNSECURED			1	1FE	841,405		99,1897	818,315	825,000		836,682			3.375	3.131	MS	8,198	27,844	12/15/2015	09/15/2025
05329W-AM-4	AutoNation Inc-SR UNSECURED			1,5	2FE	2,890,227		96,6481	2,802,794	2,900,000		2,892,799			4.500	4.542	AO	32,625	117,394	09/16/2015	10/01/2025
05330K-AA-3	AUTO METRO PUERTO RICO-SECURED BOND			1	2FE	9,048,003		87,6321	8,360,102	9,540,000		9,162,532			6.750	7.368	MJSD	163,451	641,724	10/09/2013	06/30/2035
053332-AP-7	AUTOZONE INC-SENIOR UNSECURED			1	2FE	196,652		97,1255	184,538	190,000		194,388			3.125	2.553	JJ	2,738	5,938	08/02/2016	07/15/2023
053332-AR-3	AUTOZONE INC-SR UNSECURED			1	2FE	485,018		95,2084	476,042	500,000		499,339			3.250	3.632	AO	3,431	16,250	12/15/2015	04/15/2025
05348E-AP-4	AVALONBAY COMMUNITIES IN-SENIOR UNSECURE			1	1FE	4,991,700		101,1093	5,055,465	5,000,000		4,998,084			3.950	3.969	JJ	91,069	197,500	11/09/2010	01/15/2021
05348E-AR-0	AVALONBAY COMMUNITIES IN-SENIOR UNSECURE			2	1FE	6,647,740		97,7784	6,551,150	6,700,000		6,676,413			2.850	2.939	MS	56,224	190,950	12/05/2012	03/15/2023
05348E-AS-8	AVALONBAY COMMUNITIES IN-SENIOR UNSECURE			1	1FE	3,889,392		100,5740	3,922,386	3,900,000		3,896,951			3.625	3.669	AO	35,344	141,375	09/16/2013	10/01/2020
05348E-AU-3	AVALONBAY COMMUNITIES IN-SR UNSECURED			1	1FE	8,878,002		99,4010	8,891,419	8,945,000		8,902,454			3.500	3.590	MN	40,004	313,075	11/12/2014	11/15/2024
05348E-AV-1	AVALONBAY COMMUNITIES-SENIOR UNSECURED			1	1FE	422,459		98,3458	393,383	400,000		416,669			3.450	2.712	JD	1,150	13,800	08/02/2016	06/01/2025
05348E-AW-9	AVALONBAY COMMUNITIES IN-SR UNSECURED			1	1FE	5,123,244		98,6017	5,068,129	5,140,000		5,127,712			3.500	3.539	MN	22,987	179,900	11/04/2015	11/15/2025
05348E-AZ-2	AVALONBAY COMMUNITIES-SENIOR UNSECURED			1	1FE	6,772,460		91,9680	6,253,825	6,800,000		6,773,349			3.900	3.923	AO	55,987	265,200	09/26/2016	10/15/2046
053611-AF-6	AVERY DENNISON CORP-UNSECURED NOTE			1	2FE	1,698,827		102,1999	1,737,398	1,700,000		1,699,665			5.375	5.384	AO	19,290	91,375	04/08/2010	04/15/2020
053611-AG-4	AVERY DENNISON CORP-SENIOR UNSECURED NOT			1	2FE	9,355,474		98,8450	9,261,775	9,370,000		9,362,699			3.350	3.369	AO	66,267	311,844	12/02/2013	04/15/2023
05367A-AA-1	AVIATION CAPITAL GROUP-SENIOR UNSECURED			1	2FE	590,625		105,1661	525,830	500,000		541,820			7.125	2.322	AO	7,521	35,625	10/20/2016	10/15/2020
05369A-AA-9	Aviation Capital Group L-SENIOR UNSECURE			1	2FE	28,942,386		90,3319	28,132,965	31,144,000		29,043,021			3.500	4.431	MN	181,673	545,020	07/19/2018	11/01/2027
053807-AT-0	Avnet Inc-SENIOR UNSECURED			1,5	2FE	104,768		100,5821	105,611	105,000		104,857			3.750	3.799	JD	4,125	11,929	11/29/2016	12/01/2021
053807-AT-0	Avnet Inc-SENIOR UNSECURED			1,5	2FE	60,436		100,5821	60,349	60,000		60,383			3.750	3.511	JD	188	1,125	07/27/2018	12/01/2021
054561-AK-1	AXA Equitable Holdings I-SENIOR UNSECURE			1,5	2FE	16,846,810		88,7032	15,789,162	17,800,000		16,854,319			5.000	5.361	AO	175,528	445,000	05/18/2018	04/20/2048
05502F-AA-6	AZUL INVESTMENTS LLP-SENIOR UNSECURED			1	4FE	99,294		93,3760	93,376	100,000		99,384			5.875	6.000	AO	1,061	2,693	10/19/2017	10/26/2024
05523U-AJ-9	BAE SYSTEMS HOLDINGS INC-NOTE			1	2FE	4,774,330		101,1582	4,228,414	4,180,000		4,219,776			6.375	4.038	JD	22,206	266,475	12/02/2013	06/01/2019
05523U-AL-4	BAE SYSTEMS HOLDINGS INC-SENIOR UNSECURE			1	2FE	28,038,621		100,4094	26,728,985	26,620,000		27,987,791			4.750	4.414	AO	295,038	1,264,450	03/30/2017	10/07/2044
05531F-AB-9	BB&T Corp-SENIOR UNSECURED NOTE			1	1FE	12,733,970		101,2288	10,122,881	10,000,000		10,151,921			6.850	2.199	AO	116,069	685,000	01/01/2013	04/30/2019
05531F-AQ-6	BB&T CORPORATION-SR UNSECURED			2	1FE	151,128		99,9387	149,908	150,000		150,001			2.250	1.993	FA	1,406	3,375	12/15/2015	02/01/2019
05531F-AS-2	BB&T CORPORATION-SR UNSECURED			2	1FE	200,663		99,3021	198,604	200,000		200,165			2.450	2.363	JJ	2,259	4,900	12/15/2015	01/15/2020
05531F-AU-7	BB&T CORPORATION-SR UNSECURED			2	1FE	352,598		99,1048	346,867	350,000		350,860			2.625	2.448	JD	4,645	9,188	12/15/2015	06/29/2020
05565E-G8-8	BMW U.S. Capital LLC Gtd Senior Note			1	1	41,450,000		101,5838	42,110,630	41,450,000		41,450,000			3.880	3.879	FA	616,500	1,608,260	02/13/2014	02/13/2024
05580M-50-4	B. RILEY FINANCIAL INC-SENIOR UNSECURED			1	1PL	10,000,000		24,6000	9,840,000	10,000,000		10,000,000			7.375	7.375	FMAN			05/14/2018	05/31/2023
05580M-60-3	B RILEY FINANCIAL INC. - SENIOR UNSECURE			1	1PL	13,200,000		23,3500	12,328,800	13,200,000		13,200,000			6.875	6.875	MJSD			09/06/2018	09/30/2023
05582*-AA-3	BG Stewart Solar Farm LL Senior Secured			2	2	3,122,302		103,0036	3,216,084	3,122,302		3,122,302			4.130	4.189	JAJO	240,753	134,892	12/18/2015	10/05/2030
055878-AA-6	BEI Precision Systems & Senior Sub Note			2	5	3,017,323		94,8549	2,861,842	3,017,073		3,017,217			12.000	11.979	JAJO	173,794	362,537	12/31/2017	04/28/2024
055878-AA-6	BEI Precision Systems & Senior Sub Note			2	5	22,429		94,8549	21,518	22,685		22,442			12.000	12.278	JAJO	1,382	623	09/30/2018	04/28/2024
05588#-AA-3	BCC Software, Inc. Senior Sub Note			1	5	1,594,511		96,7249	1,542,507	1,594,737		1,594,527			12.000	12.014	JAJO	147,646	208,464	09/30/2018	04/11/2023
05606#-AA-1	BIF III Holtwood LLC Senior Secured			1	2	15,000,000		100,9905	15,148,575	15,000,000		15,000,000			4.504	4.505	FMAN	170,777	424,126	02/15/2018	02/15/2033
057224-AZ-0	BAKER HUGHES INC-SENIOR NOTE			1	1FE	47,366,398		95,2796	44,238,333	46,430,000		47,237,329			5.125	4.987	MS	700,642	2,379,538	12/15/2015	09/15/2040
05723K-AF-7	Baker Hughes a GE Co LLC-SENIOR UNSECURE			1	1FE	22,900,000															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
06051G-EV-5	Bank of America Corp-SENIOR UNSECURED NO				1FE	3,171,229	116.0686	2,992,249	2,578,000	3,134,087	(13,827)				5.875	4.377	FA	60,583	151,458	12/11/2017	02/07/2042
06051G-EU-9	BANK OF AMERICA CORP-SR UNSECURED				1FE	2,227,789	98.4859	2,220,000	2,220,000	2,225,530	(1,317)				3.300	3.232	JJ	34,595	73,260	08/02/2016	01/11/2023
06051G-EY-1	BANK OF AMERICA CORP-SENIOR UNSECURED				1FE	100,908	100.0222	100,022	100,000	100,015	(371)				3.476	3.141	JAJJ	753	3,254	08/02/2016	01/15/2019
06051G-FC-8	Bank of America Corp-SR UNSECURED				1FE	9,912,202	103.4870	9,127,558	8,820,000	9,843,869	(22,831)				5.000	4.240	JAJJ	196,000	438,163	08/01/2018	01/21/2044
06051G-FD-6	Bank of America Corp-SENIOR UNSECURED NO				1FE	225,228	99.8953	224,764	225,000	225,014	(73)				2.650	2.617	AO	1,491	5,963	12/15/2015	04/01/2019
06051G-FF-1	Bank of America Corp-SENIOR UNSECURED NO				1FE	1,099,502	100.5543	1,055,820	1,050,000	1,082,619	(5,638)				4.000	3.346	AO	10,500	42,000	08/02/2016	04/01/2024
06051G-FG-9	Bank of America Corp-SR UNSECURED				1FE	5,742,154	102.5016	5,171,207	5,045,000	5,703,604	(14,821)				4.875	4.044	AO	61,486	245,944	10/30/2017	04/01/2044
06051G-FH-7	Bank of America Corp-SUBORDINATED NOTE				2FE	8,586,736	99.1800	8,469,973	8,540,000	8,574,782	(5,559)				4.200	4.116	FA	124,542	358,680	08/02/2016	08/26/2024
06051G-FL-8	BANK OF AMERICA CORP-SUBORDINATED				2FE	970,278	97.2599	938,558	965,000	969,470	(517)				4.250	4.176	AO	7,861	41,013	08/02/2016	10/22/2026
06051G-FM-6	Bank of America Corp-SUBORDINATED				2FE	8,338,491	97.4146	8,289,984	8,510,000	8,386,724	17,359				4.000	4.273	JJ	150,343	340,400	08/02/2016	01/22/2025
06051G-FN-4	BANK OF AMERICA CORP-SR UNSECURED				1FE	292,392	98.9312	296,794	300,000	297,603	(1,773)				2.250	2.877	AO	1,313	6,750	12/15/2015	04/21/2020
06051G-PP-9	Bank of America Corp-SUBORDINATED				2FE	341,197	96.8935	319,749	330,000	338,427	(1,177)				3.950	3.495	AO	2,535	13,035	08/02/2016	04/21/2025
06051G-FQ-7	BANK OF AMERICA CORP-SUBORDINATED				2FE	941,386	98.6378	925,223	938,000	941,248	(82)				4.750	4.726	AO	8,663	31,578	10/04/2018	04/21/2045
06051G-FS-3	BANK OF AMERICA CORP-SR UNSECURED				1FE	419,493	98.9263	395,705	400,000	416,439	(2,217)				3.875	3.177	FA	5,458	(20,020)	12/11/2017	08/01/2025
06051G-FU-8	BANK OF AMERICA CORP-SUBORDINATED				2FE	13,539,616	98.8595	13,355,922	13,510,000	13,536,005	(3,141)				4.450	4.417	MS	197,058	601,195	10/30/2017	03/03/2026
06051G-GA-1	BANK OF AMERICA CORP-SENIOR UNSECURED	1			1FE	2,309,797	92.5645	2,193,779	2,370,000	2,313,477	3,406				3.248	3.563	AO	14,968	66,600	08/01/2018	10/21/2027
06051G-GB-9	BANK OF AMERICA CORP-SENIOR UNSECURED	2			1FE	2,492,875	98.2060	2,455,151	2,500,000	2,495,688	2,235				2.151	2.246	MN	7,768	53,775	09/22/2017	11/09/2020
06051G-GC-7	BANK OF AMERICA CORP-SUBORDINATED	1			2FE	114,853	96.1166	105,728	110,000	114,317	(465)				4.183	3.607	MN	460	4,601	10/30/2017	11/25/2027
06051G-GF-0	BANK OF AMERICA CORP-SENIOR UNSECURED	1,5			1FE	216,692	97.0101	203,721	210,000	216,015	(587)				3.824	3.414	JJ	3,591	9,263	10/30/2017	01/20/2028
06051G-GF-0	BANK OF AMERICA CORP-SENIOR UNSECURED	1,5			1FE	77,899	97.0101	77,608	80,000	77,773	74				3.824	4.163	JJ	1,368		08/01/2018	01/20/2028
06051G-GG-8	BANK OF AMERICA CORP-SENIOR UNSECURED	1,5			1FE	16,497,418	96.1032	15,583,135	16,215,000	16,492,417	(2,273)				4.443	4.337	JJ	322,193	720,432	10/30/2017	01/20/2048
06051G-GM-5	BANK OF AMERICA CORP-SENIOR UNSECURED	1,5			1FE	4,605,000	95.1296	4,380,717	4,605,000	4,605,000					4.244	4.244	AO	36,373	195,436	04/19/2017	04/24/2038
06051G-GR-4	BANK OF AMERICA CORP-SENIOR UNSECURED	1,5			1FE	774,127	94.8319	725,464	765,000	773,266	(756)				3.593	3.446	JJ	12,140	27,486	10/30/2017	07/21/2028
06051G-HA-0	Bank of America Corp-SENIOR UNSECURED	1			1FE	37,216	89.0710	35,628	40,000	37,234	18				3.946	4.361	JJ	693		08/01/2018	01/23/2049
06051G-HC-6	Bank of America Corp-SENIOR UNSECURED	1			1FE	2,039,407	97.2008	2,067,462	2,127,000	2,047,762	8,356				3.004	3.831	JD	1,952	35,498	05/30/2018	12/20/2023
06051G-HD-4	Bank of America Corp-SENIOR UNSECURED	1			1FE	372,389	93.4150	365,252	391,000	373,115	726				3.419	3.978	JD	408	10,362	08/01/2018	12/20/2028
06051G-HD-4	Bank of America Corp-SENIOR UNSECURED	1			1FE	2,339,684	93.4150	2,183,107	2,337,000	2,339,556	(129)				3.419	3.405	JD	2,441	8,329	05/30/2018	12/20/2028
06051G-HG-7	Bank of America Corp-SENIOR UNSECURED	1			1FE	9,954,157	97.2038	9,817,582	10,100,000	9,960,036	5,878				3.970	4.138	MS	129,201	187,164	08/01/2018	03/05/2029
06406F-AD-5	BANK OF NY MELLON CORP-SENIOR UNSECURED	2			1FE	595,342	94.9538	569,723	600,000	596,756	656				2.200	2.324	FA	4,950	13,200	10/20/2016	08/16/2023
06406H-BY-4	BANK OF NEW YORK MELLON-SR UNSECURED	2			1FE	209,694	101.1554	202,311	200,000	204,710	(1,699)				3.550	2.622	MS	1,933	7,100	12/15/2015	09/23/2021
06406H-CP-2	BANK OF NEW YORK MELLON-SR UNSECURED	2			1FE	251,475	99.9706	249,927	250,000	250,000	(480)				2.100	1.897	JJ	2,421	5,250	12/15/2015	01/15/2019
06406H-CR-8	BANK OF NEW YORK MELLON-SR UNSECURED	2			1FE	200,796	99.8828	199,766	200,000	200,022	(259)				2.200	2.068	MS	1,430	4,400	12/15/2015	03/04/2019
06406H-CW-7	BANK OF NEW YORK MELLON-SR UNSECURED	2			1FE	302,330	99.4802	298,441	300,000	300,402	(649)				2.300	2.077	MS	2,108	6,900	12/15/2015	09/11/2019
06406H-CZ-0	BANK OF NEW YORK MELLON-SR UNSECURED	2			1FE	396,013	99.1238	396,495	400,000	398,860	964				2.150	2.402	FA	3,034	8,600	12/15/2015	02/24/2020
06406H-DA-4	BANK OF NY MELLON CORP-SR UNSECURED	2			1FE	147,027	96.5576	144,836	150,000	147,911	302				3.000	3.251	FA	1,588	4,500	12/15/2015	02/24/2025
06406H-DD-8	BANK OF NEW YORK MELLON-SR UNSECURED	2			1FE	251,155	99.3421	248,355	250,000	250,404	(254)				2.600	2.492	FA	2,419	6,500	12/15/2015	08/17/2020
06406Y-AF-4	Bank of New York Mellon -SENIOR UNSECURE	2			1FE	13,799,643	97.2359	13,710,262	14,100,000	13,813,040	13,397				3.400	3.665	JJ	202,413	239,700	07/09/2018	01/29/2028
06406Y-AA-0	Bank of New York Mellon -SUBORDINATED	2			1FE	465,027	93.5479	467,739	500,000	465,591	564				3.300	4.104	FA	5,867		10/04/2018	08/23/2029
06659#-AC-1	Banner Seventeen LLC Senior Secured	1			2FE	4,600,000	96.5048	4,439,221	4,600,000	4,600,000					3.690	3.690	JAJJ	37,720	169,740	07/11/2013	07/11/2023
06659#-AD-9	Banner Seventeen LLC Senior Note Ser	1			2FE	6,900,000	97.1053	6,700,266	6,900,000	6,900,000					3.840	3.840	JAJJ	58,880	264,960	07/11/2013	07/11/2023
06659#-AF-4	Banner Seventeen LLC Senior Secured	1			2FE	43,600,000	95.8232	41,778,915	43,600,000	43,600,000					3.520	3.520	JAJJ	341,049	1,534,720	04/28/2016	07/11/2023
06849R-AC-6	BARRICK NA FINANCE LLC-SENIOR UNSECURED	1			2FE	8,383,548	121.1315	10,477,876	8,650,000	8,421,525	4,184				7.500	7.755	MS	191,021	648,750	12/09/2015	09/15/2038
06849R-AG-7	BARRICK NA FINANCE LLC-SENIOR UNSECURED	1			2FE	1,713,629	105.4245	1,750,447	1,660,000	1,713,683	(521)				5.700	5.441	MN	8,148	73,445	10/04/2018	05/30/2041
06849R-AK-8	BARRICK NA FINANCE LLC-SR UNSECURED	1			2FE	16,322,454	105.0344	15,776,161	15,020,000	16,309,031	(9,202)				5.750	5.127	MN	143,942	477,883	12/20/2018	05/01/2043
06850#-AB-0	BarrierSafe Solutions In Senior Note Ser	2			2	11,150,000	99.1176	11,051,612	11,150,000	11,150,000					3.910	3.910	AO	106,569	457,665	04/03/2014	04/03/2021
06850#-AC-8	BarrierSafe Solutions In Senior Note	2			2	11,100,000	99.8370	11,081,907	11,100,000	11,100,000					4.530	4.530	AO	122,914	503,380	04/03/2014	04/03/2024
070101-CF-5	Basin Electric Power Coo First Mtg Bond	1			1	4,575,000	117.3692	5,369,641	4,575,000	4,575,000					7.690	7.686	JD	13,682	332,858	12/17/2008	12/17/2028
07177M-AB-9	BAXALTA INC-SENIOR UNSECURED	1			2FE	5,510,253	97.7661	5,421,131	5,545,000	5,518,982	3,437				4.000	4.083	JD	4,929	221,800	05/27/2016	06/23/20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
07274N-AU-7	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	197,969	.97	194,795	200,000	198,266		297			2.750	3.107	JJ	2,536		07/16/2018	07/15/2021
07274N-AX-1	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	185,811	.90	181,274	200,000	186,658		846			2.850	4.062	AO	1,203	1,410	07/16/2018	04/15/2025
07274N-AZ-6	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	139,816	.87	115,849	132,500	139,653		(163)			4.200	3.728	JJ	2,566		07/16/2018	07/15/2034
07274N-AZ-6	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	489	.87	433	500	490					4.200	4.386	JJ	10	2,550	07/16/2018	07/15/2034
07274N-BA-0	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	9,782,366	101	9,834,540	9,680,000	9,780,426		(1,940)			5.500	5.404	JJ	223,312	20,705	07/16/2018	07/30/2035
07274N-BC-6	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	28,094,980	105	27,735,145	26,329,000	28,071,323		(23,657)			5.875	5.321	AO	326,553	382,410	07/16/2018	04/15/2038
07274N-BD-4	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	828,515	.73	779,375	1,055,000	830,705		2,190			3.600	5.166	JJ	17,513		07/16/2018	07/15/2042
07274N-BF-9	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	1,491,225	.85	1,206,795	1,410,000	1,490,356		(869)			4.400	4.036	JJ	28,607	25,238	07/16/2018	07/15/2044
07274N-BF-9	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	1,094,296	.85	1,078,412	1,260,000	1,095,640		1,344			4.400	5.340	JJ	25,564	28,281	07/16/2018	07/15/2044
07274N-BH-5	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	946,856	.82	733,012	890,000	946,656		(200)			4.700	4.375	JJ	19,288	85,156	07/16/2018	07/15/2064
07274N-BH-5	Bayer US Finance II LLC-SENIOR UNSECURED			1	2FE	3,766,840	.82	3,442,685	4,180,000	3,767,565		725			4.700	5.265	JJ	90,590	13,854	10/04/2018	07/15/2064
073016-AA-7	Bayonne Water Joint Vent Senior Secured			1	2Z	21,228,750	100	21,250,892	21,228,750	21,228,750					5.070	5.069	JD	544,656	1,072,742	12/20/2012	06/30/2037
07330M-AB-3	BRANCH BANKING & TRUST-SUBORDINATED			2	1FE	251,045	.98	245,069	250,000	250,751		(99)			3.625	3.573	MS	2,643	9,063	12/15/2015	09/16/2025
07330N-AJ-4	BRANCH BANKING & TRUST-SR UNSECURED			2	1FE	152,121	.99	148,784	150,000	150,918		(408)			2.850	2.751	AO	1,069	4,275	12/15/2015	04/01/2021
073685-AD-1	BEACON ESCROW CORP-SENIOR UNSECURED			1	4FE	6,459,000	.87	5,675,846	6,459,000	6,459,000					4.875	4.875	MM	52,479	314,876	10/11/2017	11/01/2025
073856-AA-6	BearCom Acquisition Corp Senior Sub Note			1	4Z	6,691,782	.96	6,432,449	6,691,782	6,691,782					11.250	11.250	JAJO	365,957		07/06/2018	01/31/2025
075560-BM-6	BEAZER HOMES USA-SENIOR UNSECURED			1	4FE	5,508,000	.86	4,736,880	5,508,000	5,508,000					6.750	6.747	MS	109,472	371,790	06/28/2017	03/15/2025
075887-AV-1	BECTON DICKINSON & CO-SENIOR NOTE			1	2FE	3,327,760	108	2,712,267	2,500,000	3,206,669		(22,213)			6.000	3.964	MM	19,167	150,000	01/01/2013	05/15/2039
075887-AW-9	BECTON DICKINSON & CO-SENIOR NOTE			1	2FE	3,096,854	.99	2,867,554	2,885,000	2,938,560		(27,864)			3.250	2.227	MM	12,762	93,763	01/01/2013	11/12/2020
075887-BF-5	BECTON DICKINSON & CO-SR UNSECURED			1	2FE	12,750,000	.96	12,316,444	12,750,000	12,750,000					3.734	3.733	JD	21,159	476,085	12/04/2014	12/15/2024
075887-BF-5	BECTON DICKINSON & CO-SR UNSECURED			1	2FE	123,254	.96	111,089	115,000	120,846		(933)			3.734	2.765	JD	191	4,294	05/06/2016	12/15/2024
075887-BG-3	BECTON DICKINSON & CO-SR UNSECURED			1	2FE	53,051,614	.93	44,557,488	47,606,000	52,783,274		(115,903)			4.685	3.999	JD	99,126	2,230,341	11/04/2016	12/15/2044
075887-BT-5	BECTON DICKINSON AND CO-SENIOR UNSECURED			1	2FE	185,000	.96	179,176	185,000	185,000					2.894	2.894	JD	372	5,354	05/22/2017	06/06/2022
075887-BW-8	BECTON DICKINSON AND CO-SENIOR UNSECURED			1	2FE	185,000	.94	174,980	185,000	185,000					3.700	3.700	JD	475	6,845	05/22/2017	06/06/2027
075887-BX-6	BECTON DICKINSON AND CO-SENIOR UNSECURED			1	2FE	14,794,958	.94	13,915,514	14,795,000	14,794,960		2			4.669	4.669	JD	47,971	689,773	07/27/2018	06/06/2047
075887-CF-4	Becton Dickinson and Co-SENIOR UNSECURED			2	2FE	275,000	.98	272,236	275,000	275,000					3.678	3.260	MMSD	2,370	4,929	02/27/2018	12/29/2020
079857-AH-1	BELLSOUTH CAP FUNDING-SENIOR UNSECURED			1	2FE	617,621	119	575,559	480,000	599,229		(7,880)			7.875	4.944	FA	14,280	37,800	08/02/2016	02/15/2030
079860-AD-4	BELLSOUTH CORP-BOND			1,5	2FE	5,083,266	109	5,085,848	5,088,000	5,085,544		13			6.875	6.878	AO	73,847	349,800	04/25/2012	10/15/2031
079867-AM-9	BELLSOUTH TELECOMMUNICAT-SENIOR UNSECURE			1	2FE	798,710	114	744,981	651,000	764,870		(14,426)			7.000	4.014	AO	11,393	45,570	08/02/2016	10/01/2025
081331-AC-4	BELVOIR LAND LLC-UNSECURED			1	1FE	8,935,142	109	8,308,320	8,500,000	8,865,409		(21,211)			5.170	4.709	JD	439,450	19,531	07/08/2015	12/15/2035
081437-AF-2	BEMIS CO-SENIOR UNSECURED NOTE			1	2FE	2,124,810	102	2,043,237	2,000,000	2,009,284		(15,481)			6.800	5.966	FA	56,667	136,000	02/23/2010	08/01/2019
081437-AH-8	BEMIS CO-SENIOR UNSECURED NOTE			1	2FE	5,563,768	102	5,725,042	5,600,000	5,587,906		3,863			4.500	4.581	AO	53,200	252,000	09/27/2011	10/15/2021
081437-AH-8	BEMIS CO-SENIOR UNSECURED NOTE			1	2FE	1,860,939	102	1,737,959	1,700,000	1,751,585		(19,188)			4.500	3.245	AO	16,150	76,500	10/23/2012	10/15/2021
084423-AP-7	BERKLEY (WR) CORPORATION-SR UNSECURED			1	2FE	217,703	112	208,669	185,000	214,799		(1,003)			6.250	4.898	FA	4,368	11,563	12/09/2015	02/15/2037
084423-AR-3	WR Berkley Corp-SENIOR UNSECURED NOTE			1	2FE	558,965	102	514,883	500,000	517,608		(9,899)			5.375	3.233	MS	7,913	26,875	07/30/2014	09/15/2020
084659-AF-8	BERKSHIRE HATHAWAY ENERG-SENIOR UNSECURE			1,5	1FE	2,668,756	.99	2,501,260	2,505,000	2,662,991		(3,458)			4.500	4.099	FA	46,969	112,725	05/16/2017	02/01/2045
084664-BL-4	BERKSHIRE HATHAWAY FIN-UNSECURED SENIOR			1	1FE	26,198,759	119	29,793,217	24,925,000	26,065,606		(32,383)			5.750	5.370	JJ	660,859	1,433,188	08/02/2016	01/15/2040
084664-BQ-3	BERKSHIRE HATHAWAY FIN-SENIOR NOTE			1	1FE	8,923,089	102	5,713	8,950,000	8,949,108		169			4.250	4.253	JJ	175,395	380,375	12/15/2015	01/15/2021
084664-BT-7	BERKSHIRE HATHAWAY FIN-SR UNSECURED			1	1FE	153,198	.99	149,656	150,000	151,751		(491)			3.000	2.635	MM	575	4,500	12/15/2015	05/15/2022
084664-BU-4	BERKSHIRE HATHAWAY FIN-SENIOR UNSECURED			1	1FE	26,119,564	101	26,144,439	25,633,000	26,062,827		(10,828)			4.400	4.284	MM	144,114	1,121,808	08/01/2018	05/15/2042
084664-BV-2	BERKSHIRE HATHAWAY FIN-SR UNSECURED			1	1FE	2,801,095	101	2,658,896	2,618,000	2,793,135		(4,224)			4.300	3.872	MM	14,384	104,356	08/01/2018	05/15/2043
084664-CQ-2	Berkshire Hathaway Finan-SENIOR UNSECURE			1	1FE	23,385,830	.99	23,306,073	23,505,000	23,385,631		(199)			4.200	4.230	FA	372,946		08/07/2018	08/15/2048
084670-BC-1	BERKSHIRE HATHAWAY INC-SR UNSECURED			1	1FE	214,186	102	204,347	200,000	206,823		(2,493)			3.750	2.399	FA	2,833	7,500	12/15/2015	08/15/2021
084670-BF-4	BERKSHIRE HATHAWAY INC-SR UNSECURED			1	1FE	210,322	101	202,644	200,000	205,401		(1,668)			4.500	2.483	JJ	2,852	6,800	12/15/2015	01/31/2022
084670-BK-3	Berkshire Hathaway Inc-SR UNSECURED			1	1FE	5,686,546	104	5,437,678	5,208,000	5,653,847		(11,241)			4.500	3.941	FA	91,140	234,360	10/30/2017	02/11/2043
084670-BL-1	BERKSHIRE HATHAWAY INC-SR UNSECURED			1	1FE	302,193	.99	298,551	300,000	300,381		(610)			2.100	1.891	FA	2,398	6,300	12/15/2015	08/14/2019
084670-BS-6	BERKSHIRE HATHAWAY INC-SENIOR UNSECURED			1	1FE	14,311,535	.96	13,884,369	14,325,000	14,314,464		1,233			3.125	3.136	MS	131,810	447,656	03/08/2016	03/15/2026
086218-AA-8	Berwind Consolidated Hol Senior Secured			1	2Z	47,200,000	102	48,441,785	47,200,000	47,200,000					4.640	4.640	JD	115,588		12/12/2018	12/15/2028
088898-AA-6	BIF II Safe Harbor Holdi Senior Secured			1	2FE	27,200,000	102	27,905,813	27,2												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
09256B-AG-2	BLACKSTONE HOLDINGS FINA-SENIOR UNSECURE	1		1	1FE	13,759,180	99.4980	13,263,083	13,330,000	13,751,933	(5,070)				5.000	4.783	JD	29,622	482,228	07/13/2018	06/15/2044
09256B-AH-0	BLACKSTONE HOLDINGS FINA-SENIOR UNSECURE	1		1	1FE	10,190,999	92.3219	9,642,100	10,444,000	10,192,814	2,216				4.450	4.608	JJ	214,305	447,452	06/28/2018	07/15/2045
09256B-AK-3	BLACKSTONE HOLDINGS FINA-SENIOR UNSECURE	1		1	1FE	18,659,172	85.8614	16,399,533	19,100,000	18,667,759	7,707				4.000	4.135	AO	188,878	764,000	09/25/2017	10/02/2047
097023-AE-5	BOEING CO-SR UNSECURED	1		1	1FE	1,225,779	145.1342	1,146,561	790,000	1,170,412	(22,770)				8.750	3.903	MS	20,853	69,125	08/02/2016	09/15/2031
097023-AM-7	BOEING CO-SENIOR UNSECURED	1		1	1FE	214,864	121.7346	188,689	155,000	199,815	(6,348)				7.250	2.390	JD	499	11,238	08/02/2016	06/15/2025
097023-AS-4	BOEING CO/THE-SENIOR UNSECURED NOTE	1		1	1FE	1,760,902	133.0777	1,636,856	1,230,000	1,707,691	(16,821)				6.625	3.759	FA	30,784	81,488	10/30/2017	02/15/2038
097023-AX-3	BOEING CO/THE-SENIOR UNSECURED NOTE	1		1	1FE	10,754,625	136.1059	10,450,212	7,678,000	10,662,652	(61,886)				6.875	4.040	MS	155,426	431,759	08/01/2018	03/15/2039
097023-AZ-8	BOEING CO-SR UNSECURED	1		1	1FE	223,505	102.1470	204,294	200,000	206,542	(5,716)				4.875	1.913	FA	3,683	9,750	12/15/2015	02/15/2020
097023-BA-2	BOEING CO/THE-SENIOR UNSECURED NOTE	1		1	1FE	13,482,257	124.3891	13,241,217	10,645,000	13,427,672	(47,819)				5.875	4.025	FA	236,260	551,614	06/18/2018	02/15/2040
097023-BG-9	BOEING CO-SR UNSECURED	1		1	1FE	198,351	98.4707	196,941	200,000	199,171	278				2.350	2.502	AO	796	4,700	12/15/2015	10/30/2021
097023-BH-7	BOEING CO-SR UNSECURED	1		1	1FE	149,101	97.6022	146,403	150,000	149,381	95				2.850	2.927	AO	724	4,275	12/15/2015	10/30/2024
097023-BP-9	BOEING CO-SR UNSECURED	1		1	1FE	243,086	94.8758	237,190	250,000	245,000	652				2.600	2.925	AO	1,101	6,500	12/15/2015	10/30/2025
097023-BV-6	Boeing Co/The-SENIOR UNSECURED	1		1	1FE	7,072,599	92.5932	6,944,488	7,500,000	7,076,801	4,202				3.650	3.985	MS	91,250	136,875	06/25/2018	03/01/2047
097023-BX-2	Boeing Co/The-SENIOR UNSECURED	1		1	1FE	3,130,617	97.9537	3,144,315	3,210,000	3,133,868	3,251				3.250	3.555	MS	34,775	54,481	07/11/2018	03/01/2028
097023-BY-0	Boeing Co/The-SENIOR UNSECURED	1		1	1FE	7,482,243	94.0699	7,323,340	7,785,000	7,487,386	5,144				3.550	3.833	MS	92,123	144,325	07/16/2018	03/01/2038
097023-BZ-7	Boeing Co/The-SENIOR UNSECURED	1		1	1FE	17,298,192	92.0874	16,944,083	18,400,000	17,308,232	10,040				3.625	3.970	MS	222,333	348,323	06/28/2018	03/01/2048
09951*-AJ-9	Boral Industries, Inc. Senior Unsecure	1		1	2FE	14,600,000	95.4536	13,936,226	14,600,000	14,600,000					4.050	4.050	AO	123,188	295,650	04/16/2018	04/16/2026
099724-AD-8	BorgWarner Inc-BOND	1		1	2FE	7,995,120	103.6488	8,291,902	8,000,000	7,998,085	429				8.000	8.000	AO	160,000	640,000	09/23/1999	10/01/2019
099724-AG-1	BorgWarner Inc-SENIOR UNSECURED NOTE	1		1	2FE	2,474,775	101.2689	2,531,722	2,500,000	2,494,652	2,851				4.625	4.753	MS	34,045	115,625	09/13/2010	09/15/2020
099724-AH-9	BORGWARNER INC-SENIOR UNSECURED	1		1	2FE	102,872	91.7235	91,724	100,000	102,746	(59)				4.375	4.199	MS	1,288	4,375	10/20/2016	03/15/2045
100743-AJ-2	BOSTON GAS COMPANY-SENIOR UNSECURED NOTE	1		1	1FE	22,128,628	100.8994	22,234,191	22,036,000	22,117,087	(2,086)				4.487	4.461	FA	373,530	972,955	10/04/2018	02/15/2042
10075E-AB-4	BOSTON GAS COMPANY-MEDIUM TERM NOTE	1		1	1FE	7,062,163	104.0785	7,285,492	7,000,000	7,005,419	(5,238)				8.970	8.889	JD	156,975	627,900	12/31/1994	12/15/2019
10112R-AR-5	BOSTON PROPERTIES LP-UNSECURED BOND REID	1		1	2FE	367,563	103.6610	362,813	350,000	353,437	(1,981)				5.625	4.988	MN	2,516	19,688	07/14/2010	11/15/2020
10112R-AS-3	BOSTON PROPERTIES LP-SENIOR UNSECURED NO	1		1	2FE	4,973,047	101.3550	4,874,162	4,809,000	4,853,552	(19,807)				4.125	3.668	MN	25,347	198,371	12/02/2013	05/15/2021
10112R-AS-3	BOSTON PROPERTIES LP-SENIOR UNSECURED NO	1		1	2FE	7,633,784	101.3550	8,007,045	7,900,000	7,825,639	28,888				4.125	4.546	MN	28,888	41,640	09/26/2011	05/15/2021
10112R-AU-8	BOSTON PROPERTIES LP-SENIOR UNSECURED NO	1		1	2FE	6,685,193	100.1781	6,711,931	6,700,000	6,693,314	1,446				3.850	3.876	FA	107,479	257,950	05/31/2012	02/01/2023
10112R-AU-8	BOSTON PROPERTIES LP-SENIOR UNSECURED NO	1		1	2FE	13,192,278	100.1781	12,446,123	12,424,000	12,757,781	(80,815)				3.850	3.101	FA	199,302	478,324	05/08/2013	02/01/2023
10112R-AX-2	BOSTON PPTYS LP SR NT	1		1	2FE	10,210,099	96.7660	9,908,839	10,240,000	10,217,623	2,689				3.650	3.685	FA	155,733	373,760	01/08/2016	02/01/2026
101137-AE-7	Boston Scientific Corp-SENIOR UNSECURED	1,5		1	2FE	520,802	125.0476	500,190	400,000	505,084	(4,001)				7.000	4.723	MN	3,578	28,000	10/06/2014	11/15/2035
101137-AP-2	BOSTON SCIENTIFIC CORP-SENIOR UNSECURED	1		1	2FE	2,308,004	99.3485	2,254,217	2,269,000	2,289,691	(14,721)				2.850	2.171	MN	8,263	64,667	09/28/2017	05/15/2020
10334#-AC-6	Boyd Watterson GSA Fund, Senior Notes Se	1		1	2FE	43,400,000	96.0302	41,677,107	43,400,000	43,400,000					4.300	4.300	FA	741,296	933,100	04/10/2018	02/08/2028
10334#-AE-2	Boyd Watterson GSA Fund, Senior Notes Se	1		1	2FE	18,400,000	94.6118	17,408,571	18,400,000	18,400,000					4.400	4.400	FA	321,591	404,800	04/10/2018	02/08/2030
10510K-AA-5	BRAMBLES USA INC-SENIOR NOTE	1		1	2FE	2,817,585	102.2273	2,622,130	2,565,000	2,611,105	(35,657)				5.350	3.855	AO	34,307	137,228	12/02/2013	04/01/2020
10510K-AC-1	BRAMBLES USA INC-SR UNSECURED	1		1	2FE	6,658,780	100.1339	6,683,937	6,675,000	6,662,916	1,465				4.125	4.155	AO	52,009	345,546	10/19/2015	10/23/2025
10510K-AC-1	BRAMBLES USA INC-SR UNSECURED	1		1	2FE	9,101,242	100.1339	9,092,157	9,080,000	9,099,766	(1,476)				4.125	4.087	AO	70,748	187,275	07/10/2018	10/23/2025
110122-AA-6	Bristol-Myers Squibb Co-DEBENTURE	1		1	1FE	5,209,714	115.7727	5,701,806	4,925,000	5,021,612	(18,131)				7.150	6.633	JD	15,651	352,138	08/07/2002	06/15/2023
110122-AC-2	BRISTOL-MYERS SQUIBB CO-SENIOR UNSECURED	1		1	1FE	603,510	132.6755	583,772	440,000	603,263	(1,67)				6.875	4.985	FA	12,604	30,250	05/16/2017	08/01/2097
110122-AQ-1	Bristol-Myers Squibb Co-NOTE	1		1	1FE	34,508,500	123.3192	30,977,782	25,120,000	33,566,719	(297,285)				6.125	3.674	MN	256,433	1,538,600	07/19/2016	05/01/2038
110122-AT-5	BRISTOL-MYERS SQUIBB CO-SR UNSECURED	1,5		1	1FE	194,097	96.1132	192,226	200,000	196,679	875				2.000	2.487	FA	1,667	4,000	12/15/2015	08/01/2022
110122-AU-2	BRISTOL-MYERS SQUIBB CO-SR UNSECURED	1,5		1	1FE	20,087,857	86.9438	19,749,281	22,715,000	20,123,748	35,891				3.250	4.002	FA	307,599	369,119	06/27/2018	08/01/2042
110122-AX-6	Bristol-Myers Squibb Co-SR UNSECURED	1		1	1FE	21,572,607	104.9116	21,049,458	20,064,000	21,548,123	(19,697)				4.500	4.024	MS	300,960	760,748	07/13/2018	03/01/2044
11041R-AL-2	BAE SYSTEMS FINANCE INC-SENIOR UNSECURED	1		1	2FE	322,091	121.4404	285,385	235,000	305,516	(7,043)				7.500	3.405	JJ	8,813	17,625	08/02/2016	07/01/2027
11120V-AA-1	BRIXNOR OPERATING PART-SENIOR UNSECURED	1		1	2FE	483,854	96.6605	459,138	475,000	481,696	(1,014)				3.850	3.580	FA	7,620	18,288	10/20/2016	02/01/2025
11133T-AB-9	BROADRIDGE FINANCIAL SOL-SENIOR UNSECURE	1		1	2FE	9,649,034	101.0009	9,756,684	9,660,000	9,666,734	1,616				3.950	3.968	MS	127,190	381,175	12/02/2013	09/01/2020
11133T-AC-7	Broadridge Financial Sol-SENIOR UNSECURE	1,5		1	2FE	13,423,089	95.1414	12,782,249	13,435,000	13,425,664	1,069				3.400	3.411	JD	5,075	456,790	06/22/2016	06/27/2026
11134#-AA-0	Broadstone Net Lease LLC Senior Notes	1		1	5G1	22,700,000	100.0348	22,707,900	22,700,000	22,700,000					4.840	4.840	AO	222,788	1,098,680	04/18/2017	04/18/2027
11134#-AB-8	Broadstone Net Lease, In Senior Unsecure	1		1	2FE	29,300,000	101.6603	29,													

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
115637-AT-7	Brown-Forman Corp-SENIOR UNSECURED			1	1FE	21,599,512	99.7975	21,760,853	21,805,000	21,604,044		4,532			4.000	4.069	AO	184,131	551,850	10/04/2018	04/15/2038
115637-AT-7	Brown-Forman Corp-SENIOR UNSECURED			1	1FE	9,650,816	99.7975	9,610,543	9,610,000	9,610,000	(467)				4.000	3.968	AO	81,151	654,830	07/10/2018	04/15/2038
116794-AF-5	Braker Corp. Senior Note Ser			1	2	11,100,000	100.5895	11,165,435	11,100,000	11,100,000					4.310	4.309	JJ	216,613	478,410	01/18/2012	01/18/2022
116794-B*-8	Braker Corp. Senior Note Ser			1	2	11,300,000	101.7312	11,495,626	11,300,000	11,300,000					4.460	4.459	JJ	228,191	503,980	01/18/2012	01/18/2024
117043-AG-4	Brunswick Corp/DE-SENIOR UNSECURED NOTE			1	2FE	364,063	110.4835	392,217	355,000	361,917		(588)			7.125	6.818	FA	10,539	25,294	08/26/2015	08/01/2027
117043-AP-4	Brunswick Corp/DE-SR UNSECURED			1,5	2FE	2,360,513	98.2086	2,288,260	2,330,000	2,333,664		(9,847)			4.625	4.182	MM	13,770	107,763	01/09/2017	05/15/2021
118230-AQ-4	Buckeye Partners LP-SENIOR UNSECURED			1	2FE	816,530	87.8505	777,477	885,000	818,043		1,513			3.950	5.124	JD	5,513	4,758	10/04/2018	12/01/2026
120568-AW-0	BUNGE LTD FINANCE CORP-SR UNSECURED			1	2FE	17,484,018	99.7582	17,382,858	17,425,000	17,448,463		(12,556)			3.500	3.421	MM	62,682	609,110	07/27/2018	11/24/2020
120568-AX-8	BUNGE LTD FINANCE CORP-SENIOR UNSECURED			1	2FE	35,236,037	87.6171	32,272,005	36,833,000	35,402,126		117,316			3.250	3.837	FA	452,227	1,160,596	07/10/2018	08/15/2026
120568-AY-6	BUNGE LTD FINANCE CORP-SENIOR UNSECURED			1	2FE	2,889,983	95.5743	2,776,432	2,905,000	2,891,316		1,375			3.000	3.132	MS	23,240	84,315	08/08/2018	09/25/2022
120568-AY-6	BUNGE LTD FINANCE CORP-SENIOR UNSECURED			1	2FE	2,004,000	95.5743	1,911,485	2,000,000	2,002,996		(773)			3.000	2.956	MS	16,000	60,000	09/29/2017	09/25/2022
12189L-AA-9	BURLINGTN NORTH SANTA FE-DEBENTURE			1	1FE	7,618,949	117.1067	7,451,502	6,383,000	7,501,951		(33,335)			5.750	4.418	MM	60,979	365,873	10/20/2016	05/01/2040
12189L-AC-5	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	135,700	109.4145	120,356	110,000	133,999		(722)			5.050	3.592	MS	1,852	5,555	08/02/2016	03/01/2041
12189L-AC-1	BURLINGTN NORTH SANTA FE-SR UNSECURED			1	1FE	2,791,151	113.1632	2,606,147	2,303,000	2,751,469		(12,523)			5.400	4.051	JD	10,364	124,362	05/16/2017	06/01/2041
12189L-AG-6	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	262,478	108.8611	246,026	226,000	260,684		(971)			4.950	3.908	MS	3,294	11,187	05/16/2017	09/15/2041
12189L-AJ-0	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	1,297,746	100.6875	1,147,838	1,140,000	1,287,909		(4,176)			4.400	3.562	MS	14,769	50,160	08/02/2016	03/15/2042
12189L-AK-7	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	787,531	99.7812	798,249	800,000	788,571		266			4.375	4.473	MS	11,667	35,000	10/06/2014	09/01/2042
12189L-AN-1	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1,5	1FE	1,448,586	101.8486	1,273,107	1,250,000	1,436,843		(4,984)			4.450	3.515	MS	55,625	86,378	08/02/2016	03/15/2043
12189L-AP-6	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	3,352,053	111.9693	3,168,732	2,830,000	3,318,863		(11,892)			5.150	4.022	MS	48,582	145,745	05/16/2017	09/01/2043
12189L-AR-2	BURLINGTN NORTH SANTA FE LLC DEB			1	1FE	216,769	102.2157	212,609	208,000	213,798		(1,055)			3.750	3.143	AO	1,950	7,800	02/08/2016	04/01/2024
12189L-AS-0	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	13,122,648	107.8160	14,177,807	13,150,000	13,124,383		485			4.900	4.913	AO	161,088	644,350	03/04/2014	04/01/2044
12189L-AS-0	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	2,319,591	107.8160	2,026,941	1,880,000	2,295,259		(10,338)			4.900	3.551	AO	23,030	92,120	08/02/2016	04/01/2044
12189L-AU-5	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	712,246	104.2654	633,934	608,000	706,617		(2,388)			4.550	3.568	MS	9,221	27,664	08/02/2016	09/01/2044
12189L-AW-1	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	1,427,144	96.9523	1,299,161	1,340,000	1,424,096		(1,937)			4.150	3.765	AO	13,903	147,168	08/01/2018	04/01/2045
12189L-AW-1	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	9,281,912	96.9523	9,158,118	9,446,000	9,283,716		1,804			4.150	4.259	AO	98,002	196,005	06/12/2018	04/01/2045
12189L-AZ-4	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	5,313,846	94.2774	4,930,710	5,230,000	5,310,588		(1,726)			3.900	3.807	FA	84,988	274,820	10/20/2016	08/01/2046
12189L-AZ-4	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	19,009,816	94.2774	18,252,114	19,360,000	19,019,166		4,653			3.900	4.005	FA	314,600	670,020	06/12/2018	08/01/2046
12189L-BB-6	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	34,599,950	96.7777	33,872,186	35,000,000	34,617,570		6,879			4.125	4.191	JD	64,167	1,443,750	03/06/2017	06/15/2047
12189L-BC-4	Burlington Northern Sant-SENIOR UNSECURE			1	1FE	210,321	96.3724	202,382	210,000	210,324		3			4.050	4.041	JD	378	3,048	08/01/2018	06/15/2048
12189T-AA-2	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	341,536	120.7448	301,862	250,000	320,032		(9,083)			7.000	2.575	JD	778	17,500	08/02/2016	12/15/2025
12189T-AD-6	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	437,983	134.8292	404,488	300,000	426,320		(4,974)			7.290	3.929	JD	1,823	21,870	08/02/2016	06/01/2036
12189T-AK-0	BURLINGTN NORTH SANTA FE-SR UNSECURED			1	1FE	77,193	125.1613	75,097	60,000	74,095		(1,062)			7.082	4.255	MM	567	4,249	12/09/2015	05/13/2029
12189T-AR-5	BURLINGTN NORTH SANTA FE-NOTE			1	1FE	97,468	136.4964	88,723	65,000	92,930		(1,926)			7.950	3.434	FA	1,952	5,168	08/02/2016	08/15/2030
12189T-AZ-7	BURLINGTN NORTH SANTA FE-UNSECURED NOTE			1	1FE	13,139,839	121.8152	12,548,184	10,301,000	12,735,930		(81,743)			6.150	4.274	MM	105,585	599,353	08/01/2018	05/01/2037
12189T-BC-7	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE			1	1FE	15,370,862	101.2188	13,496,513	13,334,000	13,575,402		(316,211)			4.700	2.248	AO	156,675	626,698	01/01/2013	10/01/2019
12365*-AA-2	Butler Machinery Company Senior Note Ser			1	2	10,750,000	99.4939	10,695,594	10,750,000	10,750,000					4.080	4.079	JD	15,838	438,600	12/18/2013	12/18/2020
12365*-AB-0	Butler Machinery Company Senior Note Ser			1	2	9,350,000	100.8217	9,426,829	9,350,000	9,350,000					4.750	4.749	JD	16,038	444,125	12/18/2013	12/18/2023
124857-AJ-2	CBS CORPORATION-SENIOR UNSECURED BOND			1	2FE	506,173	91.7711	458,856	500,000	505,683		(134)			4.850	4.768	JJ	12,125	22,431	10/06/2014	07/01/2042
124857-AK-9	CBS CORP-SENIOR UNSECURED			1	2FE	1,007,049	91.2659	867,026	950,000	1,004,337		(1,147)			4.900	4.517	FA	17,586	46,550	08/02/2016	08/15/2044
124857-AM-5	CBS CORP-SENIOR UNSECURED			1	2FE	527,001	97.1767	485,884	500,000	519,273		(3,267)			3.700	2.920	FA	6,989	18,500	08/02/2016	08/15/2024
124857-AN-3	CBS CORP-SENIOR UNSECURED			1	2FE	515,122	88.8307	444,154	500,000	514,500		(303)			4.600	4.410	JJ	10,606	27,341	10/20/2016	01/15/2045
124857-AN-3	CBS CORP-SENIOR UNSECURED			1	2FE	400,889	88.8307	381,972	430,000	401,029		140			4.600	5.069	JJ	9,121		10/04/2018	01/15/2045
1248EP-BT-9	CCO HLDGS LLC/CAP CORP-SENIOR UNSECURED			1,5	3FE	7,887,240	93.1400	7,309,627	7,848,000	7,881,546		(4,468)			5.125	5.044	MM	67,035	345,818	03/30/2017	05/01/2027
1248EP-BT-9	CCO HLDGS LLC/CAP CORP-SENIOR UNSECURED			1,5	3FE	3,482,500	93.1400	3,259,900	3,500,000	3,485,559		1,331			5.125	5.186	MM	29,896	179,375	03/14/2017	05/01/2027
1248EP-BX-0	CCO HOLDINGS LLC / CCO H-SENIOR UNSECURE			1,5	3FE	1,388,850	92.0000	1,297,200	1,410,000	1,390,810		1,606			5.000	5.189	FA	29,375	70,500	10/10/2017	02/01/2028
12505#-AA-9	COHM Property Holdings L Senior Secured			1	2FE	20,042,956	108.5153	21,749,674	20,042,956	20,042,956					6.340	6.340	MJSD	329,675	1,260,698	03/31/2011	12/31/2031
12516U-AD-7	CEMEX FIN LLC SR SECD NT			1	3FE	2,815,000	99.3740	2,797,378	2,815,000	2,815,000					6.000	6.000	AO	42,225	168,900	03/25/2014	04/01/2024
12516U-AD-7	CEMEX FIN LLC SR SECD NT																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
12542R-J8-0	CHS INC SER T SR NT				2	37,100,000	99.9608	37,085,457	37,100,000	37,100,000					4.580	4.579	JJ	736,311	1,699,180	01/25/2016	01/25/2025
125509-BH-1	Cigna Corp-SENIOR UNSECURED NOTE				2FE	7,771,275	110.5892	7,464,774	6,750,000	7,603,126	(28,823)				6.150	5.066	MN	53,044	415,125	04/19/2012	11/15/2036
125509-BP-3	CIGNA CORP-SENIOR UNSECURED				2FE	2,459,413	102.1784	2,350,102	2,300,000	2,398,331	(48,641)				4.500	2.253	MS	30,475	103,500	09/26/2017	03/15/2021
125509-BO-1	CIGNA CORP-SR UNSECURED				2FE	163,132	107.1563	150,019	140,000	161,524	(559)				5.875	4.733	MS	2,422	8,225	12/09/2015	03/15/2041
125509-BT-5	Cigna Corp-SENIOR UNSECURED NOTE				2FE	21,701,455	103.8766	21,305,093	20,510,000	21,559,535	(24,777)				5.375	4.994	FA	416,467	1,102,413	08/13/2012	02/15/2042
125720-AF-2	CME GROUP INC-SENIOR UNSECURED BOND				1FE	5,440,190	116.7115	6,360,779	5,450,000	5,440,613	172				5.300	5.312	MS	85,050	288,850	09/04/2013	09/15/2043
125720-AF-2	CME GROUP INC-SENIOR UNSECURED BOND				1FE	523,170	116.7115	525,202	450,000	517,026	(1,551)				5.300	4.303	MS	7,023	23,850	10/06/2014	09/15/2043
125720-AG-0	CME GROUP INC-SR UNSECURED				1FE	31,128,103	97.3708	30,369,967	31,190,000	31,148,558	5,861				3.000	3.023	MS	275,512	935,700	12/15/2015	03/15/2025
125720-AH-8	CME Group Inc-SENIOR UNSECURED				1FE	15,191,800	101.2802	15,192,030	15,000,000	15,189,922	(1,878)				4.150	4.075	JD	27,667	377,789	06/28/2018	06/15/2048
125720-AH-8	CME Group Inc-SENIOR UNSECURED				1FE	41,538,891	101.2802	42,233,843	41,700,000	41,539,406	515				4.150	4.173	JD	76,913	328,543	06/25/2018	06/15/2048
125896-BL-3	CHS ENERGY CORP-SENIOR UNSECURED BOND				2FE	23,323,418	101.3179	22,690,146	22,395,000	23,287,220	(19,740)				4.700	4.426	MS	266,065	1,013,059	07/31/2018	03/31/2043
125896-BN-9	CHS ENERGY CORP-SENIOR UNSECURED BOND				2FE	174,669	104.3841	182,672	175,000	174,686	6				4.875	4.887	MS	2,844	8,531	02/24/2014	03/01/2044
125896-BP-4	CHS ENERGY CORP-SR UNSECURED				2FE	3,090,173	98.3094	3,047,590	3,100,000	3,092,802	895				3.600	3.638	MN	14,260	111,600	11/04/2015	11/15/2025
12592B-AB-0	CNH INDUSTRIAL CAPITAL LLC-NOTE				2FE	64,688	99.2500	64,513	65,000	64,956	78				3.700	3.500	JJ	1,012	2,194	05/26/2015	07/15/2019
126117-AR-1	CNA FINANCIAL CORP-SENIOR UNSECURED NOTE				2FE	7,526,536	105.5341	6,906,150	6,544,000	6,972,832	(154,813)				5.750	3.125	FA	142,150	376,280	09/22/2017	08/15/2021
126117-AS-9	CNA FINANCIAL CORP-SENIOR UNSECURED NOTE				2FE	54,993	99.0729	54,490	55,000	54,993	1				3.950	3.952	MN	278	2,173	02/24/2014	05/15/2024
126117-AU-4	CNA FINANCIAL CORP-SENIOR UNSECURED				2FE	149,660	93.0401	139,560	150,000	149,697	30				3.450	3.477	FA	1,955	5,175	08/07/2017	08/15/2027
12612W-AB-0	CON-WAY INC-SENIOR UNSECURED NOTE				4FE	2,256,000	85.0000	1,997,500	2,350,000	2,271,917	2,748				6.700	7.057	MN	26,242	157,450	10/13/2011	05/01/2034
126149-AD-5	BESTFOODS-SR UNSECURED				1FE	875,793	124.7066	804,357	645,000	820,316	(18,954)				7.250	3.332	JD	2,078	46,763	12/15/2015	12/15/2026
12621E-AK-9	CNO Financial Group Inc-SR UNSECURED				3FE	3,003,726	95.2500	2,927,033	3,073,000	3,021,251	6,508				5.250	5.564	MN	13,893	148,304	08/11/2016	05/30/2025
12626P-AM-5	CRH AMERICA INC-UNSECURED				2FE	12,379,754	96.1106	11,912,915	12,395,000	12,384,188	1,409				3.875	3.890	MN	480,306	57,180	05/12/2015	05/18/2025
12636Y-AA-0	CRH America Finance Inc-SENIOR UNSECURED				2FE	3,764,614	91.8032	3,635,406	3,960,000	3,775,128	10,514				3.400	4.064	MN	19,448	67,320	05/31/2018	05/09/2027
12636Y-AB-8	CRH AMERICA FINANCE INC-SENIOR UNSECURED				2FE	9,435,148	86.5493	8,213,533	9,490,000	9,436,182	927				4.400	4.435	MN	60,314	417,560	05/02/2017	05/09/2047
12636Y-AC-6	CRH America Finance Inc-SENIOR UNSECURED				2FE	7,782,380	95.2858	7,622,862	8,000,000	7,791,542	9,162				3.950	4.293	AO	76,367	158,000	07/11/2018	04/04/2028
12636Y-AD-4	CRH America Finance Inc-SENIOR UNSECURED				2FE	44,671,244	88.8870	40,532,468	45,600,000	44,678,293	7,049				4.500	4.626	AO	495,900	1,026,000	06/07/2018	04/04/2048
126408-BP-7	CSX CORP-DEBTURE				2FE	1,995,020	119.4109	2,388,218	2,000,000	1,997,165	216				7.250	7.271	MN	24,167	145,000	05/01/1997	05/01/2027
126408-GH-0	CSX CORP-SENIOR UNSECURED NOTE				2FE	25,136,335	116.2040	26,991,854	23,228,000	24,870,978	(56,821)				6.000	5.366	AO	348,420	1,393,680	05/18/2017	10/01/2036
126408-GK-3	CSX CORP-SENIOR UNSECURED				2FE	1,745,697	118.2635	1,151,078	1,320,000	1,711,781	(14,453)				6.150	3.873	MN	13,530	81,180	08/02/2016	05/01/2037
126408-GP-2	CSX CORP-SENIOR UNSECURED NOTE				2FE	144,767	129.6776	129,678	100,000	137,759	(1,213)				7.450	4.497	AO	1,863	7,450	06/26/2012	04/01/2038
126408-GS-6	CSX CORP-UNSECURED NOTE				2FE	23,112,597	118.5766	26,497,127	22,346,000	23,020,418	(16,659)				6.220	5.962	AO	235,514	1,389,921	08/02/2016	04/30/2040
126408-GU-1	CSX CORP-SENIOR UNSECURED NOTE				2FE	5,900,576	110.8688	5,443,656	4,910,000	5,784,717	(24,096)				5.500	4.238	AO	57,011	270,050	08/02/2016	04/15/2041
126408-GW-7	CSX CORP-SENIOR UNSECURED				2FE	9,712,140	99.6268	8,966,413	9,000,000	9,680,096	(17,437)				4.750	4.230	MN	36,813	427,500	04/11/2017	05/30/2042
126408-GY-3	CSX CORP-SENIOR UNSECURED				2FE	378,552	92.7330	324,566	350,000	375,097	(617)				4.100	3.656	MS	4,225	14,350	08/02/2016	03/15/2044
126408-GZ-0	CSX CORP-NOTE				2FE	7,594,224	101.4898	7,713,223	7,600,000	7,596,698	560				3.700	3.709	MN	46,867	281,200	10/17/2013	11/01/2023
126408-GZ-0	CSX CORP-NOTE				2FE	468,302	101.4898	456,704	450,000	460,255	(2,048)				3.700	3.162	MN	2,775	16,650	11/13/2014	11/01/2023
126408-HA-4	CSX Corp-SENIOR UNSECURED				2FE	548,965	93.8490	469,245	500,000	547,512	(613)				4.500	3.994	FA	9,375	22,500	08/02/2016	08/01/2054
126408-HC-0	CSX CORP-SENIOR UNSECURED				2FE	10,230	87.7476	8,775	10,000	10,221	(4)				3.950	3.827	MN	66	395	08/02/2016	05/01/2050
126408-HC-0	CSX CORP-SENIOR UNSECURED				2FE	12,286,482	87.7476	11,262,400	12,835,000	12,289,109	8,153				3.950	4.190	MN	84,497	506,983	05/18/2017	05/01/2050
126408-HD-8	CSX CORP NT				2FE	5,790,732	97.2805	5,739,548	5,900,000	5,819,605	10,191				3.350	3.576	MN	32,942	197,650	01/26/2016	11/01/2025
126408-HF-3	CSX CORP-SENIOR UNSECURED				2FE	8,996,007	88.0778	8,455,464	9,600,000	9,014,071	10,978				3.800	4.172	MN	60,800	364,800	04/19/2017	11/01/2046
126408-HG-1	CSX CORP-SENIOR UNSECURED				2FE	24,574,493	86.4531	21,461,989	24,825,000	24,576,327	1,483				4.250	4.299	MN	175,844	1,055,063	06/13/2017	11/01/2066
126410-LK-3	CSX TRANSPORTATION INC-DEBTURE				1FE	8,434,108	109.4060	9,244,811	8,450,000	8,448,796	(105)				9.750	9.752	JD	36,617	823,875	08/02/2016	06/15/2020
12652A-AA-1	CRC ESCROW ISSUER LLC / -SENIOR UNSECURE				4FE	5,763,000	86.0000	4,956,180	5,763,000	5,763,000					5.250	5.250	AO	63,873	302,558	09/29/2017	10/15/2025
12656*-AB-8	CSLB Holdings, Inc. Gtd Senior Note				1	15,800,000	100.7837	15,923,825	15,800,000	15,800,000					3.860	3.859	MN	89,788	609,880	11/08/2011	11/08/2021
12656*-AC-6	CSLB Holdings, Inc. Gtd Senior Note				1	17,550,000	101.1229	17,747,069	17,550,000	17,550,000					4.010	4.009	MN	103,608	703,755	11/08/2011	11/08/2023
12656*-AD-4	CSLB Holdings, Inc. Gtd Senior Note				1	17,600,000	102.2195	17,990,632	17,600,000	17,600,000					4.260	4.260	MN	110,381	749,760	11/08/2011	11/08/2026
12656*-AK-8	CSLB Holdings, Inc. Gtd Senior Note				1	23,000,000	93.0699	21,406,077	23,000,000	23,000,000					2.870	2.870	AO	143,022	660,100	10/13/2016	10/13/2026
126634-AC-8	CVR REF LLC/COFF FIN INC-SECURED NOTE				4FE	12,211,801	98.5000	12,332,200	12,520,000	12,365,066											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
12673P-AC-9	CA INC-NOTE			1	2FE	14,236,301	101.2862	14,332,001	14,150,000	14,161,077	(12,446)				5.375	5.281	JD	63,380	710,642	12/02/2013	12/01/2019
12673P-AE-5	CA Inc-SENIOR UNSECURED NOTE			1	2FE	12,943,850	100.9767	13,126,965	13,000,000	12,970,276	5,540				4.500	4.554	FA	221,000	585,000	08/14/2013	08/15/2023
12684P-AA-2	CSCC LLC Senior Secured			2	2	46,983,506	98.1362	46,107,827	46,983,506	46,983,506					3.790	3.790	MJSD	456,121	1,762,596	08/21/2015	06/30/2032
127055-AH-4	Cabot Corp-SENIOR UNSECURED NOTE			1	2FE	13,331,402	99.6918	13,259,004	13,300,000	13,317,780	(4,675)				3.700	3.659	JJ	226,913	492,100	07/02/2015	07/15/2022
127055-AK-7	CABOT CORP-SENIOR UNSECURED			1	2FE	5,222,103	95.3359	4,986,068	5,230,000	5,223,503	705				3.400	3.418	MS	52,358	177,820	09/06/2016	09/15/2026
127055-AK-7	CABOT CORP-SENIOR UNSECURED			1	2FE	2,471,347	95.3359	2,335,730	2,450,000	2,466,854	(1,964)				3.400	3.295	MS	24,527	83,300	09/07/2016	09/15/2026
129466-AM-0	BERKSHIRE HATHAWAY ENERG-SR UNSECURED			1	1FE	780,123	133.7457	728,914	545,000	734,700	(15,637)				8.480	4.096	MS	13,608	46,216	12/15/2015	09/15/2028
130789-AF-7	CALIFORNIA WATER SVC CO GTD 1ST MTG BD S			2	1FE	366,994	115.1432	351,187	305,000	360,489	(1,573)				5.500	4.203	JJ	1,398	16,775	07/18/2014	12/01/2040
131347-CF-1	CALPINE CORP-SENIOR UNSECURED			1	4FE	3,395,036	91.5000	3,247,335	3,549,000	3,421,320	16,772				5.750	6.478	JJ	43,081	204,068	06/05/2017	01/15/2025
133131-AS-1	CAMDEN PROPERTY TRUST-SENIOR UNSECURED N			1	1FE	2,918,292	104.8011	2,724,828	2,600,000	2,745,736	(31,670)				4.875	3.433	JD	5,633	126,750	01/29/2013	06/15/2023
133131-AT-9	CAMDEN PROPERTY TRUST-SENIOR UNSECURED N			1	1FE	10,498,360	97.8273	10,516,432	10,750,000	10,623,381	29,334				2.950	3.269	JD	14,094	317,125	07/02/2015	12/15/2022
133131-AV-4	CAMDEN PROPERTY TRUST-SENIOR UNSECURED N			1	1FE	17,365,425	98.5031	17,238,037	17,500,000	17,416,894	12,803				3.500	3.592	MS	180,347	612,500	09/03/2014	09/15/2024
133131-AW-2	CAMDEN PROPERTY TRUST-SENIOR UNSECURED N			1	1FE	5,893,687	101.2411	5,973,225	5,900,000	5,893,501	(186)				4.100	4.113	AO	58,459		10/02/2018	10/15/2028
13342B-AE-5	Cameron International Co-SENIOR UNSECURE			1,5	2FE	2,009,022	101.2009	1,932,817	1,900,000	1,935,687	(15,546)				4.500	3.592	JD	7,125	85,500	12/04/2016	06/01/2021
13342B-AF-2	Cameron International Co-SENIOR UNSECURE			1,5	2FE	21,638,653	116.6909	20,385,901	17,470,000	21,122,523	(96,934)				5.950	4.447	JD	86,622	1,039,440	02/13/2013	06/01/2041
13342B-AL-9	CAMERON INTL CORP-SENIOR UNSECURED NOTE			1	2FE	9,017,511	99.0562	8,964,587	9,050,000	9,032,123	3,171				4.000	4.044	JD	16,089	362,000	12/11/2013	12/15/2023
134429-AZ-2	CAMPBELL SOUP CO-SENIOR UNSECURED			1	2FE	1,445,699	74.7386	1,158,448	1,550,000	1,449,591	2,441				3.800	4.237	FA	24,378	58,900	05/16/2017	08/02/2042
138616-AC-1	CANTOR FITZGERALD LP-UNSECURED			2	2FE	420,875	106.0294	424,118	400,000	413,547	(3,473)				6.500	5.413	JD	1,011	26,000	10/20/2016	06/17/2022
14040H-AY-1	Capital One Financial Co-SENIOR NOTE			2	2FE	8,410,877	102.4773	8,659,330	8,450,000	8,438,047	4,264				4.750	4.809	JJ	185,078	401,375	07/14/2011	07/15/2021
14040H-BP-9	CAPITAL ONE FINANCIAL CO-SENIOR UNSECURE			2	2FE	2,516,125	98.7060	2,467,649	2,500,000	2,508,241	(6,282)				2.500	2.237	MN	8,507	62,109	09/26/2017	05/12/2020
140420-NB-2	CAPITAL ONE BANK USA NA-SUBORDINATED NOT			2	2FE	8,470,189	96.5569	8,110,776	8,400,000	8,431,496	(7,073)				3.375	3.276	FA	107,100	283,500	02/12/2013	02/15/2023
14149Y-BB-3	Cardinal Health Inc-SR UNSECURED			1	2FE	1,265,206	84.7510	1,019,555	1,203,000	1,260,832	(1,262)				4.500	4.190	MN	6,917	54,135	05/11/2015	11/15/2044
14149Y-BD-9	CARDINAL HEALTH INC-SENIOR UNSECURE			1	2FE	310,381	90.1836	261,533	290,000	309,924	(396)				4.900	4.453	MS	4,184	14,210	10/30/2017	09/15/2045
14149Y-BM-9	CARDINAL HEALTH INC-SENIOR UNSECURED			1	2FE	249,872	85.1582	212,896	250,000	249,880	2				4.368	4.371	JD	485	10,920	10/30/2017	06/15/2047
14149Y-BN-9	CARDINAL HEALTH INC-SENIOR UNSECURED			1	2FE	9,400,000	85.1582	8,004,872	9,400,000	9,400,000					4.368	4.368	JD	18,249	410,592	06/01/2017	06/15/2047
141781-AT-1	Cargill Inc-SENIOR UNSECURED BOND			1,5	1FE	6,845,575	118.7496	6,531,229	5,500,000	6,816,673	(28,902)				6.125	4.015	AO	67,375	168,438	07/11/2018	04/19/2034
141781-BC-7	Cargill Inc-SR UNSECURED			1	1FE	609,699	97.4078	572,758	588,000	607,922					4.100	3.881	MN	4,018	24,108	05/11/2015	11/01/2042
141781-BF-0	CARGILL INC-SR UNSECURED			1	1FE	68,201,922	106.2936	69,202,676	65,125,000	68,102,459	(67,507)				4.760	4.431	MN	327,217	2,879,187	09/19/2018	11/23/2045
142339-AF-7	Carlisle Cos Inc-SENIOR UNSECURED NOTE			1	2FE	16,401,461	98.5415	16,219,932	16,460,000	16,433,726	6,045				3.750	3.794	MN	78,871	617,250	12/02/2013	11/15/2022
14313*-AA-1	CarMax Auto Superstores, Senior Note Ser			1	2	6,380,000	97.2886	6,207,013	6,380,000	6,380,000					3.860	3.860	AO	43,781	246,268	06/22/2016	04/27/2023
14313*-AB-9	CarMax Auto Superstores, Senior Note Ser			1	2	12,350,000	96.1566	11,875,340	12,350,000	12,350,000					4.170	4.170	AO	91,555	514,995	06/22/2016	04/27/2026
14313*-AC-7	CarMax Auto Superstores, Senior Note Ser			1	2	8,380,000	95.6971	8,019,417	8,380,000	8,380,000					4.270	4.270	AO	63,614	357,826	06/22/2016	04/27/2028
14314C-AA-3	CARLYLE FINANCE LLC-SENIOR UNSECURED			1	2FE	25,877,726	99.2194	25,697,823	25,900,000	25,875,349	(2,377)				5.650	5.656	MS	434,940		09/07/2018	09/15/2048
144141-CU-0	DUKE ENERGY PROGRESS INC-SECURED			1	1FE	272,106	118.6175	252,655	213,000	263,435	(2,483)				6.125	3.982	MS	3,841	13,046	05/11/2015	09/15/2033
144141-CZ-9	CAROLINA PWR & LT CO 1ST MTG BOND			1	1FE	2,098,663	100.0667	1,746,165	1,745,000	1,747,384	(61,124)				5.300	1.749	JJ	42,646	92,485	01/01/2013	01/15/2019
144141-DA-3	DUKE ENERGY PROGRESS INC-SECURED			1	1FE	7,655,138	100.1428	7,575,804	7,565,000	7,591,726	(10,364)				3.000	2.850	MS	66,824	226,950	12/15/2015	09/15/2021
144141-DB-1	DUKE ENERGY PROGRESS INC-SECURED			1	1FE	49,313	97.0059	48,503	50,000	49,359	16				4.100	4.186	MN	262	2,050	12/09/2015	05/15/2042
144141-DB-1	DUKE ENERGY PROGRESS INC-SECURED			1	1FE	3,280,886	97.0059	3,068,298	3,163,000	3,273,057	(3,004)				4.100	3.868	MN	16,571	129,683	10/30/2017	05/15/2042
144141-DC-9	DUKE ENERGY PROGRESS LLC-SECURED			1	1FE	150,561	98.6506	147,976	150,000	150,298	(90)				2.800	2.733	MN	537	4,200	12/15/2015	05/15/2022
14456#-AA-4	Carrix, Inc. Gtd Senior Note			1	2PL	18,000,000	101.2162	18,218,916	18,000,000	18,000,000					4.960	4.961	JJ	374,480	895,280	07/19/2017	07/31/2027
14456#-AB-2	Carrix, Inc. Gtd Senior Note			1	2PL	7,500,000	101.6042	7,620,315	7,500,000	7,500,000					5.060	5.061	JJ	159,179	380,554	07/19/2017	07/31/2029
14456#-AC-0	Carrix, Inc. Gtd Senior Note			1	2PL	16,000,000	102.6403	16,422,448	16,000,000	16,000,000					5.210	5.211	JJ	349,649	835,916	07/19/2017	07/31/2032
147528-E8-8	Casey's General Stores, Senior Note			2	2	6,776,280	101.3659	6,081,954	6,000,000	6,180,990	(107,627)				5.220	3.283	FA	123,540	313,200	01/01/2013	08/09/2020
14879E-AD-0	CATALENT PHARMA SOLUTION-SENIOR UNSECURE			1	4FE	3,823,000	94.7500	3,622,293	3,823,000	3,823,000					4.875	4.872	JJ	85,938	186,371	10/13/2017	01/15/2026
149123-B5-9	Caterpillar Inc-SENIOR UNSECURED NOTE			1	1FE	639,378	110.7368	570,295	515,000	631,642	(3,296)				5.200	3.703	MN	2,529	26,780	08/02/2016	05/27/2041
149123-BV-2	CATERPILLAR INC-SR UNSECURED			1	1FE	4,731,517	101.8099	4,530,541	4,450,000	4,531,003	(72,587)				3.900	2.155	MN	16,391	173,550	09/21/2017	05/27/2021
149123-CB-5	Caterpillar Inc-SENIOR UNSECURED BOND			1	1FE	65,510,254	93.0331	62,025,188	66,670,000	65,598,069	9,685				3.803	3.883	FA	957,840	2,446,575	10/04/2018	08/15/2042
149123-CD-1	Caterpillar Inc-SR UNSEC																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
151020-AH-7	Celgene Corp-SENIOR UNSECURED NOTE	1		5	2FE	22,808,372	98.1783	22,581,013	23,000,000	22,906,726					3.250	3.369	FA	282,389	747,500	07/02/2015	08/15/2022
151020-AL-8	CELGENE CORP-SENIOR UNSECURED BOND	1			2FE	19,829,400	96.1982	19,829,644	20,000,000	19,843,644		3,019			5.250	5.307	FA	396,667	1,050,000	08/01/2013	08/15/2043
151020-AM-6	CELGENE CORP-SR UNSECURED	1			2FE	4,373,470	87.8442	3,616,547	4,117,000	4,355,208		(5,386)			4.625	4.244	MN	24,300	190,411	05/16/2017	05/15/2044
151020-AP-9	CELGENE CORP-SENIOR UNSECURED NOTE	1			2FE	5,132,439	97.5309	5,022,843	5,150,000	5,139,617		1,692			3.625	3.666	MN	23,855	186,688	05/06/2014	05/15/2024
151020-AS-3	CELGENE CORP-SR UNSECURED	1			2FE	17,212,109	96.2662	16,731,073	17,380,000	17,261,078		15,323			3.875	3.993	FA	254,424	673,475	08/03/2015	08/15/2025
151020-AS-3	CELGENE CORP-SR UNSECURED	1			2FE	95,042	96.2662	86,640	90,000	93,693		(515)			3.875	3.159	FA	1,318	3,488	04/13/2016	08/15/2025
151020-AU-8	CELGENE CORP-SR UNSECURED	1			2FE	13,557,976	92.4683	12,575,686	13,600,000	13,559,503		700			5.000	5.020	FA	256,889	1,025,667	08/03/2015	08/15/2045
151020-AU-8	CELGENE CORP-SR UNSECURED	1			2FE	30,132,316	92.4683	25,706,181	27,800,000	30,083,428		(44,312)			5.000	4.461	FA	525,111	1,390,000	01/19/2018	08/15/2045
151020-AW-4	Celgene Corp-SENIOR UNSECURED	1			2FE	834,771	84.2105	791,578	940,000	835,112		342			4.350	5.092	MN	5,225	3,748	10/04/2018	11/15/2047
151020-AZ-7	Celgene Corp-SENIOR UNSECURED	1			2FE	4,741,648	86.6595	4,614,619	5,325,000	4,741,995		348			4.550	5.291	FA	88,166		12/19/2018	02/20/2048
15135#-BN-1	Centennial Energy Holdin Senior Note Ser	1			2	20,500,000	100.8353	20,671,237	20,500,000	20,500,000					4.970	4.969	JD	31,132	1,018,850	12/20/2012	12/20/2027
15135#-BR-2	Centennial Energy Holdin Senior Note Ser	1			2	20,500,000	100.8353	20,671,237	20,500,000	20,500,000					4.970	4.969	JD	540,557	1,018,850	02/20/2013	12/20/2027
151895-C*-8	CenterPoint Properties T Senior Note Ser	1			2	20,200,000	96.2003	19,432,461	20,200,000	20,200,000					3.600	3.599	JD	369,590	727,200	06/12/2013	06/12/2023
151895-D*-7	CenterPoint Properties T Senior Note Ser	1			2	24,125,000	95.3910	23,013,079	24,125,000	24,125,000					3.590	3.589	JD	55,333	866,088	06/08/2016	06/08/2024
151895-D*-8	CenterPoint Properties T Senior Note Ser	1			2	18,200,000	93.3360	16,987,152	18,200,000	18,200,000					3.750	3.750	FA	238,875	644,583	08/25/2016	08/25/2026
15189W-AG-5	CENTERPOINT ENERGY RESOURCES SR UNSECURE	1			2FE	8,496,506	102.0099	8,752,446	8,580,000	8,559,088		9,493			4.500	4.626	JJ	178,035	386,100	09/13/2011	01/15/2021
15189W-AG-5	CENTERPOINT ENERGY RESOURCES SR UNSECURE	1			2FE	5,118,887	102.0099	4,840,368	4,745,000	4,853,621		(58,025)			4.500	3.175	JJ	98,459	213,525	02/21/2014	01/15/2021
15189W-AH-3	CENTERPOINT ENERGY RESOU-SENIOR NOTE	1			2FE	24,980	117.3576	29,339	25,000	24,984					5.850	5.855	JJ	674	1,463	09/13/2011	01/15/2041
15189W-AH-3	CENTERPOINT ENERGY RESOU-SENIOR NOTE	1			2FE	5,826,926	117.3576	5,416,052	4,615,000	5,667,263		(29,515)			5.850	4.226	JJ	124,490	269,978	12/02/2013	01/15/2041
15189W-AJ-9	CENTERPOINT ENERGY RESOU-SENIOR UNSECURE	1			2FE	7,177,907	92.5626	6,683,017	7,220,000	7,178,632		782			4.100	4.134	MS	98,673	296,020	08/21/2017	09/01/2047
15189X-AM-0	CENTERPOINT ENER HOUSTON-SECURED NOTE	1			1FE	11,969,280	90.9704	10,916,448	12,000,000	11,973,074		712			3.550	3.564	FA	177,500	426,000	08/07/2012	08/01/2042
15189X-AS-7	CenterPoint Energy HousT-SECURED	1			1FE	9,359,016	97.1594	9,132,987	9,400,000	9,359,251		235			3.950	3.975	MS	312,511		02/26/2018	03/01/2048
15189Y-AD-8	CENTERPOINT ENERGY RESOU-SENIOR NOTE	1			2FE	4,106,982	112.9844	3,739,782	3,310,000	4,003,391		(24,322)			6.250	4.539	FA	86,198	206,875	05/14/2014	02/01/2037
156504-AH-5	Century Communities Inc-SENIOR UNSECURED	1			4FE	2,237,232	88.0000	2,031,920	2,309,000	2,240,079		2,848			5.875	6.434	JJ	62,551	37,099	08/30/2018	07/15/2025
15678#-AJ-4	Corner Corporation Senior Note Ser	1			1	48,550,000	98.9346	48,032,748	48,550,000	48,550,000					3.580	3.580	FA	656,612	1,738,090	01/29/2015	02/14/2025
15909#-AA-4	Chanel, Inc. Senior Note Ser	1			2	41,500,000	98.3866	40,830,439	41,500,000	41,500,000					3.770	3.770	AO	330,294	1,564,550	10/15/2014	10/15/2024
15909#-AB-2	Chanel, Inc. Senior Note Ser	1			2	3,000,000	97.8506	2,935,518	3,000,000	3,000,000					3.920	3.920	AO	24,826	117,597	10/15/2014	10/15/2026
161175-AX-2	CHARTER COMM OPT LLC/CAP-FIRST LIEN	1			2FE	85,000	99.8922	84,908	85,000	85,000					3.579	3.578	JJ	1,335	3,042	12/01/2016	07/23/2020
161175-AY-0	CHARTER COMM OPT LLC/CAP-FIRST LIEN	1			2FE	7,085,000	99.4360	7,045,039	7,085,000	7,085,000					4.908	4.907	JJ	152,616	347,732	12/01/2016	07/23/2025
161175-AZ-7	CHARTER COMM OPT LLC/CAP-FIRST LIEN	1			2FE	1,298,543	102.6447	1,129,092	1,100,000	1,283,819		(7,238)			6.384	4.885	AO	13,265	70,224	12/01/2016	10/23/2035
161175-BA-1	CHARTER COMM OPT LLC/CAP-FIRST LIEN	1			2FE	5,324,809	102.7939	5,442,935	5,295,000	5,324,145		(441)			6.484	6.438	AO	64,851	344,553	04/12/2018	10/23/2045
161175-BJ-2	Charter Communications 0-FIRST LIEN	1			2FE	195,845	90.4616	180,923	200,000	196,218		341			3.750	3.999	FA	2,833	7,500	12/01/2017	02/15/2028
161175-BL-7	Charter Communications 0-FIRST LIEN	1			2FE	11,426,021	90.6169	10,357,511	11,430,000	11,425,778		49			5.375	5.377	MN	102,394	614,363	12/04/2017	05/01/2047
161175-BL-7	Charter Communications 0-FIRST LIEN	1			2FE	9,458,676	90.6169	8,048,593	8,882,000	9,448,451		(9,332)			5.375	4.950	MN	79,568	477,408	12/04/2017	05/01/2047
16412X-AG-0	Cheniere Corpus Christi -FIRST LIEN	1			3FE	1,215,000	94.4050	1,147,021	1,215,000	1,215,000					5.125	5.127	JD	31,307	31,654	12/28/2017	06/30/2027
166751-AJ-6	CHEVRON CORP-SENIOR UNSECURED NOTE	1			1FE	6,114,861	100.3143	5,154,147	5,138,000	5,166,822		(166,423)			4.950	1.661	MS	83,364	254,331	12/15/2015	03/03/2019
166764-AH-3	CHEVRON CORP-SR UNSECURED	1			1FE	151,838	99.8433	149,765	150,000	151,120		(244)			3.191	3.002	JD	93	4,787	12/15/2015	06/24/2023
166764-AR-1	CHEVRON CORP-SR UNSECURED	1			1FE	247,681	98.9960	247,490	250,000	249,329		557			1.961	2.193	MS	1,607	4,903	12/15/2015	03/03/2020
166764-AT-7	CHEVRON CORP-SR UNSECURED	1			1FE	194,835	97.8966	195,793	200,000	197,241		818			2.411	2.869	MS	1,581	4,822	12/15/2015	03/03/2022
166764-AY-6	CHEVRON CORP-SR UNSECURED	1			1FE	149,429	99.0797	148,620	150,000	149,772		116			2.419	2.502	MN	443	3,629	12/15/2015	11/17/2020
166764-BD-1	CHEVRON CORP-SR UNSECURED	1			1FE	677,640	99.2120	669,681	675,000	676,896		(251)			3.326	3.279	MN	2,744	22,451	12/15/2015	11/17/2025
167885-AA-0	CHICAGO PARKING METERS L-SENIOR NOTE	1			2FE	28,438,842	103.6205	27,770,301	26,800,000	27,267,962		(219,053)			5.489	4.564	JD	739,612	1,471,052	05/08/2013	12/30/2020
16876A-AA-2	CHILDREN'S HOSPITAL MEDI- SECURED NOTE	1			1FE	29,504,462	101.4971	29,505,194	29,070,000	29,478,331		(8,866)			4.268	4.176	MN	158,535	1,260,886	05/04/2018	05/15/2044
16876B-AA-0	CHILDREN'S HOSPITAL CORP-UNSECURED	1			1FE	9,830,000	100.3765	9,867,009	9,830,000	9,830,000					4.115	4.116	JJ	202,252	404,505	01/24/2017	01/01/2047
16876B-AA-0	CHILDREN'S HOSPITAL CORP-UNSECURED	1			1FE	8,324,394	100.3765	8,060,232	8,030,000	8,314,904		(5,702)			4.115	3.903	JJ	165,217	330,435	05/25/2017	01/01/2047
171232-AO-4	CHUBB CORP-SR UNSECURED	1			1FE	11,012,743	121.1044	10,745,590	8,873,000	10,954,810		(45,397)			6.000	4.159	MN	73,942	351,788	06/05/2018	05/11/2037
171232-AS-0	CHUBB CORP-SR NOTE	1			1FE	13,730,935	127.4783	12,945,426	10,155,000	13,187,005		(99,770)			6.500	4.225	MN	84,433	660,075	08/02/2016	05/15/2038
171265-A@-0	Chugach Electric Associa First Mortgage	1			1	21,466,665	103.6916	22,259,129	21,												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
17252M-AN-0	Cintas Corp No 2-SENIOR UNSECURED			1	2FE	11,377,801	.97	6660	11,235,502	11,504,000	.11	383,312		5,511	3.700	3.849	AO	106,412	212,824	07/17/2018	04/01/2027
17275R-AD-4	Cisco Systems Inc-NOTE			1	1FE	54,565,638		123,1191	57,655,425	46,829,000		53,988,346	(237,020)		5.900	4.666	FA	1,043,766	2,762,911	08/17/2016	02/15/2039
17275R-AF-9	Cisco Systems Inc-BOND			1	1FE	44,504,097		117,9929	45,237,279	38,339,000		44,068,791	(181,007)		5.500	4.363	JJ	972,320	2,108,645	08/17/2016	01/15/2040
17275R-AH-5	CISCO SYSTEMS INC-SR UNSECURED			1	1FE	217,642		101,5523	203,105	200,000		204,657	(4,387)		4.450	2.770	JJ	4,104	8,900	12/15/2015	01/15/2020
17275R-AP-7	CISCO SYSTEMS INC-SR UNSECURED			1	1FE	256,944		100,1725	250,431	250,000		253,004	(1,333)		2.900	2.329	MS	2,356	7,250	12/15/2015	03/04/2021
17275R-AR-3	CISCO SYSTEMS INC-SR UNSECURED			1	1FE	604,947		99,8593	599,156	600,000		600,259	(1,579)		2.125	1.857	MS	4,250	12,750	12/15/2015	03/01/2019
17275R-AW-2	CISCO SYSTEMS INC-SR UNSECURED			1	1FE	554,381		100,4072	542,199	540,000		550,246	(1,410)		3.500	3.172	JD	840	18,900	12/15/2015	06/15/2025
17275R-AX-0	CISCO SYSTEMS INC-SR UNSECURED			1	1FE	151,594		99,4693	149,204	150,000		150,534	(358)		2.450	2.200	JD	163	3,675	12/15/2015	06/15/2020
172958-2F-6	CITIFUNDS INSTL TR/LEGG MASON PTNRS LIQU			6	1	2,033,070		2,2135	1,106,740	50,000,000		1,163,247			0.758	(2.494)	MON	378,960	23,736	08/24/2006	09/16/2019
172967-AM-3	CITIGROUP INC-SENIOR UNSECURED				2FE	50,729		113,9767	45,591	40,000		48,103	(1,115)		6.875	3.341	JD	229	2,750	08/02/2016	06/01/2025
172967-AR-2	CITIGROUP INC-SENIOR UNSECURED				2FE	287,408		114,6882	258,048	225,000		276,319			6.625	3.641	JJ	6,873	14,906	08/02/2016	01/15/2028
172967-BL-4	CITIGROUP INC-GLOBAL SUB NT				2FE	1,550,785		116,3883	1,489,770	1,280,000		1,521,315	(12,669)		6.625	4.712	JD	3,769	84,800	10/30/2017	06/15/2032
172967-CC-3	CITIGROUP INC-SUBORDINATED				2FE	238,483		109,7269	222,746	203,000		235,008	(1,488)		6.000	4.528	AO	2,064	12,180	08/02/2016	10/31/2033
172967-EW-7	Citigroup Inc-SENIOR NOTE				2FE	10,549,151		138,7351	9,460,343	6,819,000		10,227,500	(100,741)		8.125	4.400	JJ	255,476	554,044	08/02/2016	07/15/2039
172967-FT-3	CITIGROUP INC-SR UNSECURED				2FE	531,315		102,1734	510,867	500,000		518,239	(5,643)		4.500	3.227	JJ	10,438	22,500	02/16/2017	01/14/2022
172967-FX-4	CITIGROUP INC-SR UNSECURED				2FE	2,616,886		113,0203	2,422,026	2,143,000		2,585,726	(11,020)		5.875	4.429	JJ	52,809	125,901	08/02/2016	01/30/2042
172967-HA-2	Citigroup Inc-SUBORDINATED				2FE	4,972,540		117,9679	4,474,524	3,793,000		4,898,366	(23,437)		6.675	4.673	MS	75,955	253,183	10/20/2016	09/13/2043
172967-HB-0	CITIGROUP INC-SUBORDINATED				2FE	1,066,782		104,9389	986,425	940,000		1,037,251	(12,562)		5.500	3.739	MS	15,510	51,700	08/02/2016	09/13/2025
172967-HD-6	CITIGROUP INC-SR UNSECURED				2FE	154,858		100,2907	150,436	150,000		153,132	(580)		3.875	3.401	AO	1,066	5,813	12/15/2015	10/25/2023
172967-HE-4	CITIGROUP INC-SR UNSECURED				2FE	1,581,469		101,0792	1,501,026	1,485,000		1,575,794	(1,946)		4.950	4.537	MN	11,026	73,508	12/09/2015	11/07/2043
172967-HM-6	CITIGROUP INC-SR UNSECURED				2FE	226,414		99,8566	224,677	225,000		225,116	(439)		2.550	2.320	AO	5,738	5,738	12/15/2015	04/08/2019
172967-HS-3	CITIGROUP INC-SUBORDINATED				2FE	746,551		99,6585	672,695	675,000		743,293	(1,398)		5.300	4.618	MN	5,466	35,775	08/02/2016	05/06/2044
172967-JC-6	Citigroup Inc-SUBORDINATED NOTE				2FE	251,833		96,1621	230,789	240,000		240,526	(1,133)		4.300	3.654	MN	1,175	10,320	10/30/2017	11/20/2026
172967-JJ-1	CITIGROUP INC-SR UNSECURED				2FE	16,089,525		99,0919	15,978,571	16,125,000		16,116,370	7,242		2.400	2.447	FA	142,975	387,000	02/10/2015	02/18/2020
172967-JL-6	CITIGROUP INC-SUBORDINATED				2FE	17,235,166		96,7189	17,198,547	17,782,000		17,396,961	52,519		3.875	4.272	MS	181,833	689,053	02/25/2016	03/26/2025
172967-JP-7	CITIGROUP INC-SR UNSECURED				2FE	146,625		94,9657	142,449	150,000		147,586	333		3.300	3.585	AO	880	4,950	12/15/2015	04/27/2025
172967-JT-9	CITIGROUP INC-SUBORDINATED				2FE	1,275,400		97,8644	1,179,266	1,205,000		1,258,399	(7,241)		4.400	3.622	JD	3,093	53,020	08/02/2016	06/10/2025
172967-JU-6	CITIGROUP INC-SENIOR UNSECURED				2FE	150,686		97,4033	131,494	135,000		150,044	(315)		4.650	3.968	JJ	2,633	6,278	10/30/2017	07/30/2045
172967-KA-8	CITIGROUP INC-SUBORDINATED				2FE	6,432,438		96,3817	6,028,674	6,255,000		6,408,366	(14,569)		4.450	4.109	MS	71,133	278,348	10/30/2017	09/29/2027
172967-KB-6	CITIGROUP INC-SR UNSECURED				2FE	346,950		98,6705	345,347	350,000		348,801	629		2.650	2.420	AO	9,275	9,275	12/15/2015	10/26/2020
172967-KG-5	CITIGROUP INC-SR UNSECURED				2FE	333,967		96,1464	312,476	325,000		331,763	(840)		3.700	3.365	JJ	5,645	12,025	04/12/2016	01/12/2026
172967-KV-2	CITIGROUP INC-SENIOR UNSECURED				2FE	4,476,270		97,1462	4,371,578	4,500,000		4,483,787	5,979		2.350	2.494	FA	43,769	105,750	09/29/2017	08/02/2021
172967-KY-6	CITIGROUP INC-SENIOR UNSECURED			1	2FE	351,765		92,3188	327,732	355,000		352,122	317		3.200	3.318	AO	2,209	11,360	10/30/2017	10/21/2026
172967-LJ-8	CITIGROUP INC-SENIOR UNSECURED		1,5		2FE	139,361		92,3809	133,952	145,000		139,396	35		4.281	4.520	AO	1,155	4,259	08/09/2018	04/24/2048
172967-LJ-8	CITIGROUP INC-SENIOR UNSECURED		1,5		2FE	408,208		92,3809	355,666	385,000		407,745	(385)		4.281	3.933	AO	3,067	16,482	10/30/2017	04/24/2048
172967-LP-4	CITIGROUP INC-SENIOR UNSECURED		1,5		2FE	365,211		94,4677	340,084	360,000		364,720	(429)		3.668	3.489	JJ	5,759	13,205	10/30/2017	07/24/2028
172967-LW-9	Citigroup Inc-SENIOR UNSECURED				2FE	9,059,746		97,2951	8,951,145	9,200,000		9,065,356	5,610		4.075	4.251	AO	70,814	189,714	06/15/2018	04/23/2029
17858P-AA-9	CITY OF HOPE-SECURED			1	1FE	28,886,634		117,4000	26,861,114	22,880,000		28,726,156	(134,510)		5.623	3.992	MN	164,392	1,264,817	10/04/2018	11/15/2043
17858P-AB-7	City of Hope-SENIOR UNSECURED			1	1FE	11,074,212		98,5592	10,629,607	10,785,000		11,070,476	(3,736)		4.378	4.291	FA	178,374	551,543	05/31/2018	08/15/2048
17858P-AB-7	City of Hope-SENIOR UNSECURED			1	1FE	26,252,925		98,5592	25,911,208	26,290,000		26,253,043	119		4.378	4.387	FA	434,813	295,104	10/22/2018	08/15/2048
184692-B#-7	Clearbridge Energy MLP Fd Inc-Senior Sec			1	1FE	36,353,712		100,0718	36,379,814	36,353,712		36,353,712			3.780	3.779	JD	95,428	1,374,170	06/06/2013	06/06/2025
184692-B*-1	Clearbridge Energy MLP Fd Inc-Senior Sec			1	1FE	29,971,616		102,2769	30,654,039	29,971,616		29,971,616			4.210	4.209	JJ	592,347	1,261,805	07/12/2012	07/12/2024
184692-B#-9	Clearbridge Energy MLP F Senior Secured			1	1FE	36,353,712		99,7293	36,255,302	36,353,712		36,353,712			3.650	3.649	JD	92,147	1,326,910	06/06/2013	06/06/2023
184692-C*-0	Clearbridge Energy MLP Fd Inc-Senior Sec			1	1FE	3,059,098		102,4321	3,133,498	3,059,098		3,059,098			4.200	4.200	AO	21,771	128,482	04/30/2014	04/30/2026
18469P-A#-7	Clearbridge Energy MLP Op Fd Inc-Senior			1	1FE	17,889,188		101,3950	18,138,742	17,889,188		17,889,188			4.020	4.019	FA	287,658	719,145	02/07/2013	02/07/2025
18469P-A*-1	ClearBridge Energy MLP O Senior Secured			1	1FE	3,461,823		99,6014	3,441,886	3,427,548		3,441,132	(12,039)		3.270	2.900	FA	44,832	112,081	04/05/2017	02/07/2020
18469P-A#-9	Clearbridge Energy MLP Op Fd Inc-Senior			1	1FE	4,515,745		100,5482	4,540,501	4,515,745		4,515,745			3.870	3.869	FA	69,904	174,759	02/07/2013	02/07/2023
18469Q-A#-5	Clearbridge Energy MLP Fd Inc-Senior Sec			1	1FE	18,239,443		101,7275	18,554,530	18,239,443		18,239,443			4.080	4.080	MS	192,244	744,169	03/28/2013	0

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
189478-AA-4	Clubessentials LLC Senior Sub Note			2	5	1,740,792	.99	664,647	1,770,363	1,776,319	1,746,354				0.000	0.338	JA			05/02/2018	01/16/2024
191216-AF-7	COCA-COLA CO/THE-SENIOR UNSECURED				1FE	666,697		148,443	400,000	400,000	583,583				7.375	4.359	JJ	12,456	29,500	08/02/2016	07/29/2093
191216-AZ-3	COCA-COLA CO/THE-SR UNSECURED			1	1FE	199,113		97,600	200,000	200,000	199,460				2.500	2.567	AO	1,250	5,000	12/15/2015	04/01/2023
191216-BE-9	COCA-COLA CO/THE-SR UNSECURED			1	1FE	233,003		100,310	225,000	225,000	230,118				3.200	2.694	MN	1,200	7,200	12/15/2015	11/01/2023
191216-BG-4	COCA-COLA CO/THE-SR UNSECURED			1	1FE	611,369		99,364	596,187	600,000	604,417				2.450	2.038	MN	2,450	14,700	12/15/2015	11/01/2020
191216-BT-6	COCA-COLA CO/THE-SR UNSECURED			1	1FE	198,107		98,286	196,573	200,000	199,265				1.875	2.081	AO	667	3,750	12/15/2015	10/27/2020
194160-BX-7	Colgate-Palmolive Co-NOTE				1FE	2,288,760		123,778	2,429,773	1,963,000	2,127,648				7.600	5.998	MN	12,432	149,188	12/09/2008	05/19/2025
194160-CE-8	Colgate-Palmolive Co-MEDIUM TERM NOTE				1FE	9,292,599		122,912	10,478,275	8,525,000	9,091,734				6.450	5.501	JD	45,822	549,863	01/15/2014	06/16/2028
194160-EC-0	COLGATE-PALMOLIVE CO-SR UNSECURED			1	1FE	289,294		96,354	300,000	300,000	293,445				2.100	2.637	MN	1,050	6,300	12/15/2015	05/01/2023
195674-JB-6	Colonial Gas Co. Senior Note Ser			1	1FE	21,100,000		104,076	21,960,205	21,100,000	21,100,000				4.628	4.628	MS	287,527	976,508	03/15/2012	03/15/2042
195869-AG-7	COLONIAL PIPELINE CO-BOND			1	1FE	5,034,269		134,017	6,740,737	5,030,000	5,034,073				7.630	7.620	AO	33,040	383,789	11/28/2009	04/15/2032
195869-AJ-1	COLONIAL PIPELINE CO-NOTE			1	1FE	4,346,825		123,912	5,390,398	4,350,000	4,347,365				6.580	6.585	FA	97,795	286,230	08/20/2002	08/28/2032
195869-AN-2	COLONIAL PIPELINE CO-BOND			1	1FE	22,225,952		94,798	21,234,942	22,400,000	22,243,585				4.200	4.246	AO	198,613	940,800	04/03/2013	04/15/2043
195869-AP-7	COLONIAL PIPELINE CO-SR UNSECURED			1	1FE	12,655,229		101,004	12,817,455	12,690,000	12,664,711				3.750	3.783	AO	475,875	475,875	09/16/2015	10/01/2025
195869-AQ-5	Colonial Pipeline Co-SENIOR UNSECURED			1	1FE	145,997		95,882	143,824	150,000	146,025				4.250	4.412	AO	1,346	1,222	08/01/2018	04/15/2048
196801-AB-3	Colorcon, Inc. Senior Note Ser			2		35,000,000		59,597	34,828,395	35,000,000	35,000,000				3.990	3.990	MS	384,038	1,396,500	09/22/2014	09/22/2024
20030N-AC-5	Comcast Corp-NOTE			1	1FE	14,762,657		124,231	15,690,458	12,630,000	14,372,077				7.050	5.589	MS	262,178	890,151	08/02/2016	03/15/2033
20030N-AF-8	Comcast Corp-SR UNSECURED			1	1FE	3,211,963		109,628	2,833,888	2,585,000	3,151,281				5.650	3.836	JD	146,053	146,053	08/02/2016	06/15/2035
20030N-AK-7	Comcast Corp-SR UNSECURED			1	1FE	3,363,453		119,708	2,908,729	2,430,000	3,274,782				6.500	3.708	MN	20,183	157,950	08/02/2016	11/15/2035
20030N-AM-3	Comcast Corp-NOTE			1	1FE	42,813,088		119,268	45,764,366	38,371,000	42,312,218				6.450	5.517	MS	728,729	2,474,930	05/16/2017	03/15/2037
20030N-AV-3	Comcast Corp-SENIOR UNSECURED NOTE			1	1FE	13,275,891		122,967	12,720,957	10,345,000	12,947,140				6.950	4.842	FA	271,614	718,978	08/02/2016	08/15/2037
20030N-AX-9	Comcast Corp-BOND			1	1FE	3,828,091		117,312	3,440,789	2,933,000	3,763,875				6.400	4.239	MN	23,985	187,172	05/16/2017	05/15/2038
20030N-AY-7	Comcast Corp-SENIOR UNSECURED NOTE			1	1FE	20,264,119		122,453	20,903,128	17,070,000	19,858,916				6.550	5.206	JJ	559,043	1,118,085	08/02/2016	07/01/2039
20030N-BA-8	Comcast Corp-SENIOR UNSECURED NOTE			1	1FE	223,524		102,365	204,731	200,000	206,761				5.150	2.197	MS	3,433	10,300	12/15/2015	03/01/2020
20030N-BB-6	Comcast Corp-SENIOR UNSECURED NOTE			1	1FE	12,688,562		117,359	13,308,525	11,340,000	12,560,265				6.400	5.502	MS	241,920	725,760	08/02/2016	03/01/2040
20030N-BD-2	COMCAST CORP-SR UNSECURED			1	1FE	4,600,589		99,735	4,438,234	4,450,000	4,561,240				3.125	2.384	JJ	64,123	139,063	09/21/2017	07/15/2022
20030N-BE-0	Comcast Corp-SR UNSECURED			1	1FE	2,497,615		98,951	2,293,698	2,318,000	2,485,999				4.650	4.160	JJ	49,702	107,787	05/16/2017	07/15/2042
20030N-BG-5	Comcast Corp-SR UNSECURED			1	1FE	1,563,134		96,519	1,447,792	1,500,000	1,500,901				4.500	4.229	JJ	31,125	67,500	05/16/2017	01/15/2043
20030N-BH-3	Comcast Corp-SR UNSECURED			1	1FE	3,643,822		99,317	3,495,978	3,520,000	3,627,506				4.250	3.961	JJ	68,982	148,939	04/11/2018	01/15/2033
20030N-BJ-9	COMCAST CORP-SR UNSECURED			1	1FE	1,275,438		100,239	1,227,937	1,225,000	1,258,177				3.600	3.029	MS	14,700	44,100	12/15/2015	03/01/2024
20030N-BK-6	Comcast Corp-SR UNSECURED			1	1FE	1,141,196		100,160	991,586	990,000	1,130,757				4.750	3.861	MS	15,675	47,025	08/02/2016	03/01/2044
20030N-BL-4	COMCAST CORP-SR UNSECURED			1	1FE	151,921		97,942	146,914	150,000	151,329				3.375	3.208	FA	1,913	5,063	12/15/2015	02/15/2025
20030N-BM-2	Comcast Corp-SR UNSECURED			1	1FE	2,975,851		96,419	2,653,472	2,752,000	2,947,141				4.200	3.588	FA	43,665	115,584	10/30/2017	08/15/2034
20030N-BP-5	COMCAST CORP-SENIOR UNSECURED			1	1FE	164,355		96,739	140,272	145,000	162,467				4.400	3.421	FA	2,410	6,380	08/02/2016	08/15/2035
20030N-BQ-3	COMCAST CORP-SENIOR UNSECURED			1	1FE	3,129,702		97,434	2,630,723	2,700,000	3,108,100				4.600	3.693	FA	46,920	124,200	08/02/2016	08/15/2045
20030N-BU-4	COMCAST CORP-SENIOR UNSECURED			1	1FE	3,537,026		82,857	3,065,731	3,700,000	3,544,054				3.400	3.644	JJ	58,008	125,800	10/20/2016	07/15/2046
20030N-BW-0	Comcast Corp-SENIOR UNSECURED			1	1FE	195,116		89,389	196,656	220,000	196,081				2.350	3.941	JJ	2,384		08/09/2018	01/15/2027
20030N-CM-1	Comcast Corp-SENIOR UNSECURED			1	1FE	116,017		101,088	116,251	115,000	116,016				4.700	4.644	AO	1,291		12/17/2018	10/15/2048
200339-DW-6	COMERICA BANK-SR UNSECURED			1	1FE	249,617		98,759	246,895	250,000	249,871				2.500	2.537	JD	503	6,250	12/15/2015	06/02/2020
200340-AP-2	COMERICA INC-SR UNSECURED			2	1FE	149,352		99,548	149,319	150,000	149,921				2.125	2.257	MN	336	3,188	12/15/2015	05/23/2019
20162R-AB-8	Marine Corps Community S-UNSECURED BOND			1	1FE	7,693,991		104,405	7,097,178	6,797,725	6,938,539				6.316	3.641	JD	35,779	392,098	07/02/2015	06/01/2022
202795-HG-8	COMMONWEALTH EDISON CO-1ST MTG			1	1FE	4,082,844		116,405	4,438,725	3,825,000	4,012,092				5.875	5.366	FA	93,633	224,719	08/02/2016	02/01/2033
202795-HK-9	COMMONWEALTH EDISON CO-BOND			1	1FE	16,323,189		117,901	15,724,535	13,337,000	15,815,763				5.900	4.349	MS	231,693	786,883	08/02/2016	03/15/2036
202795-HT-0	COMMONWEALTH EDISON CO-SECURED BOND			1	1FE	8,932,249		125,878	9,773,230	7,764,000	8,745,870				6.450	5.380	JJ	230,914	500,778	05/17/2011	01/15/2038
202795-HZ-6	COMMONWEALTH EDISON CO 1ST MTG BD SER 11			1	1FE	372,554		100,539	351,888	350,000	357,302				3.400	2.505	MS	3,967	11,900	05/28/2013	09/01/2021
202795-JA-9	COMMONWEALTH EDISON CO-SECURED			1	1FE	824,789		93,818	733,658	782,000	822,175				(1,109)	7,429	AO	29,716	29,716	08/02/2016	10/01/2042
202795-JA-9	COMMONWEALTH EDISON CO-SECURED			1	1FE	2,590,661		93,818	2,561,234	2,730,000	2,598,544				3.190		AO	1,291		12/17/2018	10/15/2048
202795-JB-7	COMMONWEALTH EDISON CO-SECURED			1	1FE	1,083,674		105,704	991,511	938,000	1,071,931				4.600	3.700	FA	16,300	43,148	05/11/2015	08/15/2043
202795-JD-3	COMMONWEALTH EDISON CO-SECURED			1	1FE	139,207		106,494	125,663	118,000	137,533				4.700	3.671	JJ	2,557	5,546	05/11/2015	01/15/2044</

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
207597-DX-0	Connecticut Light & Powe-SECURED			1	1FE	10,238,220		113,6529	9,000,000	10,235,750			(2,470)		5.750	4.624	MS	172,500		12/06/2018	03/01/2037
207597-EF-8	CONNECTICUT LIGHT & PWR 1ST & REF MTG BD			1	1FE	470,016		98,1255	460,000	466,277			(1,573)		2.500	2.124	JJ	5,303	13,517	08/02/2016	01/15/2023
207597-EF-8	CONNECTICUT LIGHT & PWR 1ST & REF MTG BD			1	1FE	681,566		98,1255	695,000	685,767			1,432		2.500	2.849	JJ	8,012	13,000	08/03/2018	01/15/2023
207597-E6-6	CONNECTICUT LIGHT & PWR-SECURED			1	1FE	103,031		101,9000	90,000	102,303			(309)		4.300	3.473	AO	817	3,870	08/02/2016	04/15/2044
207597-EH-4	Connecticut Light & Powe-SECURED			1	1FE	28,765,680		99,7254	28,145,000	28,756,491			(9,189)		4.150	4.014	JD	97,335	960,517	07/11/2018	06/01/2045
207597-EJ-0	Connecticut Light & Powe-SECURED			1	1FE	12,033,250		98,2260	12,278,251	12,058,945			25,695		3.200	3.702	MS	117,778	200,000	06/06/2018	03/15/2027
208251-AE-8	CONOCOPHILLIPS HLDG CO-SENIOR NOTE			1	1FE	9,523,408		123,6508	9,197,147	9,250,960			(110,686)		6.950	4.023	AO	109,132	396,363	08/01/2018	04/15/2029
20825C-AF-1	ConocoPhillips-UNSECURED SENIOR NOTE			1	1FE	456,798		117,7116	365,000	442,233			(4,162)		5.900	3.901	AO	4,546	21,535	04/27/2015	10/15/2032
20825C-AP-9	ConocoPhillips-SR UNSECURED			1	1FE	2,996,152		118,0833	2,963,891	2,952,668			(14,229)		5.900	4.517	MN	18,923	148,090	08/02/2016	05/15/2038
20825C-AQ-7	ConocoPhillips-NOTE			1	1FE	20,210,062		123,7589	19,605,884	19,958,948			(91,499)		6.500	4.510	FA	429,504	992,355	07/20/2018	02/01/2039
20826F-AC-0	CONOCOPHILLIPS COMPANY-SR UNSECURED			1	1FE	763,313		98,3625	762,309	775,000			227		4.300	4.393	MN	4,258	33,638	08/02/2016	11/15/2044
20826F-AC-0	CONOCOPHILLIPS COMPANY-SR UNSECURED			1	1FE	719,454		98,3625	663,947	675,000			(916)		4.300	3.917	MN	3,709	27,800	07/27/2018	11/15/2044
20826F-AF-3	CONOCOPHILLIPS COMPANY-SR UNSECURED			1	1FE	195,441		95,2284	174,268	183,000			(510)		4.150	3.650	MN	970	4,784	05/11/2015	11/15/2034
20826F-AR-7	ConocoPhillips Co-SENIOR UNSECURED			1	1FE	14,211,151		121,8455	12,753,570	10,467,000			(71,846)		5.950	3.838	MS	183,376	622,787	01/26/2018	03/15/2046
209111-EF-6	Consolidated Edison Co o-BOND			1	1FE	9,773,638		113,5363	11,126,562	9,800,000			763		5.700	5.719	FA	232,750	558,600	02/09/2004	02/01/2034
209111-EM-1	Consolidated Edison Co o-NOTE			1	1FE	1,782,537		120,1338	2,144,388	1,786,583			(223)		6.200	6.182	JD	4,919	110,670	12/09/2015	06/15/2036
209111-EX-7	CONSOLIDATED EDISON CO O-SR UNSECURED			1	1FE	227,558		100,8071	201,614	200,000			(8,585)		6.650	2.260	AO	3,325	13,300	12/15/2015	04/01/2019
209111-EY-5	Consolidated Edison Co o-SENIOR UNSECURE			1	1FE	4,407,282		113,1014	4,400,000	4,407,402			(328)		5.500	5.483	JD	20,167	242,000	04/27/2015	12/01/2039
209111-EZ-2	Consolidated Edison Co o-SENIOR UNSECURE			1	1FE	9,694,213		101,8350	8,487,946	8,335,000			(188,937)		4.450	2.078	JD	16,485	370,908	01/01/2013	06/15/2020
209111-FA-6	Consolidated Edison Co o-SR UNSECURED			1	1FE	1,117,560		116,7901	1,039,432	890,000			(5,985)		5.700	4.062	JD	2,255	50,730	12/09/2015	06/15/2040
209111-FB-4	Consolidated Edison Co o-SENIOR UNSECURED			1	1FE	1,154,926		97,4317	1,100,978	1,153,952			(614)		4.200	4.058	MS	13,974	47,460	05/16/2017	03/15/2042
209111-FC-2	Consolidated Edison Co o-SR UNSECURED			1	1FE	303,699		93,6841	274,026	292,500			(267)		3.950	3.725	MS	3,851	11,554	04/27/2015	03/01/2043
209111-FC-2	Consolidated Edison Co o-SR UNSECURED			1	1FE	1,482,431		93,6841	1,490,046	1,590,500			2,322		3.950	4.380	MS	20,942	62,825	12/15/2015	03/01/2043
209111-FD-0	Consolidated Edison Co o-SENIOR UNSECURE			1	1FE	9,127,243		99,8164	8,567,245	8,583,000			(11,634)		4.450	4.073	MS	112,461	381,944	05/16/2017	03/15/2044
209111-FE-8	CONSOLIDATED EDISON CO O-SR UNSECURED			1	1FE	150,141		99,6049	149,407	150,095			(15)		3.300	3.288	JD	413	4,950	12/15/2015	12/01/2024
209111-FF-5	Consolidated Edison Co o-SR UNSECURED			1	1FE	679,226		97,7746	669,756	679,391			59		4.625	4.672	JD	2,640	22,780	12/15/2015	12/01/2054
209111-FF-5	Consolidated Edison Co o-SR UNSECURED			1	1FE	3,363,696		97,7746	3,142,476	3,358,971			(1,768)		4.625	4.371	JD	12,387	132,784	10/04/2018	12/01/2054
209111-FG-3	CONSOLIDATED EDISON CO O-SENIOR UNSECURE			1	1FE	404,147		100,8593	378,222	375,000			(590)		4.500	4.034	JD	1,406	16,875	05/16/2017	12/01/2045
209111-FH-1	CONSOLIDATED EDISON CO O-SENIOR UNSECURE			1	1FE	1,136,406		91,5559	1,007,115	1,100,000			(748)		3.850	3.664	JD	1,882	42,350	10/20/2016	06/15/2046
209111-FK-4	CONSOLIDATED EDISON CO O-SENIOR UNSECURE			1	1FE	956,884		93,0455	920,000	956,343			(419)		4.300	4.091	JD	3,297	39,560	10/30/2017	12/01/2056
210177-AA-1	Consolidated Terminals L Senior Secured			1	2PL	39,450,000		101,1192	39,891,524	39,450,000					4.820	4.819	JD	100,356	1,901,490	12/12/2013	12/12/2023
21036P-AP-3	CONSTELLATION BRANDS INC-SENIOR UNSECURE			1	2FE	10,207,529		102,1280	9,661,307	10,063,981			(75,380)		4.750	3.695	JD	37,446	449,350	01/18/2017	12/01/2025
21036P-AT-5	CONSTELLATION BRANDS INC-SENIOR UNSECURE			1	2FE	8,957,727		91,2722	8,050,207	8,820,000			(2,427)		4.500	4.405	MN	57,330	386,113	10/30/2017	05/09/2047
21036P-AT-5	CONSTELLATION BRANDS INC-SENIOR UNSECURE			1	2FE	6,149,296		91,2722	5,640,621	6,180,000			471		4.500	4.531	MN	40,170	274,050	08/01/2018	05/09/2047
21036P-AZ-1	Constellation Brands Inc-SENIOR UNSECURE			1	2FE	372,562		84,2871	341,363	405,000			199		4.100	4.598	FA	6,273	415	08/01/2018	02/15/2048
210518-CL-8	CONSUMERS ENERGY CO-SENIOR SECURED BOND			1	1FE	25,936,323		103,5663	21,748,917	21,000,000			(704,042)		5.650	2.148	AO	250,483	1,186,500	01/01/2013	04/15/2020
210518-CT-1	CONSUMERS ENERGY CO-SECURED			1	1FE	148,733		98,9084	148,363	149,300			194		2.850	2.996	MN	546	4,275	12/15/2015	05/15/2022
210518-CU-8	CONSUMERS ENERGY CO-SECURED			1	1FE	304,459		97,0353	266,847	275,000			(750)		3.950	3.335	MN	1,388	10,863	08/02/2016	05/15/2043
210518-CW-4	CONSUMERS ENERGY CO-SECURED			1	1FE	149,989		98,7587	148,138	150,000			1		3.125	3.126	FA	1,576	4,688	12/15/2015	08/31/2024
210518-CX-2	CONSUMERS ENERGY CO-SECURED			1	1FE	6,421,149		99,5191	6,255,774	6,286,000			(1,048)		4.350	4.243	FA	91,907	273,441	05/04/2017	08/31/2064
210518-D8-2	Consumers Energy Company First Mortgage			1		28,000,000		103,9623	29,109,444	28,000,000					4.310	4.310	JD	53,636	1,206,800	12/17/2012	12/15/2042
210518-DB-9	Consumers Energy Co-SECURED			1	1FE	12,144,634		98,6077	12,030,140	12,200,000			384		4.050	4.076	MN	63,135	346,367	10/04/2018	05/15/2048
210518-DB-9	Consumers Energy Co-SECURED			1	1FE	21,370,091		98,6077	20,756,921	21,050,000			(2,619)		4.050	3.961	MN	108,934	300,568	07/16/2018	05/15/2048
212015-AH-4	CONTINENTAL RESOURCES IN-SENIOR UNSECURE			1	2FE	720,000		99,2905	744,679	750,000			5,210		5.000	5.900	MS	11,042	37,500	06/22/2017	09/15/2022
212015-AH-4	CONTINENTAL RESOURCES IN-SENIOR UNSECURE			1	2FE	7,994,362		99,2905	7,765,509	7,821,001			(25,571)		5.000	4.621	MS	115,143	346,418	12/12/2018	09/15/2022
212015-AH-4	CONTINENTAL RESOURCES IN-SENIOR UNSECURE			1	2FE	339,413		99,2905	312,765	315,000			(2,657)		5.000	3.986	MS	4,638	15,750	01/01/2013	09/15/2022
212015-AQ-4	CONTINENTAL RESOURCES-SENIOR UNSECURED			1	2FE	1,275,300		88,5071	1,380,711	1,560,000			4,345		4.900	6.318	JD	6,370	76,440	06/20/2017	06/01/2044
212015-AS-0	Continental Resources In-Senior UNSECURE			1	2FE	8,894,922		94,0762	8,371,838	8,895,564			642		4.375	4.380	JD	179,525	49,748	05/29/2018	01/15/2028
216871-AE-3	EATON ELECTRIC HOLDINGS-SENIOR NOTE			1	2FE	149,285		100,8667	151,300	150,000			78		3.875	3.933	JD	258	5,813	12/02/2010	12/15/2020
216871-AE-3	EATON ELECTRIC HOLDINGS-SENIOR NOTE			1	2FE	5,636,01															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
219350-BK-0	Corning Inc-SENIOR UNSECURED			1	2FE	5,145,550		101,4430	5,072,151	5,000,000			(70)		5.350	5.156	MN	40,868		12/20/2018	11/15/2048
220068-AB-2	Corporation Service Co. Senior Note Ser			2		30,000,000		101,0122	30,303,660	30,000,000					4.320	4.319	FA	464,400	1,296,000	08/22/2013	08/22/2023
22100*-AA-1	Corvias Campus Living LL Senior Secured			1	2PL	51,050,159		100,6803	51,397,453	51,050,159					5.300	5.299	JJ	1,352,829	2,704,337	05/14/2015	07/01/2050
22101#-AA-6	CORVIAS CAMPUS LIVING - HU, LLC - Sr Se			2	2FE	67,500,000		97,2100	65,616,750	67,500,000					5.910	5.911	JD	2,327,063	3,989,250	01/13/2017	06/01/2031
22160K-AF-2	COSTCO WHOLESALE CORP-SR UNSECURED			1	1FE	248,610		98,9161	247,290	250,000					1.700	1.845	JD	189	4,250	12/15/2015	12/15/2019
22160K-AG-0	COSTCO WHOLESALE CORP-SR UNSECURED			1	1FE	149,571		98,9625	148,444	150,000					1.750	1.822	FA	992	2,625	12/15/2015	02/15/2020
22160K-AH-8	COSTCO WHOLESALE CORP-SR UNSECURED			1	1FE	197,394		97,7400	195,480	200,000					2.250	2.480	FA	1,700	4,500	12/15/2015	02/15/2022
22160K-AM-7	Costco Wholesale Corp-SENIOR UNSECURED			1	1FE	8,539,639		96,4579	8,584,750	8,900,000					3.000	3.535	MN	31,892	133,500	06/28/2018	05/18/2027
223611-AF-1	Cowboys Stadium LP Senior Secured			2	2FE	39,439,815		97,8572	38,594,698	39,439,815					3.950	3.952	MS	393,796	1,539,751	03/09/2017	03/31/2034
223611-A8-3	Cowboys Stadium LP Senior Secured			2	2FE	37,289,055		94,6382	35,289,690	37,289,055					3.460	3.460	MS	326,134	1,274,531	06/30/2015	03/31/2034
224044-CF-2	COX COMMUNICATIONS INC-SR UNSECURED			1	2FE	3,544,065		91,1720	3,081,613	3,380,000			(6,219)		4.800	4.424	FA	67,600	162,240	02/13/2015	02/01/2035
224044-CF-2	COX COMMUNICATIONS INC-SR UNSECURED			1	2FE	691,109		91,1720	638,204	700,000					4.800	4.905	FA	14,000	33,600	10/20/2016	02/01/2035
224044-CG-0	COX COMMUNICATIONS INC-SR UNSECURED			1	2FE	19,719,180		92,2801	18,240,746	19,771,000					3.350	3.383	MS	195,019	655,242	10/04/2018	09/15/2026
224399-AT-2	Crane Co-SENIOR UNSECURED			1	2FE	21,012,797		91,5888	19,306,911	21,080,000					4.200	4.218	MS	260,689	527,222	10/04/2018	03/15/2048
228227-BD-5	Crown Castle Internation-SR UNSECURED			1	2FE	5,238,769		103,8424	5,399,805	5,200,000					5.250	5.106	JJ	125,883	273,000	10/20/2016	01/15/2023
22822R-BH-2	Crown Castle Towers LLC-SECURED			1	1FE	24,995,000		99,5150	24,873,774	24,995,000			(5,969)		4.241	4.241	MON	47,113	453,461	06/26/2018	07/15/2028
22822V-AA-9	CROWN CASTLE INTERNATION-SENIOR UNSECURE			1	2FE	4,640,085		99,9651	4,498,431	4,500,000			(41,605)		3.400	2.411	FA	57,800	153,000	09/29/2017	02/15/2021
22822V-AB-7	CROWN CASTLE INTL CORP-SENIOR UNSECURED			1	2FE	545,481		99,5603	497,802	500,000					4.450	3.281	FA	8,406	22,250	10/20/2016	02/15/2026
22822V-AE-1	Crown Castle Internation-SENIOR UNSECURE			1,5	2FE	29,725,427		97,3965	29,024,163	29,800,000					4.000	4.030	MS	397,333	1,192,000	01/31/2017	03/01/2027
22822V-AF-8	CROWN CASTLE INTL CORP-SENIOR UNSECURED			1	2FE	8,784,780		92,6943	8,208,079	8,855,000					4.750	4.800	MN	59,745	420,613	04/26/2017	05/15/2047
22822V-AF-8	CROWN CASTLE INTL CORP-SENIOR UNSECURED			1	2FE	8,777,346		92,6943	8,073,672	8,710,000					4.750	4.701	MN	52,865	413,725	05/01/2017	05/15/2047
22822V-AH-4	CROWN CASTLE INTERNATION-SENIOR UNSECURE			1	2FE	11,436,989		92,7041	10,609,979	11,445,000					3.650	3.658	MS	139,247	417,742	07/25/2017	09/01/2027
228782-AA-6	CRUGER ISSUER TR PRIN UNIT TR CTF			2	1	49,868,948		92,0992	138,148,725	150,000,000					0.000	8.739	N/A			08/24/2006	12/01/2021
22959#-AA-9	CSOLAR IV South LLC Senior Secured			2	2FE	13,993,594		110,3546	15,442,575	13,993,594					5.371	5.371	MJSD	191,657	744,098	11/21/2013	09/30/2038
22966R-AA-4	CUBESMART LP-SENIOR UNSECURED NOTE REID			1	2FE	4,243,838		103,3979	4,394,409	4,250,000					4.800	4.818	JJ	94,067	204,000	06/19/2012	07/15/2022
22966R-AB-2	CUBESMART LP-SENIOR UNSECURED NOTE REID			1	2FE	10,245,983		102,2833	10,586,317	10,350,000					4.375	4.501	JJ	20,125	452,812	12/10/2013	12/15/2023
22966R-AB-2	CUBESMART LP-SENIOR UNSECURED NOTE REID			1	2FE	9,447,833		102,2833	9,358,918	9,150,000					4.375	3.948	JD	17,792	400,313	07/15/2014	12/15/2023
22966R-AC-0	CUBESMART LP-SR UNSECURED			1	2FE	6,058,901		97,7504	5,938,338	6,075,000					4.000	4.032	MN	31,050	243,000	10/19/2015	11/15/2025
231021-AR-7	Cummins Inc-SR UNSECURED			1,5	1FE	1,113,665		101,8947	1,095,368	1,075,000					3.650	3.111	AO	9,809	39,238	12/15/2015	10/01/2023
23157#-AD-1	Curtiss-Wright Corp. Gtd Senior Note			1	2	12,790,700		99,8685	12,783,168	12,800,000					3.840	3.840	JD	40,960	491,520	01/01/2013	12/01/2021
23157#-AE-9	Curtiss-Wright Corp. Gtd Senior Note			1	2	13,200,000		100,7377	13,297,376	13,200,000					4.240	4.239	JD	46,640	559,880	12/08/2011	12/01/2023
23307*-AE-2	D.C. Arena L.P. Senior Secured			2	2PL	39,800,000		94,7956	37,728,649	39,800,000					4.260	4.260	MN	146,000	875,998	05/24/2018	05/30/2043
23317H-AA-0	DOR Corp-SENIOR UNSECURED NOTE REID			1	2FE	5,510,219		102,6764	5,289,888	5,152,000					4.625	3.579	JJ	109,874	238,280	08/13/2014	07/15/2022
23325P-A*-5	DNP Select Income Fund I Senior Secured			1	1FE	44,200,000		97,8989	43,271,314	44,200,000					2.760	2.760	JJ	569,296	1,219,920	07/22/2016	07/13/2023
23325P-A8-3	DNP Select Income Fund I Senior Secured			1	1FE	1,300,000		97,2214	1,263,878	1,300,000					3.000	3.000	JJ	18,200	39,000	07/22/2016	07/13/2026
233331-AJ-6	DTE Energy Co-SENIOR UNSECURED NOTE			1	2FE	184,440		119,3312	173,030	145,000					6.375	4.330	AO	1,951	9,244	04/02/2013	04/15/2033
23338V-AA-4	DTE Electric Co-SECURED			1	1FE	436,175		97,3549	399,155	410,000					4.000	3.630	AO	4,100	16,400	04/27/2015	04/01/2043
23338V-AD-8	DTE Electric Co-SECURED			1	1FE	1,269,396		102,8845	1,193,460	1,160,000					4.300	3.748	JJ	24,940	49,880	08/02/2016	07/01/2044
23338V-AE-6	DTE Electric Co-SECURED			1	1FE	61,706,451		92,7856	59,130,435	63,728,000					3.700	3.889	MS	894,281	2,120,049	05/29/2018	03/15/2045
23338V-AF-3	DTE ELECTRIC CO-SECURED			1	1FE	5,670,801		92,9162	5,272,995	5,675,000					3.700	3.704	JD	17,498	209,975	05/10/2016	06/01/2046
23338V-AG-1	DTE Electric Co-SECURED			1	1FE	7,740,964		93,0225	7,627,844	8,200,000					3.750	4.080	FA	116,167	153,750	06/25/2018	08/15/2047
23338V-AH-9	DTE Electric Co-SECURED			1	1FE	13,638,170		99,0898	13,476,210	13,600,000					4.050	4.033	MN	70,380	287,640	06/19/2018	05/15/2048
23355L-AA-4	DXC TECHNOLOGY CO-SENIOR UNSECURED			1	2FE	12,113,771		102,0406	12,372,422	12,125,000					4.450	4.450	MS	268,282	379,193	08/08/2017	09/18/2022
23355L-AB-2	DXC TECHNOLOGY CO-SENIOR UNSECURED			1,5	2FE	1,944,644		99,1358	1,898,451	1,915,000					2.875	2.234	MS	14,376	55,056	09/26/2017	03/27/2020
23355L-AF-3	DXC Technology Co-SENIOR UNSECURED			1	2FE	690,679		118,5443	685,186	578,000					7.450	5.112	AO	9,091	359	10/04/2018	10/15/2029
233835-AQ-0	DAIMLER FINANCE NA LLC-SR UNSECURED			1	1FE	2,484,462		136,6540	2,118,137	1,550,000					8.500	3.290	JJ	59,653	131,750	10/30/2017	01/18/2031
233851-AF-1	DAIMLER FINANCE NA LLC-SR UNSECURED			1,5	1FE	232,313		100,6250	214,331	213,000					3.875	2.337	MS	2,430	8,254	05/11/2015	09/15/2021
233851-AR-5	DAIMLER FINANCE NA LLC-SENIOR UNSECURED			1	1FE	25,189,175		99,2655	24,816,387	25,000,000					2.250	2.126	JJ	235,938	562,500	01/01/2013	07/31/2019
233851-BE-3	DAIMLER FINANCE NA LLC-SR UNSECURED			1	1FE	1,429,020		98,7864	1,422,524	1,440,000					2.875	3.033	MS	12,765	41,400	12/09/2015	03/10/2021
23386#-AH-5	Dairy Farmers of America Senior Note Ser			1	2	11,500,000		95,8030	11,017,345	11,500,000					3.760	3.759	JD	233,016	432,400	1	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
23918K-AP-3	DAVITA HEALTHCARE PARTNE-SENIOR UNSECURE	1		3FE		1,200,000	.99	1,194,000	1,200,000	1,200,000					5.750	5.748	FA	26,067	34,244	08/14/2012	08/15/2022
23918K-AR-9	DAVITA HEALTHCARE PARTNE-SR UNSECURED	1		3FE		2,262,625	.90	2,087,250	2,300,000	2,273,440		3,436			5.000	5.215	MN	19,167	115,000	08/31/2015	05/01/2025
24380B-AB-4	Deer District LLC Senior Secured Notes	1		2Z		27,600,000	106.8512	29,490,931	27,600,000	27,600,000					5.040	5.040	JD	177,744		11/15/2018	06/01/2044
24409B-AA-0	Deer Park Refinery Senior Note Series A			2FE		20,000,000	.97	19,414,740	20,000,000	20,000,000					4.070	4.070	JJ	357,256		07/23/2018	07/23/2025
24409B-AA-8	Deer Park Refinery Senior Note Series B			2FE		15,000,000	.94	14,200,800	15,000,000	15,000,000					4.150	4.150	JJ	273,208		07/23/2018	07/23/2028
244199-AW-5	Deere & Co-BOND			1FE		24,925,500	121.8646	30,466,139	25,000,000	24,955,804		2,914			6.550	6.573	AO	409,375	1,637,500	10/01/1998	10/01/2028
244199-AZ-8	Deere & Co-SENIOR UNSECURED NOTE			1FE		5,224,522	135.8322	6,958,681	5,123,000	5,201,866		(5,230)			8.100	7.872	MN	53,023		08/02/2016	05/15/2030
244199-BA-2	DEERE & COMPANY-SENIOR UNSECURED			1FE		21,546	130.8953	19,634	15,000	20,668		(372)			7.125	3.324	MS	350	1,069	08/02/2016	03/03/2031
244199-BC-8	Deere & Co-SENIOR UNSECURED NOTE			1FE		4,062,801	101.0687	3,546,502	3,509,000	3,577,174		(84,787)			4.375	1.888	AO	31,983	153,519	01/01/2013	10/16/2019
244199-BD-6	Deere & Co-NOTE			1FE		685,356	114.0827	684,496	600,000	672,081		(5,668)			5.375	3.937	AO	6,719	32,250	08/02/2016	10/16/2029
244199-BE-4	DEERE & COMPANY-SR UNSECURED	2		1FE		4,053,720	.97	3,914,853	4,000,000	4,039,026		(11,666)			2.600	2.281	JD	6,644	104,000	09/21/2017	06/08/2022
244199-BF-1	Deere & Co-SENIOR UNSECURED NOTE	2		1FE		20,078,869	.96	19,616,382	20,235,000	20,097,823		3,322			3.900	3.944	JD	48,227	807,031	10/04/2018	06/09/2042
244199-BF-1	Deere & Co-SENIOR UNSECURED NOTE	2		1FE		37,545,992	.96	35,170,859	36,280,000	37,464,397		(32,208)			3.900	3.687	JD	86,467	1,210,209	07/12/2018	06/09/2042
24422E-RE-1	John Deere Capital Corp-SENIOR UNSECURED			1FE		20,302,795	101.9023	8,508,840	8,350,000	8,655,056		(115,580)			3.900	2.403	JJ	152,875	325,650	07/12/2015	07/12/2021
24422E-RY-7	John Deere Capital Corp-SENIOR UNSECURED			1FE		23,754,192	.98	23,686,849	24,000,000	23,961,611		36,198			1.700	1.856	JJ	188,133	408,000	01/01/2013	01/15/2020
24422E-SL-4	JOHN DEERE CAPITAL CORP-SR UNSECURED			1FE		252,399	.99	248,568	250,000	250,000		(461)			2.800	2.601	MS	2,275	7,000	12/15/2015	03/04/2021
24422E-SP-5	John Deere Capital Corp-SR UNSECURED			1FE		537,840	.99	506,269	508,000	527,273		(3,258)			3.350	2.598	JD	898	17,018	08/02/2016	06/12/2024
24531F-AA-2	Del Real, LLC Senior Sub Note	2		.5		4,755,535	.92	4,410,836	4,755,535	4,755,535				11.000	11.156	JAJO	265,914	530,374	10/07/2016	04/06/2023	
24617F-AA-9	Delaware North Companies Senior Secured	1		2PL		19,220,988	.93	17,888,570	19,220,988	19,220,988					3.820	3.820	MN	95,859	729,964	11/14/2014	11/14/2034
24668B-AF-2	DELHAIZE AMERICA LLC-NOTE	1		2FE		7,189,105	136.4579	8,408,539	6,162,000	6,922,026		(37,196)			9.000	7.443	AO	117,078	554,580	08/29/2011	04/15/2031
24702R-AF-8	Dell Inc-SENIOR UNSECURED NOTE	1		3FE		2,055,000	.89	2,000,000	2,000,000	2,053,547		(1,408)			6.500	6.258	AO	27,444	130,000	12/20/2017	04/15/2038
247109-BR-1	DELMARVA PWR & LIGHT CO-SECURED	1		1FE		566,832	.98	525,071	535,000	564,500		(815)			4.000	3.643	JD	1,783	16,855	08/02/2016	06/01/2042
247109-BR-1	DELMARVA PWR & LIGHT CO-SECURED	1		1FE		371,235	.98	397,484	405,000	371,417		181			4.000	4.581	JD	1,350	8,100	10/04/2018	06/01/2042
247361-ZJ-0	DELTA AIR LINES INC-SENIOR UNSECURED	1		2FE		239,966	.97	234,862	240,000	239,968		6			3.625	3.628	MS	2,562	8,700	03/09/2017	03/15/2022
24906P-AA-0	DENTSPLY SIRONA Inc. Senior Note Ser	2		.2		29,261,520	.96	27,336,220	28,385,460	28,385,460				(270,630)	1.010	1.010	AUG	107,699	288,130	08/15/2016	08/15/2026
24906P-BA-9	DENTSPLY SIRONA Inc. Senior Note Ser	2		.2		55,376,640	.95	53,256,515	55,957,000	55,957,000				(533,500)	1.170	1.170	AUG	245,942	657,978	08/15/2016	08/15/2028
24906P-CA-4	DENTSPLY Sirona Inc. Senior Note Ser	1		.2		5,535,236	.87	6,011,084	6,871,200	6,871,200				(342,000)	1.500	1.500	AO	18,193	106,307	10/27/2016	10/27/2029
25044B-AA-1	DESERT SUNLIGHT FDG TR I SR SEC SER A-1	1		1PL		113,500,530	.97	109,542,233	112,292,156	113,222,444		(76,127)			3.506	3.411	JAJO	918,625	3,907,477	01/07/2014	10/07/2036
25044B-AB-9	DESERT SUNLIGHT FDG TR I SER A-1-NG	1		2PL		37,966,647	103.5852	39,427,635	38,063,000	37,985,966		5,555			5.486	5.512	JAJO	487,232	2,072,498	03/20/2014	10/07/2036
250847-DU-1	DTE Electric Co-SENIOR SECURED NOTE	1		1FE		3,460,590	122.2873	3,301,757	2,700,000	3,273,551		(29,970)			6.350	4.292	AO	36,195	171,450	11/30/2011	10/15/2032
250847-DZ-0	DTE ELECTRIC CO-SECURED	1		1FE		136,868	111.3590	122,495	110,000	134,295		(1,093)			5.450	3.628	FA	2,265	5,995	08/02/2016	02/15/2035
250847-EA-4	DTE Electric Co-SENIOR SECURED NOTE	1		1FE		2,978,882	116.5522	2,855,530	2,450,000	2,884,398		(14,814)			5.700	4.311	AO	34,913	139,650	09/28/2011	10/15/2037
250847-EB-2	DTE Electric Co-SENIOR SECURED NOTE	1		1FE		6,117,591	126.2388	5,548,194	4,395,000	5,786,575		(54,051)			6.625	4.069	JD	24,264	291,169	08/02/2016	06/01/2036
250847-EF-3	DTE Electric Co-BOND	1		1FE		5,487,007	100.3705	5,023,545	5,005,000	5,107,409		(66,546)			3.450	2.058	AO	43,168	172,673	01/01/2013	10/01/2020
250847-EG-1	DTE Electric Co-SECURED BOND	1		1FE		11,179,790	101.7326	10,173,255	10,000,000	10,334,934		(149,004)			3.900	2.307	JD	32,500	390,000	01/01/2013	06/01/2021
250847-EJ-5	DTE ELECTRIC CO-SECURED	1		1FE		147,957	.97	146,393	150,000	148,863		308			2.650	2.882	JD	177	3,975	12/15/2015	06/15/2022
250847-EK-2	DTE ELECTRIC CO-SECURED	1		1FE		93,320	.94	84,850	85,000	92,798		(222)			3.950	3.373	JD	149	3,358	08/02/2016	06/15/2042
250847-GL-1	DTE Electric Co. Senior Note Ser	1		.1		29,900,000	102.3719	30,609,198	29,900,000	29,900,000					4.890	4.889	MS	430,510	1,462,110	09/15/2010	09/15/2020
25087-AAE-3	Detroit International Br Senior Secured	1		2FE		6,950,000	101.4505	7,050,810	6,950,000	6,950,000					5.190	5.190	MCN	29,057	360,705	06/29/2010	07/02/2020
25179B-AA-0	DEVON ENERGY CORP-NOTE	1		2FE		1,606,414	121.9427	1,390,147	1,140,000	1,530,081		(21,062)			7.950	4.500	AO	19,133	90,630	04/27/2015	04/15/2032
25179B-AL-7	DEVON ENERGY CORP-SENIOR UNSECURED NOTE	1		2FE		1,657,254	.94	1,339,810	1,413,000	1,636,608		(5,923)			5.600	4.461	JJ	36,487	79,128	05/11/2015	07/15/2041
25179B-AN-3	DEVON ENERGY CORP-SENIOR UNSECURED NOTE	1		2FE		4,656,102	.86	4,064,878	4,700,000	4,661,037		882			4.750	4.809	MN	28,526	223,250	05/17/2012	05/15/2042
25179B-AV-5	DEVON ENERGY CORPORATION-SENIOR UNSECURE	1		2FE		281,842	106.0634	265,158	250,000	275,066		(3,183)			5.850	4.124	JD	650	14,625	10/20/2016	12/15/2025
25179S-AD-2	DEVON FINANCING CORP LLC-COMPANY GUARANT	1		2FE		20,560,566	121.1041	18,650,034	15,400,000	19,160,038		(203,539)			7.875	5.225	MS	306,556	1,212,750	10/20/2010	09/30/2031
25245B-AA-5	Diageo Investment Corp-SENIOR UNSECURED	1		1FE		10,533,168	101.4850	10,249,980	10,100,000	10,526,770		(6,398)			4.250	3.970	MN	59,618	214,625	07/20/2018	05/11/2042
25271C-AN-2	DIAMOND OFFSHORE DRILL-SR UNSECURED	1		4FE		465,618	55.5000	533,000	495,431	533,000		1,128			4.875	5.785	MN	4,331	25,984	05/11/2015	11/01/2043
25272K-AD-5	MULTIPLE GUARANTORS-FIRST LIEN	1,5		2FE		2,623,100	.99	2,495,876	2,500,000	2,581,857		(32,812)			4.420	2.980	JD	4,911	110,500	09/22/2017	06/15/2021
25272K-AD-5	MULTIPLE GUARANTORS-FIRST LIEN	1,5		2FE		139,959	.99	139,769	140,000	139,978		7			4.420	4.426	JD	275	6,188	05/17/201	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
254010-AE-1	DIGNITY HEALTH-UNSECURED			1	1FE	631,032		566,515	565,000	629,611		(401)			5.267	4.660	MM	4,960	29,759	04/27/2015	11/01/2064
25466A-AG-6	DISCOVER BANK-SR UNSECURED			2	2FE	8,548,034		8,491,450	8,550,000	8,550,278		400			3.100	3.105	JD	19,879	265,050	06/01/2015	06/04/2020
25466A-AK-7	Discover Bank-SENIOR UNSECURED			2	2FE	269,976		262,807	270,000	269,974		(2)			3.350	3.352	FA	3,643	4,523	01/31/2018	02/06/2023
25468P-CL-8	WALT DISNEY COMPANY/THE-SR UNSECURED			1	1FE	160,221		152,815	150,000	154,702		(1,869)			3.750	2.406	JD	5,669	5,625	12/15/2015	06/01/2021
25468P-CP-9	WALT DISNEY COMPANY/THE-SENIOR UNSECURED			1	1FE	350,749		303,475	300,000	347,488		(1,382)			4.375	3.369	FA	4,922	13,125	08/02/2016	08/16/2041
25468P-CR-5	Walt Disney Co/The-SENIOR UNSECURED NOTE			1	1FE	34,753,658		34,884,048	35,120,000	34,806,290		7,886			4.125	4.185	JD	120,725	1,448,700	08/02/2016	12/01/2041
25468P-CW-4	WALT DISNEY COMPANY/THE-SR UNSECURED			1	1FE	893,573		874,089	900,000	896,239		901			2.350	2.462	JD	1,763	21,150	12/15/2015	12/01/2022
25468P-CX-2	Walt Disney Co/The-SR UNSECURED			1	1FE	211,939		192,274	208,000	211,610		(94)			3.700	3.591	JD	641	7,696	05/11/2015	12/01/2042
25468P-DA-1	WALT DISNEY COMPANY/THE-SR UNSECURED			1	1FE	753,101		747,054	750,000	750,379		(915)			1.850	1.726	MM	1,195	13,875	12/15/2015	05/30/2019
25468P-DB-9	WALT DISNEY COMPANY/THE-SR UNSECURED			1	1FE	808,762		752,783	760,000	805,997		(1,103)			4.125	3.749	JD	2,613	31,350	08/02/2016	06/01/2044
25468P-DF-0	WALT DISNEY COMPANY/THE-SR UNSECURED			1	1FE	202,685		195,166	200,000	201,931		(257)			3.150	2.990	MS	1,820	6,300	12/15/2015	09/17/2025
25468P-DK-9	WALT DISNEY COMPANY/THE-SENIOR UNSECURED			1	1FE	294,563		264,778	275,000	289,983		(1,928)			3.000	2.169	FA	3,163	8,250	08/02/2016	02/13/2026
25468P-DN-3	WALT DISNEY COMPANY/THE-SENIOR UNSECURED			1	1FE	641,553		578,813	700,000	644,134		1,197			3.000	3.451	JJ	8,808	21,000	10/20/2016	07/30/2046
254709-AM-0	DISCOVER FINANCIAL SVS-SR UNSECURED			2	2FE	53,097,453		50,511,666	54,106,000	53,144,272		46,112			4.100	4.361	FA	875,014	2,083,315	07/19/2018	02/09/2027
25470D-AG-4	DISCOVERY COMMUNICATIONS-SENIOR UNSECURE			1	2FE	40,977,399		36,695,311	41,436,000	40,980,655		9,384			4.950	5.029	MM	262,083	2,051,082	01/11/2017	05/15/2042
25470D-AJ-8	DISCOVERY COMMUNICATIONS-SENIOR UNSECURE			1	2FE	14,789,697		13,432,685	15,182,000	14,805,535		7,761			4.875	5.053	AO	185,031	740,123	10/17/2016	04/01/2043
25470D-AK-5	DISCOVERY COMMUNICATIONS-SR UNSECURED			1	2FE	6,814,203		6,373,480	6,820,000	6,815,990		535			3.450	3.460	MS	69,280	235,290	02/25/2015	03/15/2025
25470D-AQ-2	DISCOVERY COMMUNICATIONS-SENIOR UNSECURE			1	2FE	134,890		129,160	135,000	134,863		29			2.950	2.975	MS	1,117	3,983	09/07/2017	03/20/2023
25470D-AT-6	DISCOVERY COMMUNICATIONS-SENIOR UNSECURE			1	2FE	9,691,468		8,937,642	9,725,000	9,690,952		185			5.200	5.223	MS	141,877	479,693	10/04/2018	09/20/2047
25470D-AT-6	DISCOVERY COMMUNICATIONS-SENIOR UNSECURE			1	2FE	7,364,295		6,745,737	7,340,000	7,363,215		(379)			5.200	5.178	MS	107,082	380,620	09/08/2017	09/20/2047
25470X-AJ-4	DISH DBS CORP-SENIOR UNSECURED NOTE			1,5	4FE	5,355,160		4,898,080	5,324,000	5,336,842		(3,321)			5.875	5.796	JJ	144,223	312,785	01/01/2013	07/15/2022
25654#-AA-0	Dodger Tickets LLC Senior Secured			2	2PL	10,982,760		11,882,006	10,982,760	10,982,760					5.660	5.653	MAR	467,945	594,847	05/11/2005	03/31/2030
25654#-AB-8	Dodger Tickets LLC Senior Secured			2	2PL	9,820,358		10,911,616	9,820,358	9,820,358					6.070	6.063	MAR	448,728	576,064	11/15/2007	03/31/2032
256677-AC-9	DOLLAR GENERAL CORP-SR UNSECURED			1	2FE	180,968		180,759	185,000	182,692		488			3.250	3.565	AO	1,269	6,013	04/28/2015	04/15/2023
25730#-AA-8	Dominion Energy Questar Senior Note Ser			2	2	32,600,000		32,146,143	32,600,000	32,600,000					3.530	3.530	JJ	482,688	575,390	01/31/2018	01/31/2028
257375-AF-2	DOMINION GAS HLDGS LLC-SR UNSECURED			1	1FE	293,452		264,527	263,000	291,149		(665)			4.800	4.100	MM	2,104	12,624	05/11/2015	11/01/2043
257375-AF-2	DOMINION GAS HLDGS LLC-SR UNSECURED			1	1FE	1,060,249		1,091,300	1,085,000	1,061,597		470			4.800	4.951	MM	8,680	52,080	12/15/2015	11/01/2043
257375-AH-8	DOMINION GAS HLDGS LLC-SR UNSECURED			1	1FE	99,2937		198,587	200,000	198,302		250			3.600	3.760	JD	320	7,200	12/15/2015	12/15/2024
257375-AJ-4	DOMINION GAS HLDGS LLC-SR UNSECURED			1	1FE	538,551		492,956	500,000	536,792		(805)			4.600	4.130	JD	1,022	23,000	04/27/2015	12/15/2044
257469-AJ-5	Dominion Resources Inc/IV-SENIOR NOTE			1	2FE	12,841,738		13,615,076	12,712,000	12,800,361		(4,024)			5.250	5.181	FA	278,075	667,380	01/24/2005	08/01/2033
25746U-AV-1	Dominion Resources Inc/IV-SENIOR UNSECURE			1	2FE	10,500,126		10,152,286	9,095,000	10,293,495		(47,030)			5.950	4.784	JD	24,051	541,153	12/09/2015	06/15/2035
25746U-BD-0	DOMINION RES INC VA SR NT 2008 SER B			1	2FE	16,967,548		16,498,105	13,260,000	16,535,228		(97,866)			7.000	4.999	JD	41,253	928,200	02/26/2014	06/15/2038
25746U-BH-1	Dominion Resources Inc/IV-SENIOR UNSECURE			1	2FE	3,545,350		3,588,954	3,550,000	3,549,416		561			5.200	5.217	FA	69,738	184,600	08/11/2009	08/15/2019
25746U-BM-0	DOMINION RESOURCES INC-SR UNSECURED			1	2FE	139,251		138,963	140,000	139,301		16			4.900	4.937	FA	2,858	6,860	12/09/2015	08/01/2041
25746U-CC-1	Dominion Resources Inc/IV-SR UNSECURED			1	2FE	7,496,757		7,268,511	7,295,000	7,487,351		(3,353)			4.700	4.522	JD	28,572	117,770	12/19/2018	12/01/2044
25746U-CC-1	Dominion Resources Inc/IV-SR UNSECURED			1	2FE	730,710		731,335	734,000	730,736		26			4.700	4.730	JD	2,875	17,249	10/04/2018	12/01/2044
25746U-CU-1	Dominion Energy Inc-SENIOR UNSECURED			1	2FE	15,047,700		14,990,579	15,000,000	15,028,083		(19,617)			3.288	2.848	MJSD	39,732	107,653	09/06/2018	06/01/2019
257559-AH-7	DOMTAR CORP-SENIOR UNSECURED NOTE			1	2FE	21,023,889		20,892,001	20,787,000	20,874,984		(26,947)			4.400	4.248	AO	228,657	804,628	01/01/2013	04/01/2022
257559-AJ-3	Domtar Corp-SENIOR UNSECURED			1	2FE	563,447		567,735	580,000	583,498		51			6.250	6.486	MS	12,083	10,048	10/04/2018	09/01/2042
257559-AK-0	DOMTAR CORP-SENIOR UNSECURED BOND			1	2FE	1,042,742		963,167	950,000	1,037,435		(1,529)			6.750	6.027	FA	24,225	64,125	05/16/2017	02/15/2044
25763#-AE-0	Donaldson Co Inc Senior Note Ser			1	2FE	24,650,000		24,609,130	24,650,000	24,650,000					3.720	3.720	MS	239,434	916,980	03/27/2014	03/27/2024
260003-AC-2	Dover Corp-DEBENTURE			1	2FE	29,501,744		24,919,559	20,905,000	20,990,242		57,064			6.650	7.220	JD	115,849	1,390,183	10/03/2000	06/01/2028
260003-AF-5	Dover Corp-NOTE			1	2FE	9,168,104		9,400,208	8,600,000	9,074,587		(15,750)			5.375	4.886	AO	97,586	446,722	06/26/2018	10/15/2035
260003-AG-3	Dover Corp-SENIOR UNSECURED			1	2FE	19,205,600		18,459,664	15,000,000	19,138,139		(67,461)			6.600	4.448	MS	291,500	495,000	06/28/2018	03/15/2038
260003-AJ-7	DOVER CORP-SR UNSECURED			1	2FE	216,337		204,113	200,000	206,638		(3,339)			4.300	2.515	MS	2,867	8,600	12/15/2015	03/01/2021
260003-AK-4	Dover Corp-SENIOR UNSECURED NOTE			1	2FE	10,687,723		9,935,624	9,164,000	10,585,937		(26,791)			5.375	4.276	MS	164,188	432,553	07/06/2018	03/01/2041
260543-BJ-1	Dow Chemical Co/The-BOND			1	2FE	602,530		566,907	465,000	581,118		(8,235)			7.375	4.437	MM	5,716	34,294	08/02/2016	11/01/2029
260543-BY-8	Dow Chemical Co/The-NOTE			1,5	2FE	3,451,053		4,722,513	3,265,000	3,428,926		(4,471)			9.400	8.813	MM	39,216	306,910	08/02/2016	05/15/2039
260543-CC-5	Dow Chemical Co/The-SENIOR UNSECURED NOT			1	2FE	6,006,437		6,130,087	6,023,000	6,019,100		1,830			4.250	4.284	MM	32,708	255,978	11/04/2010	11/15/2020
260543-CG-6	Dow Chemical Co/The-SENIOR UNSECURED NOT		</																		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
26138E-AJ-8	Dr Pepper Snapple Group -NOTE			1,5	2FE	3,102,240		2,944,271	2,465,000	3,008,128			(15,480)		7.450	5.568	MN	30,607	183,643	12/15/2015	05/01/2038
26138E-AT-6	DR PEPPER SNAPPLE GROUP -SENIOR UNSECURED			1	2FE	166,543		143,698	165,000	166,491			(29)		4.500	4.441	MN	949	6,769	05/16/2017	11/15/2045
26138E-AT-6	DR PEPPER SNAPPLE GROUP -SENIOR UNSECURED			1	2FE	142,180		130,635	150,000	142,239			59		4.500	4.846	MN	863	3,375	08/01/2018	11/15/2045
26138E-AY-5	DR PEPPER SNAPPLE GROUP -SENIOR UNSECURED			1,5	2FE	1,146,900		992,985	1,125,000	1,146,273			(400)		4.420	4.302	JD	2,210	49,725	05/16/2017	12/15/2046
26138E-AY-5	DR PEPPER SNAPPLE GROUP -SENIOR UNSECURED			1,5	2FE	9,991,700		8,826,535	10,000,000	9,991,804			143		4.420	4.425	JD	19,644	442,000	12/05/2016	12/15/2046
263901-AA-8	DUKE ENERGY INDIANA INC 1ST MTG BD			1	1FE	3,609,109		3,352,828	2,658,000	3,538,634			(27,646)		6.350	3.913	FA	63,762	155,510	08/01/2018	08/15/2038
263901-AB-6	DUKE ENERGY INDIANA INC-SECURED			1	1FE	666,338		626,899	468,000	646,051			(5,788)		6.450	3.751	AO	7,547	30,186	05/11/2015	04/01/2039
263901-AC-4	DUKE ENERGY INDIANA INC-SENIOR SECURED B			1	1FE	2,325,435		2,127,681	2,100,000	2,149,070			(31,023)		3.750	2.197	JJ	36,313	78,750	01/01/2013	07/15/2020
263901-AD-2	DUKE ENERGY INDIANA INC-SECURED			1	1FE	484,600		440,149	445,000	481,074			(1,004)		4.200	3.670	MS	5,503	18,690	04/27/2015	03/15/2042
263901-AF-7	DUKE ENERGY INDIANA INC-SECURED			1	1FE	1,149,914		1,042,337	963,000	1,139,159			(4,460)		4.900	3.740	JJ	21,758	47,187	10/30/2017	07/15/2043
26439E-AA-2	Duke Endowment (The) Senior Note			1		26,001,240		25,851,135	26,001,240	26,001,240					3.850	3.850	AO	169,622	995,081	10/31/2012	10/31/2037
26439E-ED-4	DUKE ENERGY CAROLINAS-SR UNSECURED			1	1FE	384,264		380,260	305,000	373,768			(3,600)		6.450	4.269	AO	4,153	19,673	12/09/2015	10/15/2032
26441C-AL-9	DUKE ENERGY CORPORATION-SENIOR UNSECURED			1	2FE	798,360		807,219	800,000	799,099			161		3.950	3.975	AO	6,671	31,600	10/08/2013	10/15/2023
26441C-AP-0	DUKE ENERGY CORP-SENIOR UNSECURED			1	2FE	455,972		407,402	400,000	453,577			(1,128)		4.800	3.977	JD	853	19,200	10/20/2016	12/15/2045
26441C-AT-2	Duke Energy Corp-SENIOR UNSECURED			1	2FE	1,526,965		1,504,324	1,740,000	1,527,891			926		3.750	4.526	MS	21,750		10/04/2018	09/01/2046
26441Y-AW-7	DUKE REALTY LP-SENIOR UNSECURED NOTE REI			1	2FE	8,713,600		100,9606	8,750,000	8,734,325			3,670		3.875	3.925	AO	71,580	339,063	09/14/2012	10/15/2022
26441Y-AX-5	DUKE REALTY LP-SENIOR UNSECURED NOTE REI			1	2FE	211,566		99,9228	205,000	210,191			(1,193)		3.625	2.955	AO	1,569	7,431	10/30/2017	04/15/2023
26441Y-AX-5	DUKE REALTY LP-SENIOR UNSECURED NOTE REI			1	2FE	8,772,383		99,9228	8,845,000	8,810,563			7,200		3.625	3.723	AO	67,689	320,631	03/12/2013	04/15/2023
26441Y-AZ-0	DUKE REALTY LP-SENIOR UNSECURED			1	2FE	6,087,852		95,1098	6,145,000	6,100,515			5,137		3.250	3.360	JD	100,411	199,713	06/16/2016	06/30/2026
26442C-AA-2	DUKE ENERGY CAROLINAS-SENIOR UNSUBORDINA			1	1FE	189,260		119,9620	143,000	184,021			(1,499)		6.100	3.902	JD	727	8,723	05/11/2015	06/01/2037
26442C-AB-0	DUKE ENERGY CAROLINAS-SECURED			1	1FE	253,288		121,2928	188,000	266,062			(2,065)		6.000	3.721	JJ	5,201	11,280	05/11/2015	07/15/2038
26442C-AE-4	DUKE ENERGY CAROLINAS-BOND			1	1FE	16,489,107		121,8190	14,950,000	16,259,699			(44,982)		6.050	5.277	AO	190,945	904,475	04/27/2015	04/15/2038
26442C-AH-7	DUKE ENERGY CAROLINAS-BOND			1	1FE	8,325,917		113,7524	6,913,000	8,135,537			(36,133)		5.300	4.046	FA	138,414	366,389	05/11/2015	02/15/2040
26442C-AM-6	DUKE ENERGY CAROLINAS-SECURED			1	1FE	1,892,175		100,2570	1,753,000	1,883,694			(3,688)		4.250	3.754	JD	3,311	74,503	10/30/2017	12/15/2041
26442C-AN-4	DUKE ENERGY CAROLINAS-SECURED			1	1FE	1,193,773		96,0748	1,138,000	1,189,019			(1,365)		4.000	3.710	MS	11,516	42,603	05/11/2015	09/30/2042
26442C-AN-4	DUKE ENERGY CAROLINAS-SECURED			1	1FE	736,393		96,0748	750,000	736,521			128		4.000	4.119	MS	7,583	15,000	08/01/2018	09/30/2042
26442C-AP-9	DUKE ENERGY CAROLINAS-SECURED			1	1FE	2,156,578		92,1577	2,100,000	2,153,925			(1,244)		3.750	3.597	JD	6,563	78,494	10/20/2016	06/01/2045
26442C-AP-9	DUKE ENERGY CAROLINAS-SECURED			1	1FE	18,351,834		92,1577	18,510,000	18,364,460			3,093		3.750	3.797	JD	57,844	692,813	08/01/2018	06/01/2045
26442C-AR-5	DUKE ENERGY CAROLINAS-SECURED			1	1FE	3,192,461		93,7737	3,320,000	3,193,755			1,294		3.875	4.108	MS	37,880	55,067	08/01/2018	03/15/2046
26442C-AT-1	DUKE ENERGY CAROLINAS LL-SECURED			1	1FE	23,465,690		90,8280	23,500,000	23,466,256			1,256		11.700	3.708	JD	72,458	869,500	11/09/2017	12/01/2047
26442E-AA-8	DUKE ENERGY OHIO INC-SECURED			1	1FE	165,485		100,4055	150,000	151,216			(4,820)		5.450	2.166	AO	2,044	8,175	12/15/2015	04/01/2019
26442E-AA-0	DUKE ENERGY OHIO INC-SECURED			1	1FE	793,580		90,0245	794,696	830,000			702		5.700	3.955	JD	1,365	30,710	05/16/2017	06/15/2046
26442R-AB-7	DUKE ENERGY PROGRESS INC-SECURED			1	1FE	9,148,170		101,8355	9,150,000	9,148,080			29		4.375	4.376	MS	101,190	400,313	03/03/2014	03/30/2044
26442R-AB-7	DUKE ENERGY PROGRESS INC-SECURED			1	1FE	1,690,570		101,8355	1,649,735	1,686,566			(1,553)		4.375	4.107	MS	17,916	70,875	05/16/2017	03/30/2044
26442R-AD-3	DUKE ENERGY PROGRESS INC 1ST MTG BD			1	1FE	208,004		97,0813	190,000	206,624			(394)		4.150	3.620	JD	657	7,885	04/27/2015	12/01/2044
26442R-AD-3	DUKE ENERGY PROGRESS INC 1ST MTG BD			1	1FE	9,900,307		97,0813	9,945,000	9,903,271			872		4.150	4.176	JD	34,393	412,718	12/15/2015	12/01/2044
26442U-AB-0	DUKE ENERGY PROGRESS INC-SECURED			1	1FE	523,258		99,2284	525,000	523,356			33		4.200	4.219	FA	8,330	22,050	12/15/2015	08/15/2045
26442U-AB-0	DUKE ENERGY PROGRESS INC-SECURED			1	1FE	648,760		99,2284	625,139	648,153			(388)		4.200	4.021	FA	9,996	26,460	05/16/2017	08/15/2045
26443C-AA-1	DUKE UNIVERSITY HEALTH-SENIOR UNSECURED			1	1FE	21,900,000		97,6103	21,900,000	21,900,000					3.920	3.920	JD	71,540	858,480	06/01/2017	06/01/2047
26443T-AA-4	DUKE ENERGY INDIANA LLC-SECURED			1	1FE	17,054,001		92,1732	17,100,000	17,055,714			901		3.750	3.765	MN	81,938	641,250	05/09/2016	05/15/2046
26444H-AA-9	Duke Energy Florida LLC-SECURED			1	1FE	736,719		86,1619	835,000	737,471			752		3.400	4.109	AO	7,098	4,337	08/01/2018	10/01/2046
26622B-08-2	Duquesne Light Co. First Mortgage			1		12,000,000		110,5117	12,000,000	12,000,000					4.760	4.760	FA	298,000	571,200	02/01/2012	02/03/2042
26835E-AA-2	EC Group Holdings LLC Senior Sub Note			2	5	16,890		96,5031	16,620	16,910			(20)		11.500	11.987	MJSD	2,089	276,028	09/30/2018	12/31/2023
26835E-AA-2	EC Group Holdings LLC Senior Sub Note			2	5	4,586,815		96,5031	4,586,781	4,586,792			22		11.500	11.499	MJSD	5,107	252,115	12/31/2017	12/31/2023
26860F-AA-8	EIF Pio Pico, LLC Senior Secured			1	2FE	32,129,417		100,8230	32,393,842	32,129,417					4.170	4.169	JD	697,130	1,311,462	02/11/2015	12/31/2041
26864B-AN-2	EMC CORP/MA-SENIOR UNSECURED NOTE			1	3FE	699,475		86,7624	700,000	699,731			53		3.375	3.384	JD	1,969	23,625	06/03/2013	06/01/2023
26875P-AD-3	EOG Resources Inc-SENIOR UNSECURED NOTE			1	1FE	6,137,410		100,9456	5,000,000	5,077,921			(184,804)		5.625	1.849	JD	23,438	281,250	01/01/2013	06/01/2019
26875P-AG-6	EOG Resources Inc-SENIOR UNSECURED NOTE			1	1FE	8,246,165		101,4553	7,250,000	7,525,931			(128,075)		4.100	2.220	FA	123,854	297,250	12/15/2015	02/01/2021
26875P-AK-7	EOG Resources Inc-SENIOR UNSECURED NOTE			1	1FE	249,981		96,0699	250,000	243,888			1,334		2.625	3.251	MS	1,932	6,563	12/15/2015	03/15/2023
26875P-AL-5	EOG RESOURCES INC-SR UNSECURED			1	1FE	197,471		99,0309	200,000	199,227			597								

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
26884A-AZ-6	ERP OPERATING LP-SENIOR UNSECURED NOTE R			1	1FE	206,964	103.4616	201,750	195,000	199,268		(1,470)			4.625	3.767	JD	401	9,019	12/02/2013	12/15/2021
26884A-AZ-6	ERP OPERATING LP-SENIOR UNSECURED NOTE R			1	1FE	1,095,809	103.4616	1,138,077	1,100,000	1,098,533		445			4.625	4.673	JD	2,261	50,823	12/07/2011	12/15/2021
26884A-BB-8	ERP OPERATING LP-SR UNSECURED			1	1FE	558,938	100.7763	559,309	555,000	558,714		(80)			4.500	4.455	JJ	12,488	29,419	12/15/2015	07/01/2044
26884A-BB-8	ERP OPERATING LP-SR UNSECURED			1	1FE	447,611	100.7763	453,494	450,000	447,649		39			4.500	4.535	JJ	10,125		10/04/2018	07/01/2044
26884A-BC-6	ERP OPERATING LP-SR UNSECURED			1	1FE	501,483	99.6909	498,455	500,000	500,188		(433)			2.375	2.286	JJ	5,938	11,875	12/15/2015	07/01/2019
26884A-BD-4	ERP OPERATING LP-UNSECURED			1	1FE	3,555,003	98.2576	3,512,711	3,575,000	3,561,374		1,858			3.375	3.441	JD	10,055	120,656	12/15/2015	06/01/2025
26884L-AB-5	EQT Corp-SENIOR NOTE			1	2FE	8,090,633	101.9117	8,315,997	8,160,000	8,136,348		7,325			4.875	4.982	MN	50,830	394,997	12/02/2013	11/15/2021
26884T-AE-2	ERAC USA FINANCE LLC-SENIOR UNSECURED			1	2FE	12,096,648	109.3291	11,644,641	10,651,000	12,051,623		(25,025)			5.625	4.688	MS	176,407	515,568	05/30/2018	03/15/2042
26884T-AN-2	ERAC USA FINANCE LLC-SR UNSECURED			1	2FE	21,653,495	94.0779	19,732,839	20,975,000	21,620,059		(13,661)			4.500	4.300	FA	356,575	1,019,950	10/20/2016	02/15/2045
26884T-AN-2	ERAC USA FINANCE LLC-SR UNSECURED			1	2FE	6,454,904	94.0779	6,279,700	6,675,000	6,458,110		2,099			4.500	4.717	FA	113,475	199,688	07/12/2018	02/15/2045
26884T-AP-7	ERAC USA Finance LLC-SENIOR UNSECURED			1	2FE	3,571,775	98.0557	3,559,420	3,630,000	3,575,264		3,489			3.800	4.054	MN	22,990	68,970	06/26/2018	11/01/2025
26884T-AR-3	ERAC USA Finance LLC-SENIOR UNSECURED			1	2FE	10,794,628	93.9883	10,802,073	11,493,000	10,832,479		37,851			3.300	4.159	JD	31,606	189,634	06/13/2018	12/01/2026
26884T-AS-1	ERAC USA Finance LLC-SENIOR UNSECURED			1,5	2FE	1,156,532	89.1667	1,160,059	1,301,000	1,157,020		489			4.200	4.935	MN	9,107	2,884	10/04/2018	11/01/2046
26885B-AD-2	EQT Midstream Partners L-SENIOR UNSECURE			1	2FE	399,044	98.7850	399,140	400,000	399,134		90			4.750	4.803	JJ	9,817		06/20/2018	07/15/2023
26911*-AA-1	E.S.P. Associates, P.A. Senior Sub Note			2	4Z	2,503,596	100.2874	2,510,850	2,503,654	2,503,600		4			12.000	12.001	JAWO	151,054	71,543	06/30/2018	11/04/2023
26949B-AA-5	Eagle Creek Renewable En Senior Secured			2	2FE	23,700,000	98.7116	23,394,649	23,700,000	23,700,000					3.980	3.981	FMAN	241,055	943,260	09/29/2016	08/31/2026
26969P-C*-7	Eagle Materials Inc. Senior Note Ser			1	2	7,650,000	101.7698	7,785,390	7,650,000	7,650,000					6.480	6.480	AO	122,553	495,720	10/02/2007	10/02/2019
27004B-AA-5	Eagles Stadium Operator, Senior Note Ser			2	2PL	17,144,393	98.4895	16,885,427	17,144,393	17,144,393					4.580	4.579	JJ	362,071	765,658	10/01/2013	01/15/2039
277432-AL-4	EASTMAN CHEMICAL CO-SENIOR UNSECURED BON			1	2FE	3,567,383	92.1533	3,073,313	3,335,000	3,540,403		(5,048)			4.800	4.374	MS	53,360	160,080	01/01/2013	09/01/2042
277432-AN-0	EASTMAN CHEMICAL CO-SENIOR UNSECURED NOT			1	2FE	8,710,848	100.1301	8,360,861	8,350,000	8,494,593		(40,095)			3.600	3.056	FA	113,560	300,600	05/10/2013	08/15/2022
277432-AP-5	EASTMAN CHEMICAL CO-SR UNSECURED			1	2FE	2,671,559	89.4124	2,302,369	2,575,000	2,665,673		(1,932)			4.650	4.417	AO	25,278	119,738	08/02/2016	10/15/2044
278058-AW-2	EATON CORP-DEBENTURE			1	2FE	9,327,602	129.3239	11,580,957	8,955,000	9,210,777		(15,138)			7.650	7.263	MN	87,535	685,058	11/28/2009	11/15/2029
278058-AY-8	EATON CORP-SENIOR UNSECURED NOTE			1	2FE	4,258,305	106.8515	4,808,318	4,500,000	4,310,316		7,131			5.450	5.862	AO	51,775	245,250	10/08/2009	10/15/2034
278058-DB-5	EATON CORP-SENIOR UNSECURED NOTE			1	2FE	17,711,455	110.4398	17,118,167	15,500,000	17,363,803		(56,895)			5.800	4.800	MS	264,706	869,194	06/07/2018	03/15/2037
278058-DH-2	EATON CORP-SENIOR UNSECURED NOTE			1	2FE	6,268,122	100.9624	6,360,629	6,300,000	6,288,111		4,186			6.950	7.021	MS	122,841	437,850	03/11/2009	03/20/2019
278058-F*-8	EATON CORP-SENIOR NOTE SERIES B			1	2	35,000,000	98.4083	34,442,905	35,000,000	35,000,000					3.680	3.679	JD	57,244	1,288,000	06/28/2012	06/28/2023
278062-AD-6	EATON CORP-SR UNSECURED			1	2FE	2,117,375	98.7614	2,039,423	2,065,000	2,107,629		(2,626)			4.000	3.804	MN	13,537	68,028	08/01/2018	11/02/2032
278062-AE-4	EATON CORP-SR UNSECURED			1	2FE	53,180,832	93.8778	49,450,137	52,675,000	53,117,807		(19,408)			4.150	4.090	MN	358,263	2,033,177	06/06/2018	11/02/2042
278062-AF-1	EATON CORP-SENIOR UNSECURED			1	2FE	23,000,000	89.3724	20,555,651	23,000,000	23,000,000					3.915	3.915	MS	265,133	900,450	09/06/2017	09/15/2047
278265-AD-5	Eaton Vance Corp-SENIOR UNSECURED NOTE			1	1FE	15,723,125	100.6536	15,904,275	15,801,000	15,762,359		7,798			3.625	3.685	JD	25,457	572,786	12/02/2013	06/15/2023
278865-AL-4	Ecolab Inc-SENIOR UNSECURED NOTE			1	1FE	24,619,249	102.7393	24,046,144	23,405,002	23,906,667		(160,818)			4.350	3.570	JD	65,046	1,003,458	07/02/2015	12/08/2021
278865-AM-2	Ecolab Inc-SENIOR UNSECURED NOTE			1	1FE	72,397,866	115.2202	69,062,979	59,940,000	71,800,307		(302,605)			5.500	4.147	JD	210,623	3,234,096	07/06/2018	12/08/2041
278865-AU-4	ECOLAB INC NT			1	1FE	10,234,880	99.6127	10,200,341	10,240,000	10,236,817		706			3.250	3.258	JJ	154,382	332,800	01/11/2016	01/14/2023
278865-AU-4	ECOLAB INC NT			1	1FE	5,568,732	99.6127	5,392,036	5,413,000	5,506,197		(22,488)			3.250	2.778	JJ	81,608	175,923	02/11/2016	01/14/2023
278865-AW-0	ECOLAB INC-SENIOR UNSECURED			1	1FE	6,072,429	89.0583	5,926,832	6,655,000	6,085,557		8,755			3.700	4.225	MN	41,039	213,737	05/30/2018	11/01/2046
278865-BA-7	Ecolab Inc-SENIOR UNSECURED			1	1FE	13,650,327	93.7004	13,001,868	13,876,000	13,652,605		2,278			3.950	4.044	JD	45,675	315,987	06/27/2018	12/01/2047
278865-C*-9	Ecolab Inc. Senior Note Ser			1	1	19,900,000	102.4834	20,394,197	19,900,000	19,900,000					4.320	4.319	MN	525,360	859,680	11/21/2011	11/21/2023
27965F-AG-7	Edens & Avant Investment Gtd Senior Note			1	2	24,300,000	101.9174	24,765,928	24,300,000	24,300,000					5.550	5.548	MS	449,550	1,348,650	09/01/2010	09/01/2020
28150#-AA-3	Educational Specialty Fu Senior Sub Note			2	4Z	3,330,249	95.9477	3,195,297	3,330,249	3,330,249					12.000	12.174	MJSD	103,238	227,567	03/09/2018	06/20/2023
28176E-AD-0	Edwards Lifesciences Cor-SENIOR UNSECURE			1	2FE	3,910,920	101.1035	3,943,037	3,900,000	3,910,360		(560)			4.300	4.265	JD	7,453	158,078	06/06/2018	06/15/2028
28176E-AD-0	Edwards Lifesciences Cor-SENIOR UNSECURE			1	2FE	38,760,383	101.1035	39,268,604	38,840,000	38,763,175		2,792			4.300	4.325	JD	74,228	91,303	06/11/2018	06/15/2028
28258#-AA-4	8point3 Solar Investco 1 Senior Secured			1	2FE	65,121,948	100.3932	65,378,007	65,121,948	65,121,948					4.670	4.672	MN	1,022,179	608,084	06/20/2018	11/30/2035
28336L-BH-1	KINDER MORGAN INC/DELAWA-SENIOR UNSECURE			1	2FE	558,894	104.2923	521,461	500,000	555,548		(1,596)			7.420	6.376	FA	14,016	37,100	10/20/2016	02/15/2037
28368E-AD-8	KINDER MORGAN INC/DE-SENIOR UNSECURED			1	2FE	1,156,721	119.8028	1,072,235	895,000	1,140,808		(13,894)			7.800	4.857	FA	29,088	69,810	10/30/2017	08/01/2031
28368E-AE-6	Kinder Morgan Inc/DE-BOND			1	2FE	8,122,336	119.7009	9,576,072	8,000,000	8,099,632		(4,600)			7.750	7.595	JJ	285,889	620,000	08/02/2016	01/15/2032
28369S-BK-9	EL PASO NATURAL GAS-SENIOR UNSECURED			1	2FE	1,356,936	120.7220	1,297,761	1,075,000	1,335,905		(12,627)			8.375	5.753	JD	4,001	90,031	05/16/2017	06/15/2032
28370T-AD-1	KINDER MORGAN ENER PART-SENIOR UNSECURED			1	2FE	5,321,215	115.3620	5,975,749	5,180,000	5,315,787		(3,086)			7.500	7.247	MN	49,642	3		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
291011-AY-0	Emerson Electric Co-NOTE	1		1	1FE	12,961,006	101.3889	11,755,031	11,594,000	11,762,759		(211,241)			4.875	2.985	AO	119,322	565,208	12/15/2015	10/15/2019
291011-BB-9	Emerson Electric Co-SENIOR UNSECURED BON	1		1	1FE	14,793,056	121.2463	15,252,789	12,580,000	14,418,695		(53,303)			6.125	4.961	AO	162,666	770,525	09/30/2010	04/15/2039
291011-BD-5	Emerson Electric Co-SENIOR UNSECURED	1		1	1FE	3,597,504	111.3160	3,445,229	3,095,000	3,588,923		(8,581)			5.250	4.104	MN	20,762	81,244	06/01/2018	11/15/2039
291011-BE-3	EMERSON ELECTRIC CO-SR UNSECURED	1		1	1FE	146,720	97.9548	146,932	150,000	148,023		444			2.625	2.967	FA	1,488	3,938	12/15/2015	02/15/2023
291011-BF-0	EMERSON ELECTRIC CO-SR UNSECURED	1		1	1FE	198,823	98.6282	197,256	200,000	199,397		195			2.625	2.733	JD	438	5,250	12/15/2015	12/01/2021
291030-AM-8	EMERA US FINANCE LP-SENIOR UNSECURED	1		1	2FE	542,300	96.1495	480,748	500,000	541,379		(811)			4.750	4.232	JD	1,056	23,750	10/30/2017	06/15/2046
291641-B*-8	Empire District Electric First Mortgage	1		1	1	16,550,000	99.5934	16,482,708	16,550,000	16,550,000					4.320	4.320	MN	61,566	714,960	05/30/2013	05/30/2043
29250R-AP-1	Enbridge Energy Partners-SENIOR UNSECURE	1		1	2FE	179,065	126.0680	176,495	140,000	178,793		(272)			7.500	5.205	AO	2,217	87	10/04/2018	04/15/2038
29250R-AR-7	ENBRIDGE ENERGY PARTNERS-SENIOR UNSECURE	1		1	2FE	13,313,421	101.0268	13,360,797	13,225,000	13,224,120		(13,615)			9.875	9.762	MS	435,323	1,305,969	01/05/2009	03/01/2019
29250R-AS-5	ENBRIDGE ENERGY PARTNERS-SENIOR UNSECURE	1		1	2FE	8,177,522	102.1377	7,404,985	7,250,000	7,420,019		(136,469)			5.200	3.197	MS	111,006	377,000	01/01/2013	03/15/2020
29250R-AT-3	ENBRIDGE ENERGY PARTNERS-UNSECURED SENIO	1,5		1	2FE	11,605,847	103.5257	12,060,741	11,650,000	11,610,943		890			5.500	5.526	MS	188,665	640,750	09/08/2010	09/15/2040
29250R-AT-3	ENBRIDGE ENERGY PARTNERS-UNSECURED SENIO	1,5		1	2FE	9,208,252	103.5257	8,592,631	8,300,000	9,092,591		(21,248)			5.500	4.778	MS	134,414	456,500	01/01/2013	09/15/2040
29252B-AA-7	Enbridge Pipelines LLC Senior Note	1		1	1FL	70,942,413	100.1553	71,052,587	70,942,413	70,942,413					3.980	3.979	JD	1,454,677	2,626,663	08/18/2014	06/30/2040
29273R-AF-6	Energy Transfer Partners-SENIOR NOTE	1		1	2FE	770,497	102.6884	770,163	750,000	778,587		(869)			6.925	6.264	AO	10,490	49,688	08/02/2016	10/15/2036
29273R-AJ-8	Energy Transfer Partners-SENIOR UNSECURE	1		1	2FE	12,065,710	111.6244	11,424,758	10,235,000	11,839,444		(46,913)			7.500	6.072	JJ	383,813	767,625	04/27/2015	07/01/2038
29273R-AK-5	ENERGY TRANSFER PTNRS LP SR NT	1		1	2FE	4,676,332	101.1881	4,669,830	4,615,000	4,617,711		(13,023)			9.700	9.405	MS	131,810	447,655	12/02/2013	03/15/2019
29273R-AN-9	Energy Transfer Partners-SENIOR UNSECURE	1		1	2FE	8,509,207	101.7392	8,027,220	7,890,000	8,110,605		(96,582)			4.650	3.303	JD	30,574	366,885	08/19/2014	06/01/2021
29273R-AP-4	Energy Transfer Partners-SENIOR UNSECURE	1		1	2FE	965,481	95.5542	864,765	905,000	905,000		(1,358)			6.050	5.536	JD	54,753	54,753	10/30/2017	06/01/2041
29273R-AQ-2	ENERGY TRANSFER PTNRS LP SR NT	1		1	2FE	6,234,875	102.6961	6,418,503	6,250,000	6,244,267		1,587			5.200	5.231	FA	135,417	325,000	01/09/2012	02/01/2022
29273R-AQ-2	ENERGY TRANSFER PTNRS LP SR NT	1		1	2FE	15,528,774	102.6961	13,987,203	13,620,000	14,294,337		(223,135)			5.200	3.354	FA	295,100	708,240	01/01/2013	02/01/2022
29273R-AR-0	Energy Transfer Partners-SENIOR UNSECURE	1		1	2FE	161,532	99.8025	184,635	185,000	162,526		350			6.500	7.626	FA	5,010	12,025	12/09/2015	02/01/2042
29273R-AR-0	Energy Transfer Partners-SENIOR UNSECURE	1		1	2FE	14,592,421	99.8025	13,662,960	13,690,000	14,501,800		(16,674)			6.500	6.016	FA	370,771	889,850	05/16/2017	02/01/2042
29273R-AS-8	ENERGY TRANSFER LP-SENIOR UNSECURED	1		1	2FE	2,109,375	96.3426	1,994,292	2,070,000	2,100,847		(7,444)			3.600	3.184	FA	31,050	74,520	10/30/2017	02/01/2023
29273R-AT-6	Energy Transfer Partners-SENIOR UNSECURE	1		1	2FE	16,787,277	86.6580	14,645,196	16,900,000	16,797,720		2,081			5.150	5.194	FA	362,646	870,350	01/14/2013	02/01/2043
29273R-AX-7	Energy Transfer Partners-SR UNSECURED	1		1	2FE	61,868	100.6035	60,362	60,000	60,621		(375)			4.150	3.472	AO	623	2,490	06/18/2015	10/01/2020
29273R-AZ-2	Energy Transfer Partners-SR UNSECURED	1		1	2FE	57,942	95.0792	66,555	70,000	58,396		161			5.950	7.422	AO	1,041	4,165	12/09/2015	10/01/2043
29273R-AZ-2	Energy Transfer Partners-SR UNSECURED	1		1	2FE	3,429,792	95.0792	3,069,155	3,228,000	3,419,319		(3,831)			5.950	5.500	AO	48,017	192,066	05/16/2017	10/01/2043
29273R-BA-6	Energy Transfer Partners-JUNIOR SUBORDIN	2		1	2FE	113,751	71.0000	88,750	125,000	114,079		42			5.559	6.212	FMAN	1,177	6,560	12/06/2013	11/01/2066
29273R-BE-8	Energy Transfer Partners-SR UNSECURED	1		1	2FE	524,603	89.5191	483,403	540,000	525,709		533			4.900	5.138	MS	7,791	26,460	10/30/2017	03/15/2035
29273R-BF-5	ENERGY TRANSFER PARTNERS-SENIOR UNSECURE	1		1	2FE	739,365	86.5101	657,476	760,000	739,854		342			5.150	5.338	MS	39,140	39,140	10/30/2017	03/15/2045
29273R-BG-3	Energy Transfer Partners-SR UNSECURED	1		1	2FE	388,256	97.1660	364,373	375,000	385,810		(1,345)			4.750	4.257	JJ	8,214	17,813	02/16/2017	01/15/2026
29273R-BG-3	Energy Transfer Partners-SR UNSECURED	1		1	2FE	199,902	97.1660	194,332	200,000	199,923		9			4.750	4.756	JJ	4,381	9,500	08/02/2016	01/15/2026
29273R-BJ-7	ENERGY TRANSFER PARTNERS-SENIOR UNSECURE	1		1	2FE	1,983,706	97.7997	1,256,726	1,285,000	1,381,636		(1,615)			6.125	5.575	JD	3,498	78,706	10/30/2017	12/15/2045
29273R-BL-2	ENERGY TRANSFER PARTNERS-SENIOR UNSECURE	1,5		1	2FE	577,324	88.1377	515,605	585,000	577,355		48			5.300	5.390	AO	6,546	25,834	10/04/2018	04/15/2047
29273V-AF-7	Energy Transfer Equity L-FIRST LIEN	1		1	3FE	455,486	97.5000	438,750	450,000	455,168		(318)			5.500	5.325	JD	2,063	24,750	05/17/2018	06/01/2027
29273V-AG-5	Energy Transfer Equity L-FIRST LIEN	1		1	3FE	395,120	96.2500	385,000	400,000	395,742		622			4.250	4.529	MS	5,006	8,500	04/17/2018	03/15/2023
29278N-AF-0	Energy Transfer Partners-SENIOR UNSECURE	1		1	2FE	214,611	97.8413	210,359	215,000	214,625		14			4.950	4.973	JD	473	5,528	06/05/2018	06/15/2028
29335E-AA-1	Enhanced Capital Connect CAPCO Note Seri	2		1	1	2,408,898	100.5894	2,423,096	2,408,898	2,408,898					7.310	7.307	JD	102,326	(287,112)	01/25/2011	12/15/2020
29336U-AD-9	EnLink Midstream Partner-SENIOR UNSECURE	1		1	3FE	176,419	78.1267	167,972	215,000	176,526		107			5.050	6.476	AO	2,714		10/04/2018	04/01/2045
29364D-AR-1	ENERGY ARKANSAS INC-SECURED	1		1	1FE	196,975	98.8916	197,783	200,000	198,115		390			3.050	3.281	JD	508	6,100	12/15/2015	06/01/2023
29364D-AS-9	ENERGY ARKANSAS INC-SECURED	1		1	1FE	95,018	101.6454	91,481	90,000	94,166		(741)			3.700	2.733	JD	278	3,330	10/30/2017	06/01/2024
29364D-AU-4	ENERGY ARKANSAS INC 1ST MTD BD	1		1	1FE	1,265,822	99.3969	1,262,340	1,270,000	1,266,804		375			3.500	3.539	AO	11,113	44,450	01/05/2016	04/01/2026
29364N-AP-3	ENERGY MISSISSIPPI INC-SECURED MORTGAGE	1		1	1FE	2,098,656	101.6298	2,134,226	2,100,000	2,099,919		154			6.640	6.648	JJ	69,720	139,440	06/09/2009	07/01/2019
29364N-AS-7	ENERGY MISSISSIPPI INC-SECURED NOTE	1		1	1FE	19,644,105	101.5680	19,958,114	19,650,000	19,646,080		631			3.750	3.754	JJ	368,438	736,875	03/18/2014	07/01/2024
29364W-AK-4	Energy Louisiana LLC-SECURED	1		1	1FE	1,312,268	109.9221	1,209,143	1,100,000	1,237,292		(21,206)			5.400	3.048	MN	9,900	59,400	04/27/2015	11/01/2024
29364W-AM-0	ENERGY LOUISIANA LLC 1ST MTD BD	1		1	1FE	5,976,057	103.6028	5,639,100	5,443,000	5,758,146		(40,485)			4.440	3.476	JJ	111,436	241,669	06/10/2015	01/15/2026
29364W-AN-8	Energy Louisiana LLC-SECURED MORTGAGE	1		1	1FE	5,191,004	102.3996	5,324,778	5,200,000	5,197,292		941			4.800	4.821	MN	41,600	249,600	03/21/2011	05/01/2021
29364W-AS-7	Energy Louisiana LLC-SECURED	1		1	1FE	1,032,907	102.56														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
293791-AT-6	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	113,504	105.6527	105,653	100,000	112,328		(502)			5.750	4.656	MS	1,917	5,750	08/02/2016	03/01/2035
293791-AF-0	ENTERPRISE PRODUCTS OPER-NOTE			1	2FE	8,544,530	101.8712	8,760,927	8,600,000	8,592,193		6,487			5.250	5.333	JJ	189,379	451,500	09/24/2009	01/31/2020
293791-AG-8	ENTERPRISE PRODUCTS OPER-NOTE			1	2FE	8,936,393	112.8360	8,390,486	7,436,000	8,756,529		(36,672)			6.125	4.767	AO	96,152	455,455	05/16/2017	10/15/2039
293791-AM-5	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	2,772,592	126.5954	2,791,429	2,205,000	2,739,158		(15,819)			7.550	5.477	AO	35,145	166,478	05/16/2017	04/15/2038
293791-AP-8	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	4,287,143	103.0762	4,432,276	4,300,000	4,297,033		1,481			5.200	5.239	MS	74,533	223,600	05/11/2010	09/01/2020
293791-AT-0	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	12,519,335	109.3003	11,120,209	10,174,000	12,411,949		(57,072)			5.950	4.382	FA	252,230	768,978	01/19/2018	02/01/2041
293791-AU-7	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	117,344	101.5390	111,693	110,000	112,632		(790)			4.050	3.237	FA	1,683	4,455	06/26/2012	02/15/2022
293791-AV-5	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	871,395	106.3609	762,608	717,000	867,097		(3,752)			5.700	4.267	FA	15,439	40,869	10/30/2017	02/15/2042
293791-AW-3	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	988,682	96.2875	914,731	950,000	987,251		(894)			4.850	4.573	FA	17,406	46,075	05/16/2017	08/15/2042
293791-AY-9	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	29,425,609	90.7451	26,967,634	29,718,000	29,445,071		6,068			4.450	4.512	FA	499,593	1,322,451	05/02/2017	02/15/2043
293791-BA-0	ENTERPRISE PRODUCTS OPER-SR UNSECURE			1	2FE	5,485,102	96.9629	5,066,313	5,225,000	5,471,968		(5,367)			4.850	4.529	MS	74,616	253,415	05/16/2017	03/15/2044
293791-BC-6	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	15,495,625	100.3628	13,933,363	13,883,000	15,448,619		(32,826)			5.100	4.364	FA	267,479	708,033	12/08/2017	02/15/2045
293791-BE-2	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	290,434	98.9457	277,048	280,000	287,674		(1,168)			3.750	3.234	FA	3,967	10,500	08/02/2016	02/15/2025
293791-BF-9	ENTERPRISE PRODUCTS OPER-SR UNSECURE			1	2FE	2,329,033	97.1843	2,161,378	2,224,000	2,325,763		(1,136)			4.950	4.683	AO	23,241	110,088	10/30/2017	10/15/2054
293791-BH-5	ENTERPRISE PRODUCTS OPER-SR UNSECURE			1	2FE	109,599	98.5293	108,382	110,000	109,710		34			3.700	3.742	FA	1,538	4,070	05/04/2015	02/15/2026
293791-BH-5	ENTERPRISE PRODUCTS OPER-SR UNSECURE			1	2FE	206,912	98.5293	197,059	200,000	205,309		(678)			3.700	3.266	FA	2,796	7,400	08/02/2016	02/15/2026
293791-BJ-1	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	12,835,157	96.8577	11,947,401	12,335,000	12,820,201		(8,670)			4.900	4.642	MN	77,231	582,028	08/01/2018	05/15/2046
293791-BK-8	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE			1	2FE	4,574,530	99.0023	4,455,101	4,500,000	4,548,258		(21,093)			2.850	2.348	AO	27,075	128,250	09/29/2017	04/15/2021
293791-BO-5	Enterprise Products Oper-SENIOR UNSECURE			1	2FE	14,614,378	88.6380	13,003,200	14,670,000	14,614,298		(80)			4.250	4.272	FA	235,535	296,799	08/01/2018	02/15/2048
293868-AD-3	Enterprise RB Fund LP Secured Promiss			2	1	7,266,398	97.7983	9,077,855	9,282,221	9,168,344		352,651			0.000	2.939	APR			10/27/2010	04/01/2020
294423-AC-9	EQUIFAX INC-SENIOR UNSECURED NOTE			1	2FE	4,529,416	116.0934	5,195,180	4,475,000	4,511,221		(2,642)			6.900	6.783	JJ	154,388	308,775	09/30/2009	07/01/2028
294752-A*-1	Equity One, Inc. Senior Note Ser			1	2	26,400,000	97.3376	25,697,126	26,400,000	26,400,000					3.810	3.810	MN	139,700	1,005,840	05/11/2016	05/11/2026
294752-A@-9	Equity One, Inc. Senior Note Ser			1	2	700,000	97.8575	685,003	700,000	700,000					3.910	3.910	FA	10,644	27,370	08/11/2016	08/11/2026
297177-A#-4	Essex Portfolio L.P. Gtd Senior Note			1	2FE	22,300,000	100.9974	22,522,420	22,300,000	22,300,000					4.920	4.917	JD	551,628	1,097,160	06/30/2011	12/30/2019
297177-AJ-6	ESSEX PORTFOLIO LP-SENIOR UNSECURED NOTE			1	2FE	9,138,840	103.1280	8,869,006	8,600,000	8,781,845		(87,596)			5.200	4.064	MS	131,676	447,200	08/27/2014	03/15/2021
297177-AL-1	ESSEX PORTFOLIO LP-SENIOR UNSECURED NOTE			1	2FE	10,883,342	98.6429	10,801,399	10,950,000	10,915,526		7,797			3.375	3.459	JJ	170,409	369,563	08/27/2014	01/15/2023
297177-AR-8	ESSEX PORTFOLIO LP-SENIOR UNSECURED			1	2FE	14,453,825	96.3901	14,024,766	14,550,000	14,467,615		8,244			3.625	3.704	MN	87,906	527,438	04/07/2017	05/01/2027
297177-B#-3	Essex Portfolio L.P. Gtd Senior Note			1	2	12,750,000	101.1204	12,892,851	12,750,000	12,750,000					4.370	4.369	FA	187,273	557,175	08/30/2012	08/30/2021
29736R-AC-4	Estee Lauder Cos Inc/The-SENIOR UNSECURE			1	1FE	17,450,068	122.8158	17,151,229	13,965,000	17,393,621		(56,447)			6.000	4.086	MN	107,065	418,950	07/19/2018	05/15/2037
29736R-AF-7	ESTEE LAUDER COS INC/THE-SR UNSECURED			1	1FE	10,471,471	93.6337	10,262,254	10,960,000	10,478,419		6,598			3.700	3.989	FA	153,196	356,680	07/11/2018	08/15/2042
29736R-AG-5	ESTEE LAUDER CO INC-SENIOR UNSECURED			1	1FE	28,787,452	104.7893	27,480,998	26,225,000	28,686,373		(48,054)			4.375	3.799	JD	50,993	1,058,740	12/19/2018	06/15/2045
29736R-AK-6	Estee Lauder Cos Inc/The-SENIOR UNSECURE			1	1FE	8,205,604	101.1255	8,134,535	8,044,000	8,203,840		(1,764)			4.150	4.030	MS	98,293	166,913	06/05/2018	03/15/2047
30152@-AC-5	ECG Consulting Group LLC Sr. Sub Note (			2	5	7,092,640	98.3896	6,976,231	7,090,417	7,092,122		127			11.500	11.495	MJSD	971,503		06/30/2018	06/20/2025
30152@-AD-3	ECG Consulting Group LLC Senior Sub Note			2	5	5,908,382	98.3896	5,813,232	5,908,382	5,908,382					11.500	11.501	MJSD	360,493		06/20/2018	06/20/2025
30215*-AR-9	Explorer Pipeline Co. Senior Note Ser			1	2	30,400,000	100.3832	30,516,493	30,400,000	30,400,000					3.760	3.760	AO	206,382	1,143,040	10/26/2017	10/29/2027
302182-AE-0	EXPRESS SCRIPTS HOLDING -SENIOR UNSECURE			1,5	2FE	24,718,823	101.8039	20,717,092	20,350,000	20,678,099		(708,058)			7.250	3.644	JD	65,572	1,475,375	01/01/2013	06/15/2019
30219G-AE-8	EXPRESS SCRIPTS HOLDING -SENIOR UNSECURE			1	2FE	13,325,083	102.8628	12,960,711	12,600,000	12,863,946		(85,344)			4.750	3.969	MN	76,475	598,500	04/24/2013	11/15/2021
30219G-AF-5	EXPRESS SCRIPTS HOLDING -SENIOR UNSECURE			1	2FE	5,174,554	100.4610	4,926,605	4,904,000	5,100,106		(59,623)			3.900	2.558	FA	72,252	191,256	09/29/2017	02/15/2022
30219G-AG-3	EXPRESS SCRIPTS HOLDING-SR UNSECURED			1	2FE	207,140	111.6467	200,964	180,000	205,458		(580)			6.125	5.073	MN	1,409	11,025	12/09/2015	11/15/2041
30219G-AN-8	EXPRESS SCRIPTS HOLDING -SENIOR UNSECURE			1	2FE	534,307	92.7655	514,849	555,000	535,424		1,053			3.400	3.904	MS	6,290	14,098	08/01/2018	03/01/2027
30219G-AP-3	EXPRESS SCRIPTS HOLDING-SENIOR UNSECURED			1	2FE	24,149,468	95.8671	21,780,998	22,720,000	24,111,065		(25,407)			4.800	4.409	JJ	502,869	1,106,967	01/26/2018	07/15/2046
30219G-AP-3	EXPRESS SCRIPTS HOLDING-SENIOR UNSECURED			1	2FE	27,559,702	95.8671	26,732,532	27,885,000	27,569,241		4,483			4.800	4.875	JJ	617,188	1,220,640	10/04/2018	07/15/2046
30231G-AD-4	EXXON MOBIL CORPORATION-SR UNSECURED			1	1FE	350,814	99.8158	349,355	350,000	350,031		(263)			1.819	1.743	MS	1,875	6,367	12/15/2015	03/15/2019
30231G-AG-7	EXXON MOBIL CORPORATION-SR UNSECURED			1	1FE	549,450	99.1010	545,055	550,000	549,837		130			1.912	1.937	MS	3,359	10,516	12/15/2015	03/06/2020
30231G-AJ-1	EXXON MOBIL CORPORATION-SR UNSECURED			1	1FE	246,118	98.1380	245,345	250,000	247,928		615			2.397	2.670	MS	1,914	5,993	12/15/2015	03/06/2022
30231G-AN-2	EXXON MOBIL CORPORATION-SR UNSECURED			1	1FE	893,626	94.3421	896,250	950,000	896,905		1,147			3.567	3.910	MS	10,825	33,887	03/23/2016	03/06/2045
30231G-AN-2	EXXON MOBIL CORPORATION-SR UNSECURED			1	1FE	853,831	94.3421	771,718	818,000	851,876		(825)			3.567	3.326	MS	9,321	29,178	08/02/2016	03/06/2045

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
302736-AA-3	FPL Energy Rockaway Peak Senior Secured			1	2	659,766		101,8264	671,816	659,766					7.110	7.100	JD	35,533	34,828	08/27/2003	06/28/2020
30288-AA-8	FLNG Liquefaction 2 LLC Senior Secured			1	2FE	46,500,000		101,1232	46,500,000	46,500,000					4.540	4.542	MS	533,639	2,111,100	11/29/2016	03/31/2038
30290Y-AC-5	FS Global Credit Opportu-FS GLOBAL CREDI			1	1FE	100,000,000		103,0197	103,019,700	100,000,000					5.426	5.428	FA	904,333		10/24/2018	02/01/2026
30306V-AA-7	FLNG Liquefaction 3 LLC-SECURED			1	2FE	35,000,000		96,4350	33,752,250	35,000,000					5.550	5.551	MS	491,021	469,437	06/26/2018	03/31/2039
303250-C#-9	Fair Isaac Corp. Senior Note Ser			1	3	20,000,000		100,8205	20,164,100	20,000,000					5.590	5.587	JJ	518,628	1,118,000	07/14/2010	07/14/2020
30571#-AA-0	Fairview Health Services Taxable Bonds			2	1	59,845,807		98,7584	59,102,761	59,845,807					4.160	4.160	MN	318,114	2,483,339	09/02/2015	11/15/2043
313747-AF-4	FEDERAL REALTY INVESTMEN-NOTE REID			1	1FE	26,138,617		120,6664	30,558,773	25,325,000		(37,338)			7.480	7.214	FA	715,628	1,894,310	09/30/1998	08/15/2026
313747-AS-6	FEDERAL REALTY INVESTMEN-SENIOR UNSECURE			1	1FE	11,621,291		98,4496	11,617,056	11,800,000		21,462			3.000	3.209	FA	147,500	354,000	07/02/2015	08/01/2022
313747-AU-1	Federal Realty Investmen-SENIOR UNSECURE			1	1FE	7,078,120		101,3084	7,091,585	7,000,000		7,071,416			3.950	3.716	JJ	127,497	138,250	06/28/2018	01/15/2024
313747-AV-9	Federal Realty Investmen-SR UNSECURED			1,5	1FE	3,808,088		99,3278	3,638,377	3,663,000		3,800,516	(2,976)		4.500	4.256	JD	13,736	164,835	11/17/2016	12/01/2044
313747-AW-7	FEDERAL REALTY INVESTMEN-SR UNSECURED			1	1FE	119,444		98,6228	118,347	120,000		110			2.550	2.648	JJ	1,411	3,060	12/15/2015	01/15/2021
313747-AX-5	FEDERAL REALTY INVESTMEN-SENIOR UNSECURE			1	1FE	9,775,600		84,9298	8,492,980	10,000,000		9,786,046			3.625	3.750	FA	151,042	362,500	07/07/2016	08/01/2046
313747-AY-3	Federal Realty Investmen-SENIOR UNSECURE			1	1FE	4,707,350		94,7456	4,737,280	5,000,000		4,720,173	12,823		3.250	4.031	JJ	74,931	81,250	07/09/2018	07/15/2027
31428X-AI-3	FEDEX CORP-SENIOR UNSECURED			1,5	2FE	65,916		83,0322	56,462	68,000		65,980			3.875	4.072	FA	1,098	2,635	09/26/2017	08/01/2042
31428X-AJ-0	FEDEX CORP-SENIOR UNSECURED			1	2FE	1,847,626		86,6526	1,663,731	1,920,000		1,850,118	1,595		4.100	4.344	AO	16,619	78,720	05/16/2017	04/15/2043
31428X-AK-6	FEDEX CORP-SR UNSECURED			1	2FE	2,655,164		98,4461	2,323,327	2,360,000		2,636,470	(6,143)		5.100	4.325	JJ	55,499	120,360	08/02/2016	01/15/2044
31428X-AL-4	FEDEX CORP-SENIOR UNSECURED			1	2FE	920,105		102,2003	812,492	795,000		907,171	(5,504)		4.900	3.671	JJ	17,963	38,955	08/02/2016	01/15/2034
31428X-AM-3	FEDEX CORP-SENIOR UNSECURED			1	2FE	193,331		90,5362	167,492	185,000		192,524	(342)		3.900	3.565	FA	3,006	7,215	08/02/2016	02/01/2035
31428X-AN-1	FEDEX CORP-SR UNSECURED			1	2FE	2,014,834		85,6230	1,766,403	2,063,000		2,014,840	53		4.100	4.243	FA	35,243	66,341	10/04/2018	02/01/2045
31428X-AO-7	FEDEX CORP-SR UNSECURED			1	2FE	812,962		82,6779	719,298	870,000		813,802	282		4.500	4.847	FA	16,313	39,150	08/02/2016	02/01/2065
31428X-AP-5	FEDEX CORP-SENIOR UNSECURED			1	2FE	230,004		94,2837	188,567	200,000		228,565	(614)		4.750	3.880	MN	1,214	9,500	08/02/2016	11/15/2045
31428X-AQ-0	FEDEX CORP-SENIOR UNSECURED			1	2FE	23,646,150		90,8871	20,735,896	22,815,000		23,607,859	(15,527)		4.550	4.329	AO	259,521	1,046,809	06/01/2016	04/01/2046
31428X-AR-0	FEDEX CORP-SENIOR UNSECURED			1	2FE	844,865		90,8871	794,353	874,000		844,934	69		4.550	4.769	AO	9,942		10/04/2018	04/01/2046
31428X-AS-5	FEDEX CORP-SENIOR UNSECURED			1	2FE	2,326,381		89,8354	2,066,215	2,300,000		2,325,703	(479)		4.400	4.330	JJ	46,664	101,200	06/01/2017	01/15/2047
31428X-AT-5	FEDEX CORP-SENIOR UNSECURED			1	2FE	17,956,879		89,8354	16,448,865	18,310,000		17,968,033	5,972		4.400	4.518	JJ	371,490	805,640	04/06/2017	01/15/2047
31428X-AU-8	FedEx Corp-SENIOR UNSECURED			2	2FE	15,779,232		83,7652	13,800,318	16,475,000		15,778,952	(279)		4.050	4.299	FA	252,068	251,732	12/19/2018	02/15/2048
31677Q-BB-4	FIFTH THIRD BANK-SR UNSECURED			1	1FE	200,935		99,7936	199,587	200,000		200,068	(283)		2.375	2.225	AO	871	4,750	12/15/2015	04/25/2019
320517-AB-1	First Horizon National C-SR UNSECURED			1	2FE	204,504		99,9939	204,988	205,000		204,801	95		3.500	3.551	JD	319	7,175	10/26/2015	12/15/2020
320517-AB-1	First Horizon National C-SR UNSECURED			1	2FE	2,579,705		99,9939	2,499,848	2,500,000		2,548,408	(24,963)		3.500	2.436	JD	3,889	87,500	09/26/2017	12/15/2020
33616C-AB-6	FIRST REPUBLIC BANK-SUBORDINATED			2	2FE	3,045,749		92,4693	2,834,183	3,065,000		3,046,190	328		4.375	4.413	FA	55,872	130,448	04/03/2018	08/01/2046
33616C-AC-4	FIRST REPUBLIC BANK-SUBORDINATED			1	2FE	46,951,676		96,3118	44,941,953	46,663,000		46,949,131	(3,899)		4.625	4.585	FA	827,296	2,081,953	03/16/2018	02/13/2047
337358-BH-7	Wachovia Corp-SUBORDINATED			5	1FE	291,856		118,3988	277,032	218,000		277,032	(14)		7.574	3.480	FA	6,880	16,511	05/11/2015	08/01/2026
33738K-AA-3	WELLS FARGO BANK NA-SUBORDINATED			1	1FE	587,678		109,5279	547,640	500,000		580,683	(2,988)		6.180	4.788	FA	11,673	30,900	08/02/2016	02/15/2036
33767B-AA-7	FIRSTENERGY TRANSMISSION-SENIOR UNSECURE			1	2FE	437,718		108,6352	434,541	400,000		436,184	(733)		5.450	4.824	JJ	10,052	21,800	10/20/2016	07/15/2044
338128-AA-5	Fitch Group, Inc. Senior Note			1	2	19,740,000		102,2731	20,188,710	19,740,000		19,740,000			5.120	5.117	FA	398,660	877,801	08/09/2011	08/09/2021
33829T-AA-4	FIVE CORNERS FUNDING TRS-UNSECURED NOTE			1	2FE	9,682,656		102,8779	9,876,274	9,600,000		9,645,133	(8,237)		4.419	4.310	MN	54,206	424,224	01/17/2014	11/15/2023
33972P-AA-7	FLNG LIQUEFACTION 2 LLC-FIRST LIEN			1	2FE	50,000,000		87,7823	43,891,141	50,000,000		50,000,000			4.125	4.125	MS	521,354	2,062,500	07/12/2016	03/31/2038
340711-AG-5	FLORIDA GAS TRANSMISSION-SENIOR NOTE			2	2FE	696,329		110,5097	663,058	600,000		618,922	(11,800)		9.190	7.062	MN	9,190	53,608	06/13/2001	11/01/2024
341081-EP-8	FLORIDA POWER & LIGHT CO-BOND			1	1FE	4,296,652		118,8023	5,049,098	4,250,000		4,280,913	(1,403)		5.850	5.773	FA	103,594	248,625	12/11/2002	02/01/2033
341081-ER-4	FLORIDA POWER & LIGHT CO-SECURED			1	1FE	730,238		121,5279	680,556	560,000		710,303	(7,615)		5.950	3.590	AO	8,330	33,320	10/30/2017	10/01/2033
341081-ET-0	FLORIDA POWER & LIGHT CO-SECURED NOTE			1	1FE	479,083		109,5494	457,917	418,000		470,739	(2,288)		4.950	3.896	JD	1,724	20,691	05/11/2015	06/01/2035
341081-EU-7	FLORIDA POWER & LIGHT CO-SECURED			1	1FE	865,413		113,1510	772,822	683,000		861,304	(6,887)		5.400	3.546	MS	12,294	36,882	05/11/2015	09/01/2035
341081-EV-5	FLORIDA POWER & LIGHT CO-SECURED			1	1FE	400,996		118,2558	390,244	330,000		396,697	(2,459)		5.650	4.061	FA	7,769	18,645	03/16/2017	02/01/2037
341081-FA-0	FLORIDA POWER & LIGHT CO-BOND			1	1FE	959,696		122,9110	891,104	725,000		938,304	(7,587)		5.950	3.768	FA	17,974	43,138	10/30/2017	02/01/2038
341081-FB-8	FLORIDA POWER & LIGHT CO-SECURED			1	1FE	289,761		123,6740	263,426	213,000		281,846	(2,256)		5.960	3.681	AO	3,174	12,695	05/11/2015	04/01/2039
341081-FD-4	FLORIDA POWER & LIGHT CO-SECURED			1	1FE	1,128,755		115,7871	1,062,926	918,000		1,112,583	(5,750)		5.250	3.800	FA	20,081	48,195	05/16/2017	02/01/2041
341081-FE-2	Florida Power & Light Co-SECURED			1	1FE	975,353		111,7174	996,519	892,000		974,878	(475)		5.125	4.456	JD	3,810	6,222	10/04/2018	06/01/2041
341081-FF-9	FLORIDA POWER & LIGHT CO-SECURED			1	1FE	2,165,796		100,8355	2,150,821	2,133,000		2,163,111	(818)		4.125	4.027	FA	36,661	81,951	08/01/2018	02/01/2042
34108																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
341099-CH-0	DUKE ENERGY FLORIDA LLC-SECURED	1		1	1FE	3,669,990	125.0508	3,438,897	2,750,000	3,582,741			(27,646)		6.350	4.026	MS	51,417	162,300	08/01/2018	09/15/2037
341099-CL-1	FLORIDA PIWR CORP 1ST MTG BD-DUKE ENERGY	1		1	1FE	10,265,965	127.6495	12,450,934	12,450,000	10,230,008			(15,881)		6.400	5.942	JD	27,745	624,256	10/30/2017	06/15/2038
341099-CP-2	DUKE ENERGY FLORIDA LLC-SECURED	1		1	1FE	154,337	99.8576	149,786	150,000	151,978			(799)		3.100	2.524	FA	1,757	4,650	12/15/2015	08/15/2021
341099-CR-8	DUKE ENERGY FLORIDA LLC-SECURED	1		1	1FE	420,952	93.5467	378,864	405,000	419,586			(392)		3.850	3.620	MN	1,992	15,593	04/27/2015	11/15/2042
341099-CR-8	DUKE ENERGY FLORIDA LLC-SECURED	1		1	1FE	2,641,313	93.5467	2,620,242	2,801,000	2,651,434			3,573		3.850	4.206	MN	13,779	107,839	05/16/2017	11/15/2042
34354P-AC-9	FLOWSERVE CORPORATION-SENIOR UNSECURED N	1		1	2FE	8,328,830	97.9796	8,063,320	8,250,000	8,280,893			(8,293)		3.500	3.384	MS	85,021	288,750	09/21/2012	09/15/2022
345277-AE-7	FORD HOLDINGS LLC-SENIOR UNSECURED	1		1	2FE	771,739	117.0100	631,854	540,000	747,759			(13,781)		9.300	4.806	MS	16,740	50,220	10/30/2017	03/01/2030
345370-BR-0	Ford Motor Co-SENIOR UNSECURED NOTE	1		1	2FE	5,963,191	102.9902	4,691,203	4,555,000	5,877,946			(21,008)		7.400	5.363	MN	56,178	337,070	10/30/2017	11/01/2046
345370-BY-5	FORD MOTOR COMPANY-SENIOR UNSECURED	1		1	2FE	1,080,938	100.9913	858,426	850,000	1,043,151			(16,087)		6.625	3.812	AO	14,078	56,313	08/02/2016	10/01/2028
345370-CA-6	Ford Motor Co-SENIOR UNSECURED NOTE	1		1	2FE	4,465,145	103.1024	3,462,178	3,358,000	4,465,145					7.450	7.450	JJ	114,662	233,099	08/02/2016	07/16/2031
345370-CQ-1	Ford Motor Co-SR UNSECURED	1		1	2FE	4,735,595	77.1185	3,400,927	4,410,000	4,714,677			(7,170)		4.750	4.286	JJ	96,591	209,475	08/02/2016	01/15/2043
345370-CS-7	FORD MOTOR COMPANY-SENIOR UNSECURED	2		1	2FE	26,199,853	82.0981	21,522,014	26,215,000	26,199,970			226		5.291	5.295	JD	88,616	1,376,894	12/06/2016	12/08/2046
345397-VU-4	Ford Motor Credit Co LLC-SENIOR UNSECURE	1		1	2FE	223,552	102.5569	205,114	200,000	207,643			(2,741)		5.875	4.296	FA	4,863	11,750	06/26/2012	08/02/2021
345397-III-5	FORD MOTOR CREDIT CO LLC SR NT	1		1	2FE	498,382	94.7240	449,939	475,000	487,677			(2,486)		4.375	3.730	FA	8,370	20,781	10/05/2015	08/06/2023
345397-III-9	FORD MOTOR CREDIT CO LLC-SENIOR UNSECURE	1		1	2FE	332,573	89.4391	286,205	320,000	329,146			(1,451)		3.664	3.111	MS	3,680	11,725	08/02/2016	09/08/2024
345397-XX-4	Ford Motor Credit Co LLC-SENIOR UNSECURE	1		1	2FE	195,752	97.9931	195,986	200,000	195,802			50		3.157	4.825	FA	2,578		12/20/2018	08/04/2020
345397-XQ-1	FORD MOTOR CREDIT CO LLC-SENIOR UNSECURE	1		1	2FE	583,357	96.9755	572,155	590,000	584,390			1,034		3.200	3.688	JJ	8,706	5,755	08/08/2018	01/15/2021
345397-XT-5	FORD MTR CR CO LLC NT	1		1	2FE	11,275,000	100.0003	11,275,037	11,275,000	11,275,000					2.943	2.942	JJ	159,460	331,823	01/05/2016	01/08/2019
345397-ZB-2	Ford Motor Credit Co LLC-SENIOR UNSECURE	2		1	2FE	555,000	95.0510	527,533	555,000	555,000					4.140	4.141	FA	8,680	6,510	04/30/2018	02/15/2023
346845-AC-4	FORT BENNING FAIM-UNSECURED	2		1	1FE	19,373,878	84.2013	21,050,315	25,000,000	20,124,711			29,537		2.805	3.062	JJ	297,696	593,546	07/08/2015	01/15/2036
34959J-AH-1	FORTIVE CORPORATION-SENIOR UNSECURED	1		1	2FE	33,543,483	93.3655	31,547,284	33,789,000	33,552,946			4,513		4.300	4.344	JD	64,575	442,249	04/12/2018	06/15/2046
34959J-AH-1	FORTIVE CORPORATION-SENIOR UNSECURED	1		1	2FE	10,185,670	93.3655	9,369,233	10,035,000	10,182,235			(2,901)		4.300	4.208	JD	19,178	647,257	06/14/2017	06/15/2046
349631-AN-1	Beam Suntory Inc-SENIOR UNSECURED NOTE	1		1	2FE	23,044,044	108.5803	21,859,392	20,132,000	22,540,497			(92,062)		5.875	4.825	JJ	545,381	1,182,755	01/23/2013	01/15/2036
34964C-AA-4	FORTUNE BRANDS HOME & SE-SENIOR UNSECURE	1		1	2FE	430,185	99.6302	398,521	400,000	423,042			(3,332)		4.000	2.977	JD	711	16,000	10/20/2016	06/15/2025
350868-AA-9	Four Corners Property Tr Gtd Senior Note	1		1	2FE	5,000,000	100.5110	5,025,550	5,000,000	5,000,000					4.680	4.680	JD	15,600	234,000	06/07/2017	06/07/2024
350868-AB-7	Four Corners Property Tr Gtd Senior Note	1		1	2FE	17,000,000	100.6175	17,104,975	17,000,000	17,000,000					4.930	4.930	JD	55,873	838,100	06/07/2017	06/07/2027
350868-AC-5	Four Corners Operating P Gtd Senior Note	1		1	2Z	10,000,000	98.7380	9,873,800	10,000,000	10,000,000					4.630	4.630	JD	14,147		12/20/2018	12/20/2026
350868-AD-3	Four Corners Operating P Gtd Senior Note	1		1	2Z	5,800,000	99.1074	5,748,229	5,800,000	5,800,000					4.760	4.760	JD	8,436		12/20/2018	12/20/2028
35671D-AZ-8	FREEMONT-MCMORAN INC-SENIOR UNSECURED NO	1		1	3FE	399,770	92.5000	370,000	400,000	399,873			23		3.875	3.882	MS	4,564	(106,584)	10/09/2013	03/15/2023
35671D-BC-8	FREEMONT-MCMORAN INC-SENIOR UNSECURED BO	1		1	3FE	154,869	76.1250	125,606	165,000	155,644			171		5.450	5.892	MS	2,648	8,993	12/02/2013	03/15/2043
35671D-BC-8	FREEMONT-MCMORAN INC-SENIOR UNSECURED BO	1		1	3FE	104,748	76.1250	76,125	100,000	104,379			(93)		5.450	5.128	MS	1,605	5,450	10/06/2014	03/15/2043
359694-AB-2	H.B. FULLER CO-SENIOR UNSECURED	1		1	4FE	6,150,221	84.0000	5,145,000	6,125,000	6,145,909			(2,216)		4.000	3.949	FA	92,556	245,000	02/09/2017	02/15/2027
359694-AB-2	H.B. FULLER CO-SENIOR UNSECURED	1		1	4FE	13,501,785	84.0000	11,361,000	13,525,000	13,504,993			1,991		4.000	4.021	FA	204,378	541,000	02/13/2017	02/15/2027
36120R-AA-7	FXI HOLDINGS INC-SECURED	1		1	4FE	3,042,000	85.7500	2,608,515	3,042,000	3,042,000					7.875	7.875	MN	39,926	239,558	10/27/2017	11/01/2024
361448-AN-3	GATX CORP-SENIOR UNSECURED NOTE	1		1	2FE	5,200,713	103.7877	5,443,665	5,245,000	5,227,329			4,554		4.750	4.856	JD	11,073	249,138	12/02/2013	06/15/2022
361448-AQ-6	GATX CORP-SENIOR UNSECURED NOTE	1		1	2FE	24,724	100.0201	25,005	25,000	24,868			28		3.900	4.035	MS	246	975	03/14/2013	03/30/2023
361448-AW-3	GATX CORP-SR UNSECURED	1		1	2FE	9,054,505	94.0348	8,659,660	9,209,000	9,106,119			14,421		3.250	3.449	MS	75,655	299,293	02/10/2016	03/30/2025
361448-BC-6	GATX Corp-SENIOR UNSECURED	1		1	2FE	18,050,000	98.6194	17,800,800	18,050,000	18,050,000					4.550	4.550	MN	123,191	540,586	05/03/2018	11/07/2028
361448-BC-6	GATX Corp-SENIOR UNSECURED	1		1	2FE	19,022,981	98.6194	18,535,515	18,795,000	19,012,184			(10,797)		4.550	4.401	MN	128,276	535,501	06/07/2018	11/07/2028
36155II-AK-2	GCI INC-SR UNSECURED	1		1	4FE	877,500	97.0000	873,000	900,000	882,936			2,060		6.875	7.253	AO	13,063	61,875	02/26/2016	04/15/2025
36155II-AK-2	GCI INC-SR UNSECURED	1		1	4FE	1,542,675	97.0000	1,488,950	1,535,000	1,540,381			(1,090)		6.875	6.776	AO	22,279	(61,875)	11/16/2016	04/15/2025
36186C-BY-8	ALLY FINL INC SR GTD NT	1		1	3FE	13,829,045	111.0000	12,693,960	11,436,000	13,585,771			(110,392)		8.000	5.861	MN	152,480	914,880	06/21/2017	11/01/2031
36191*-AB-9	GFS US Holding LLC Senior Note Ser	1		1	2	24,000,000	96.1789	23,082,936	24,000,000	24,000,000					3.900	3.899	JD	10,400	936,000	06/27/2013	06/27/2025
36191*-AC-7	GFS US Holding LLC Senior Note Ser	1		1	2	24,000,000	94.3446	22,642,704	24,000,000	24,000,000					4.100	4.099	JD	984,000		06/27/2013	06/27/2028
36191*-AD-5	GFS US Holding LLC Senior Note Ser	2		1	2	23,400,000	97.1922	22,742,975	23,400,000	23,400,000					3.610	3.610	MS	227,611	806,805	09/24/2014	09/24/2024
36191*-AE-3	GFS US Holding LLC Senior Note Ser	1		1	2	13,300,000	97.2067	12,928,491	13,300,000	13,300,000					4.010	4.010	MS	143,703	533,330	09/24/2014	09/24/2024
36191*-AF-0	GFS US Holding LLC Senior Note Ser	1		1	2	8,800,000	95.5375	8,407,300	8,800,000	8,800,000					4.110	4.110	MS	97,453	361,680	09/24/2014	09/24/2026
36191G-AB-3	GNC HOLDINGS INC-SR UNSECURED	8		1	6	5															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36962G-3P-7	GENERAL ELECTRIC CO-SR UNSECURED MTN				2FE	8,008,132		95,6091	5,823,549	6,091,000		7,837,360	(62,111)		5.875	3.751	JJ	166,001	357,846	05/16/2017	01/14/2038
36962G-4B-7	GENERAL ELECTRIC CO-SR UNSECURED GMTN				2FE	82,136		104,5504	82,595	79,000		81,687	(64)		6.875	6.567	JJ	2,580	(768,784)	09/29/2009	01/10/2039
36962G-4R-2	General Electric Co-SENIOR UNSECURED				2FE	399,500		99,8576	399,430	400,000		399,509	9		4.375	4.447	MS	5,104		12/18/2018	09/16/2020
36962G-5J-9	GENERAL ELECTRIC CO-SR UNSECURED MTN				2FE	390,090		100,2999	391,170	390,000		390,087	(3)		4.650	4.639	AO	3,728	927	12/17/2018	10/17/2021
370334-BH-6	General Mills Inc-SENIOR UNSECURED NOTE				2FE	4,863,272		100,2477	4,009,908	4,000,000		4,018,133	(147,594)		5.650	1.899	FA	85,378	226,000	01/01/2013	02/15/2019
370334-BJ-2	General Mills Inc-SENIOR UNSECURED NOTE				2FE	488,293		100,1266	385,487	385,000		481,476	(2,905)		5.400	3.698	JD	924	20,790	08/02/2016	06/15/2040
370334-BP-8	GENERAL MILLS INC-SENIOR UNSECURED				2FE	726,691		85,6066	569,284	665,000		723,056	(1,539)		4.150	3.598	FA	10,426	27,598	08/02/2016	02/15/2043
37045V-AE-0	GENERAL MOTORS CO-SENIOR UNSECURED				2FE	10,869		100,2262	10,023	10,000		10,600	(114)		4.875	3.493	AO	121	488	08/02/2016	10/02/2023
37045V-AF-7	GENERAL MOTORS CO-SENIOR UNSECURED				2FE	27,893,253		93,7343	22,492,480	23,996,000		27,821,518	(71,103)		6.250	5.107	AO	370,772	1,854,220	01/26/2018	10/02/2043
37045V-AK-6	GENERAL MOTORS CO SR NT				2FE	1,378,843		97,3503	1,114,661	1,145,000		1,369,043	(8,495)		6.600	4.876	AO	18,893	75,570	10/30/2017	04/01/2036
37045V-AN-0	GENERAL MOTORS CO-SENIOR UNSECURED				2FE	174,741		90,1341	157,735	175,000		174,774	32		4.200	4.217	AO	1,838	7,350	08/02/2017	10/01/2027
37045X-AO-9	General Motors Financial-SENIOR UNSECURE				2FE	374,648		100,1935	375,726	375,000		374,653	5		4.375	4.409	MS	4,375		12/12/2018	09/25/2021
37045X-AS-5	GENERAL MOTORS FINL CO-SENIOR UNSECURED				2FE	510,731		93,5417	467,708	500,000		507,908	(1,202)		4.000	3.694	JJ	9,222	20,000	08/02/2016	01/15/2025
37045X-AY-2	General Motors Financial-SENIOR UNSECURE				2FE	104,971		98,7586	103,697	105,000		104,990	5		3.200	3.206	JJ	1,568	3,360	07/08/2015	07/13/2020
37045X-AZ-2	General Motors Financial-SENIOR UNSECURE				2FE	2,544,950		98,7586	2,468,964	2,500,000		2,524,427	(16,326)		3.200	2.510	JJ	37,333	80,000	09/22/2017	07/13/2020
37045X-BK-1	GENERAL MOTORS FINL CO-SENIOR UNSECURED				2FE	10,672,501		95,1429	10,180,294	10,700,000		10,681,684	3,726		3.700	3.726	MN	57,186	395,900	05/04/2016	05/09/2023
37045X-BM-7	General Motors Financial-SENIOR UNSECURE				2FE	462,337		97,6806	463,983	475,000		462,431	95		3.200	4.322	JJ	7,389		12/20/2018	07/06/2021
37045X-CL-8	General Motors Financial-SENIOR UNSECURE				2FE	239,697		97,4351	240,000	240,000		239,725	28		4.150	4.178	JD	332	4,980	07/27/2018	06/19/2023
37135E-AB-4	General Tools & Instrs C Senior Sub Note				5	3,252,844		99,2610	3,400,825	3,426,143		3,383,584	34,223		12.000	13.247	FIHAN	1,142	411,137	02/05/2014	05/22/2023
372460-DB-1	Genuine Parts Company Senior Note Ser				2	115,900,000		98,3889	112,674,968	114,520,000		114,520,000		(5,700,000)	1.810	1.810	AO	348,686	2,137,942	10/30/2017	10/30/2027
372546-AT-8	GEORGE WASHINGTON UNIVR-UNSECURED				1FE	509,676		101,9431	502,580	493,000		508,498	(336)		4.300	4.101	MS	6,242	21,199	05/11/2015	09/15/2044
373298-BN-7	Georgia-Pacific LLC-SENIOR UNSECURED				1FE	121,228		120,5859	122,998	102,000		120,721	(507)		7.375	4.280	JD	627	1,024	10/04/2018	12/01/2025
373298-BP-2	Georgia-Pacific LLC-SENIOR UNSECURED				1FE	458,689		125,5243	464,440	370,000		457,047	(1,642)		7.250	4.199	JD	2,235	3,652	10/04/2018	06/01/2028
373298-BU-1	GEORGIA-PACIFIC LLC-NOTE				1FE	907,129		146,2640	877,584	600,000		848,847	(14,783)		8.875	4.473	MN	6,804	53,250	10/06/2014	05/15/2031
373298-CF-3	GEORGIA-PACIFIC LLC-SENIOR UNSECURED NOT				1FE	17,374,304		120,0602	15,992,025	13,320,000		15,648,766	(408,456)		8.000	4.119	JJ	491,360	1,065,600	07/02/2015	01/15/2024
373334-JS-1	GEORGIA POWER COMPANY-SENIOR UNSECURED N				2FE	902,009		98,8753	855,271	865,000		900,497	(959)		4.750	4.452	MS	13,696	41,088	05/16/2017	09/01/2040
373334-JW-2	GEORGIA POWER CO SR NT SER 2012A				2FE	382,367		92,1176	389,657	423,000		386,165	834		4.300	4.934	MS	5,356	18,189	01/03/2014	03/15/2042
37362E-AA-0	Georgia Transmission Cor First Mortgage				1	19,285,333		109,4317	21,104,268	19,285,333		19,285,333		5.590	5.590	MJSD	275,665	1,067,370	06/25/2009	06/30/2030	
37362E-AB-8	Georgia Transmission Cor First Mortgage				2	21,000,000		109,0147	22,893,087	21,000,000		21,000,000		4.810	4.810	MJSD	255,331	1,010,100	11/01/2010	12/30/2039	
37459*-AA-6	Giants Training Facility Senior Note Ser				2FE	12,130,555		113,5433	12,685,149	11,172,080		11,776,497	(88,457)		7.150	6.038	JD	483,950	813,788	01/01/2013	12/01/2030
37459*-AB-4	Giants Training Facility Senior Note Ser				2FE	12,130,555		113,5433	12,685,149	11,172,080		11,776,497	(88,457)		7.150	6.038	JD	338,012	807,501	01/01/2013	12/01/2030
374689-AF-4	GIBRALTAR INDUSTRIES INC-SENIOR SUBORDIN				4FE	1,854,000		100,1800	1,803,240	1,800,000		1,800,885	(11,563)		6.250	5.578	FA	46,875	112,500	11/12/2013	02/01/2021
375558-AO-6	GILEAD SCIENCES INC-SR UNSECURED				1FE	163,533		102,9204	154,381	150,000		155,644	(2,716)		4.500	2.558	AO	1,688	6,750	12/15/2015	04/01/2021
375558-AS-2	GILEAD SCIENCES INC-SENIOR UNSECURED NOT				1FE	19,825,166		110,4791	17,641,302	15,968,000		19,349,533	(89,695)		5.650	4.184	JD	75,183	902,192	12/09/2015	12/01/2041
375558-AU-7	GILEAD SCIENCES INC-SR UNSECURED				1FE	4,547,720		103,1996	4,334,382	4,200,000		4,435,932	(84,947)		4.400	2.219	JD	15,400	184,800	09/22/2017	12/01/2021
375558-AV-5	GILEAD SCIENCES INC-SR UNSECURED				1FE	200,655		99,7707	199,541	200,000		200,049	(204)		2.050	1.946	AO	1,025	4,100	12/15/2015	04/01/2019
375558-AW-3	GILEAD SCIENCES INC-SENIOR UNSECURED NOT				1FE	20,616,754		99,8329	20,615,499	20,650,000		20,630,548	3,148		3.700	3.719	AO	191,013	764,050	03/04/2014	04/01/2024
375558-AX-1	GILEAD SCIENCES INC-SENIOR UNSECURED NOT				1FE	203,894		99,8329	199,666	200,000		202,549	(460)		3.700	3.420	AO	1,850	7,400	12/15/2015	04/01/2024
375558-AY-9	GILEAD SCIENCES INC-SR UNSECURED				1FE	3,086,987		100,2965	2,848,419	2,840,000		3,068,863	(5,289)		4.800	4.264	AO	34,080	136,320	12/09/2015	04/01/2044
375558-AZ-6	GILEAD SCIENCES INC-SENIOR UNSECURED				1FE	200,216		99,3293	198,659	200,000		200,058	(54)		2.350	2.322	FA	1,958	4,700	12/15/2015	02/01/2020
375558-AA-6	GILEAD SCIENCES INC-SENIOR UNSECURED				1FE	3,664,521		98,6786	3,582,034	3,630,000		3,653,564	(3,588)		3.500	3.377	FA	52,938	127,050	10/09/2015	02/01/2025
375558-AB-6	GILEAD SCIENCES INC-SENIOR UNSECURED				1FE	448,083		98,6786	444,054	450,000		448,652	194		3.500	3.555	FA	6,563	15,750	12/15/2015	02/01/2025
375558-BA-0	GILEAD SCIENCES INC-SR UNSECURED				1FE	10,333,370		96,1705	9,487,222	9,865,000		10,307,545	(9,539)		4.500	4.211	FA	184,969	452,467	05/09/2016	02/01/2045
375558-BA-0	GILEAD SCIENCES INC-SR UNSECURED				1FE	3,445,948		96,1705	3,399,628	3,535,000		3,450,136	1,486		4.500	4.660	FA	66,281	120,150	10/04/2018	02/01/2045
375558-BC-6	GILEAD SCIENCES INC-SR UNSECURED				1FE	393,337		99,7649	389,083	390,000		391,872	(499)		3.250	3.104	MS	4,225	12,675	12/15/2015	09/01/2022
375558-BD-4	GILEAD SCIENCES INC-SR UNSECURED				1FE	7,917,167		99,2092	7,887,131	7,950,000		7,918,253	553		4.750	4.776	MS	125,875	377,625	09/09/2015	03/01/2046
375558-BD-4	GILEAD SCIENCES INC-SR UNSECURED				1FE	17,278,811		99,2092	15,972,681	16,100,000		17,222,129	(22,290)		4.750	4.307	MS	254,917	764,750	05/09/2016	03/01/2046
375558-BF-9	GILEAD SCIENCES INC-SR UNSECURED				1FE	3,805,989		98,0201	3,729,666	3,805,000		3,805,553	(83)		3.650	3.647	MS	46,294	138,883	09/11/2015	03/01/2026
375558-BG-7	GILEAD SCIENCES INC-SR UNSECURED		</																		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	Code	For Eig n	Bond Char	NAIC Designation and Admini- strative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor- tization) Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
38141E-C2-3	GOLDMAN SACHS GROUP INC-SR UNSECURED			1	1FE	202,774	.97	195,513	200,000	201,866			(314)		3.850	3.654	JJ	3,700	7,700	12/15/2015	07/08/2024
38141E-C3-1	Goldman Sachs Group Inc-/SR UNSECURED			1	1FE	556,922	.95	533,304	560,000	560,000			57		4.800	4.836	JJ	12,917	62,357	12/15/2015	07/08/2044
38141E-C3-1	Goldman Sachs Group Inc-/SR UNSECURED			1	1FE	13,521,294	.95	11,828,872	12,421,000	13,471,658			(22,606)		4.800	4.246	JJ	286,511	508,128	08/01/2018	07/08/2044
38141G-ES-9	GOLDMAN SACHS GROUP INC-SR UNSECURED			1	2FE	627,941	105.3002	561,250	533,000	609,275			(7,952)		5.950	3.862	JJ	14,623	31,714	08/02/2016	01/15/2027
38141G-FD-1	Goldman Sachs Group Inc-/SUBORDINATED NO			1	2FE	12,285,271	112.9284	11,375,276	10,073,000	12,080,496			(67,697)		6.750	5.048	AO	169,982	679,928	08/02/2016	10/01/2037
38141G-GM-0	Goldman Sachs Group Inc-/SENIOR NOTE			1	1FE	20,775,798	114.0557	18,645,824	16,348,000	20,487,514			(109,092)		6.250	4.437	FA	425,729	1,021,750	02/16/2017	02/01/2041
38141G-GO-1	Goldman Sachs Group Inc-/SENIOR UNSECURE			1	1FE	527,596	103.8093	482,713	465,000	498,219			(12,384)		5.250	2.370	JJ	10,443	21,381	08/02/2016	07/27/2021
38141G-GS-7	Goldman Sachs Group Inc-/SENIOR UNSECURE			1	1FE	13,409,023	104.7034	11,894,310	11,360,000	12,131,238			(235,159)		5.750	3.397	JJ	284,868	653,200	10/20/2016	01/24/2022
38141G-RD-8	GOLDMAN SACHS GROUP INC-SR UNSECURED			1	1FE	518,572	.98	492,133	500,000	512,149			(2,787)		3.625	2.983	JJ	8,005	18,125	09/13/2016	01/22/2023
38141G-VM-3	Goldman Sachs Group Inc-/SR UNSECURED			1	1FE	3,601,533	.98	3,343,189	3,388,000	3,529,743			(24,941)		4.000	3.116	MS	44,420	135,520	02/16/2017	03/03/2024
38141G-VR-2	GOLDMAN SACHS GROUP INC-SUBORDINATED			2	2FE	1,222,965	.95	762,244	1,200,000	1,217,643			(2,257)		4.250	3.998	AO	9,917	51,000	08/02/2016	10/21/2025
38141G-VS-0	GOLDMAN SACHS GROUP INC-SR UNSECURED			2	1FE	1,115,632	.95	1,070,399	1,125,000	1,116,088			159		4.750	4.802	AO	10,391	53,438	12/15/2015	10/21/2045
38141G-VS-0	GOLDMAN SACHS GROUP INC-SR UNSECURED			2	1FE	13,878,184	.95	12,292,943	12,920,000	13,839,164			(18,664)		4.750	4.295	AO	119,331	613,700	10/30/2017	10/21/2045
38141G-VW-1	GOLDMAN SACHS GROUP INC-SR UNSECURED			2	1FE	3,828,928	100.7429	3,828,230	3,800,000	3,822,954			(9,703)		3.850	3.468	JAJO	99,903	135,955	10/20/2016	04/23/2021
38141G-WC-4	Goldman Sachs Group Inc-/SENIOR UNSECURE			1	1FE	1,236,768	.96	844,311	1,265,000	1,239,641			2,874		3.000	3.646	AO	6,852	8,433	08/01/2018	04/26/2022
38141G-WV-2	Goldman Sachs Group Inc-/SENIOR UNSECURE			1	1FE	7,892,387	.93	36,255	8,300,000	7,908,586			16,199		3.814	4.387	AO	59,795	237,422	06/26/2018	04/23/2029
38141G-WZ-3	Goldman Sachs Group Inc-/SENIOR UNSECURE			1	1FE	8,291,766	.96	2,388	8,400,000	8,296,143			4,377		4.223	4.372	MN	59,122	188,035	06/15/2018	05/01/2029
38143U-BF-1	GOLDMAN SACHS GROUP INC-/SENIOR UNSECURE			2	1FE	4,060,400	.98	2,902	4,000,000	4,037,988			(17,731)		2.875	2.401	FA	40,250	115,000	09/21/2017	02/25/2021
38143U-BH-7	GOLDMAN SACHS GROUP INC-/SENIOR UNSECURE			2	1FE	1,014,059	.94	564,646	975,000	1,005,454			(3,885)		3.750	3.241	FA	12,797	36,563	10/20/2016	02/25/2026
38145G-AH-3	GOLDMAN SACHS GROUP INC-/SENIOR UNSECURE			1	1FE	872,918	.92	365,1	870,000	872,529			(324)		3.500	3.452	MN	3,806	30,450	10/30/2017	11/16/2026
38148L-AA-4	GOLDMAN SACHS GROUP INC-SR UNSECURED			1	1FE	299,436	.99	219,066	300,000	299,818			130		2.600	2.646	AO	1,473	7,800	12/15/2015	04/23/2020
38148L-AC-0	GOLDMAN SACHS GROUP INC-/SENIOR UNSECURED			2	1FE	723,556	.94	791,111	700,000	717,242			(2,672)		3.500	3.035	JJ	10,753	24,500	08/02/2016	01/23/2025
38148L-AF-3	Goldman Sachs Group Inc-/SUBORDINATED			2	2FE	2,490,732	.93	514,000	2,245,000	2,483,459			(4,711)		5.150	4.459	MN	12,525	115,618	10/30/2017	05/22/2045
38148Y-AA-6	Goldman Sachs Group Inc-/SENIOR UNSECURE			1	1FE	951,657	.88	806,006	1,010,000	952,389			731		4.017	4.453	AO	6,875	9,466	08/01/2018	10/31/2038
384780-AA-0	GRAIN SPECTRUM FUND II-SECURED NOTE			1	1FE	16,555,430	.99	4,802	16,555,430	16,555,430					3.290	3.290	AO	122,552	541,102	09/16/2014	10/10/2019
384780-AA-0	GRAIN SPECTRUM FUND II-SECURED NOTE			1	1FE	2,878,052	.99	4,802	2,878,459	2,874,615			(1,442)		3.290	3.239	AO	21,278	94,570	05/20/2016	10/10/2019
386088-AH-1	DIAGEO INVESTMENT CORP-SENIOR UNSECURED			1	1FE	112,484	.137	828,3	75,000	108,972			(1,495)		7.450	3.717	AO	1,180	5,588	08/02/2016	04/15/2035
38742F-AA-7	Granite Reliable Funding Pass Thru Trust			1	3PL	3,859,467	.92	3,009	3,859,467	3,859,467					6.040	6.040	JAJO	53,745	229,882	09/22/2011	01/08/2032
38742F-AB-5	Granite Reliable Funding Pass Thru Trust			1	1PL	16,286,948	.99	242,7	16,286,948	16,286,948					3.180	3.180	JAJO	119,410	510,750	09/22/2011	01/08/2032
390638-AD-2	Great Lakes Gas Transmis Senior Note Ser			2	2	5,786,497	107.7247	6,140,308	5,700,000	5,702,409			(12,778)		9.090	8.857	AO	87,794	488,865	06/06/2000	10/30/2021
391164-AE-0	GREAT PLAINS ENERGY INC-NOTE			1	2FE	5,594,624	102.5966	5,745,412	5,600,000	5,598,266			575		4.850	4.862	JD	22,633	271,600	05/16/2011	06/01/2021
391164-AE-0	GREAT PLAINS ENERGY INC-NOTE			1	2FE	8,050,885	102.5966	7,474,165	7,285,000	7,552,258			(117,426)		4.850	3.087	JD	29,444	353,323	09/02/2014	06/01/2021
391164-AF-7	Great Plains Energy Inc-SR UNSECURED			1,5	2FE	8,467,560	104.2723	7,945,553	7,620,000	8,215,311			(19,410)		5.292	2.731	JD	17,922	403,250	04/22/2016	06/15/2022
391228-AA-7	Great River Hydro, LLC Senior Secured			1	2PL	27,600,000	105.2487	29,048,641	27,600,000	27,600,000					4.940	4.942	AO	458,267	1,363,440	04/18/2017	04/19/2032
391382-AB-4	GREAT-WEST LIFECC FINANC-SR UNSECURE			1	1FE	33,968,854	.93	15,75	34,500,000	33,972,683			4,076		4.150	4.242	JD	111,358	1,240,389	12/26/2018	06/03/2047
391380-AC-9	GREAT-WEST LIFECC FINANC-SR UNSECURE			1	1FE	9,544,237	100.5687	9,337,803	9,285,000	9,542,364			(1,873)		4.581	4.410	MN	51,987	313,343	07/17/2018	05/17/2048
391380-AC-9	GREAT-WEST LIFECC FINANC-SR UNSECURE			1	1FE	19,797,403	100.5687	19,988,028	19,875,000	19,797,870			466		4.581	4.605	MN	111,280	254,050	10/04/2018	05/17/2048
393154-L8-6	Green Mountain Power Cor First Mtg Bond			1	1	6,650,000	121.6451	8,089,399	6,650,000	6,650,000					6.830	6.829	MN	58,036	454,195	05/15/2008	05/15/2028
393222-AF-1	GREEN PLAINS INC-SR UNSECURED			2	4	13,550,000	.88	12,500	13,550,000	11,940,938			(1,609,063)		4.125	4.124	MS	186,313	558,938	08/10/2016	09/01/2022
39535F-AA-6	Greenleaf Power Consolid Sub Note (6% PI			1	5Z	3,156,271	.85	654,1	3,157,037	3,156,130			(141)		12.000	11.939	MJSD	96,105	1,215,067	09/30/2018	06/30/2022
39808C-AA-3	Gridiron Fdg LLC Sr Secd Nt			1	2FE	36,000,000	.99	17,000	36,000,000	36,000,000					5.640	5.639	MJSD	513,240	2,052,960	05/15/2017	06/30/2027
398433-AH-5	Griffon Corp-SENIOR UNSECURED			1	4FE	4,286,733	.90	500,000	4,250,000	4,270,948			(15,785)		5.250	4.804	MS	74,375	127,057	02/06/2018	03/01/2022
40408L-AC-1	HASI SYB 2017-1 LLC Senior Secured			1	1FE	30,669,050	.97	835,7	30,672,608	30,668,687			147		3.860	3.861	MJSD	1,439,576	1,194,526	10/18/2017	12/20/2057
404119-AJ-8	HCA Inc-BOND			1	3FE	201,875	105.0000	262,500	250,000	201,875					7.500	7.500	MN	2,865	18,750	12/11/2003	11/06/2033
404119-BR-9	HCA INC-SENIOR UNSECURED			1	3FE	2,379,235	.97	5,000	2,434,000	2,391,065			5,735		5.375	5.721	FA	54,511	(59,896)	11/16/2016	02/01/2025
40414L-AE-9	HCP INC-SENIOR UNSECURED			1	2FE	280,766	123.1666	277,125	225,000	277,636			(1,338)		6.750	4.970	FA	6,328	15,188	08/02/2016	02/01/2041
40414L-AG-4	HCP INC-SR UNSECURED			1	2FE	125,076	.97	534,9	130,000	127,184			720		3.150	3.802	FA	1,706	4,095	12/09/2015	08/01/2022
40414L-AH-2	HCP Inc-SENIOR UNSECURED NOTE			1	2FE	3,855,121	.99	287,5	3,850,000	3,850,728			(810)								

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
40434C-AD-7	HSBC USA INC-SR UNSECURED				1FE	252,101		98,4352	246,088	250,000		251,418	(232)		3.500	3.386	JD	4,569	8,750	12/09/2015	06/23/2024
40447@-AH-8	Hmshost Corporation Gtd Senior Note				1PL	12,050,000		109,2518	13,164,842	12,050,000		12,050,000			5.400	5.399	MS	216,900	650,700	03/14/2013	09/01/2024
40447@-AJ-4	Hmshost Corporation Gtd Senior Note				1PL	24,900,000		110,8206	27,594,329	24,900,000		24,900,000			5.450	5.449	MS	452,350	1,357,050	03/14/2013	09/01/2025
40465@-AC-6	HSRE Core Holding I, LLC Senior Note Ser				2	22,860,000		96,4694	22,052,905	22,860,000		22,860,000			4.300	4.300	AO	240,284	986,320	04/05/2017	04/03/2027
40465@-AD-4	HSRE Core Holding I, LLC Senior Note Ser				2	4,500,000		96,3903	4,337,564	4,500,000		4,500,000			4.210	4.210	MN	31,049	94,725	05/02/2018	05/02/2026
40465@-AE-2	HSRE Core Holding I, LLC Senior Note Ser				2	11,300,000		97,5340	11,021,342	11,300,000		11,300,000			4.150	4.150	JJ	224,054		07/09/2018	07/09/2025
40465@-AF-9	HSRE Core Holding I, LLC Senior Note Ser				2	5,800,000		96,4893	5,596,379	5,800,000		5,800,000			4.250	4.224	FA	591,600		08/07/2018	08/07/2026
40573L-AU-0	Halfmoon Parent Inc-SENIOR UNSECURED				2FE	9,980,814		98,2115	9,821,146	10,000,000		9,980,297	(517)		4.800	4.815	FA	138,667		10/04/2018	08/15/2038
406216-AH-4	HALLIBURTON CO-DEBENTURE				2FE	7,085,625		110,3739	5,518,697	5,000,000		5,593,284	(267,211)		8.750	2.939	FA	165,278	437,500	01/01/2013	02/15/2021
406216-AS-0	HALLIBURTON CO-SR UNSECURED				2FE	2,113,734		128,0789	2,087,686	1,630,000		2,113,015	(333)		7.600	5.846	FA	46,799	123,880	05/16/2017	08/15/2096
406216-AW-1	HALLIBURTON CO-SENIOR UNSECURED NOTE				2FE	28,469,320		117,4415	24,952,803	21,247,000		27,586,745	(174,470)		6.700	4.407	MS	419,156	1,187,188	12/26/2018	09/15/2038
406216-AY-7	HALLIBURTON CO-SR UNSECURED				2FE	2,360,780		124,3005	2,185,202	1,758,000		2,314,149	(15,230)		7.450	4.977	MS	38,564	130,971	08/02/2016	09/15/2039
406216-AZ-4	HALLIBURTON COMPANY-SR UNSECURED				2FE	199,462		99,9187	199,837	200,000		199,722	89		3.250	3.300	MN	831	6,500	12/15/2015	11/15/2021
406216-BA-8	HALLIBURTON CO-SENIOR UNSECURED NOTE				2FE	33,728,466		91,2666	30,939,365	33,900,000		33,749,657	3,648		4.500	4.531	MN	194,925	1,525,500	11/08/2011	11/15/2041
406216-BA-8	HALLIBURTON CO-SENIOR UNSECURED NOTE				2FE	6,551,181		91,2666	5,749,793	6,300,000		6,527,513	(6,007)		4.500	4.248	MN	36,225	283,500	10/15/2014	11/15/2041
406216-BD-2	HALLIBURTON COMPANY-SR UNSECURED				2FE	245,509		99,2622	248,155	250,000		247,142	560		3.500	3.773	FA	3,646	8,750	12/15/2015	08/01/2023
406216-BE-0	HALLIBURTON CO-SR UNSECURED				2FE	1,683,081		95,3595	1,520,984	1,595,000		1,677,511	(1,937)		4.750	4.397	FA	31,568	75,763	05/16/2017	08/01/2043
406216-BG-5	HALLIBURTON COMPANY-SR UNSECURED				2FE	294,418		96,8989	290,697	300,000		295,894	508		3.800	4.029	MN	1,457	11,400	12/15/2015	11/15/2025
406216-BG-5	HALLIBURTON COMPANY-SR UNSECURED				2FE	647,777		96,8989	610,463	630,000		643,731	(1,819)		3.800	3.429	MN	3,059	23,940	10/20/2016	11/15/2025
406216-BJ-9	HALLIBURTON CO-SR UNSECURED				2FE	9,892,788		98,1872	9,158,904	9,328,000		9,871,351	(15,427)		4.850	4.348	MN	57,808	352,875	08/01/2018	11/15/2035
406216-BK-6	HALLIBURTON CO-SR UNSECURED				2FE	25,991,940		98,1837	25,527,753	26,000,000		25,990,896	132		5.000	5.002	MN	166,111	1,317,653	11/05/2015	11/15/2045
406216-BK-6	HALLIBURTON CO-SR UNSECURED				2FE	26,114,704		98,1837	23,921,468	24,364,000		26,055,221	(31,545)		5.000	4.543	MN	155,659	927,700	12/19/2018	11/15/2045
40728T-AA-1	HAMILTON COLLEGE-UNSECURED				1FE	18,882,274		100,8402	20,604,681	20,433,000		18,884,593	915		4.750	5.143	JJ	485,284	970,568	05/22/2018	07/01/2113
41138#-AA-3	Happy Floors Acquisition Senior Sub Note				5G1	17,374		100,8127	17,342	17,202		17,307	(67)		12.500	11,231	JAJJ	1,020		09/30/2018	01/01/2023
41138#-AA-3	Happy Floors Acquisition Senior Sub Note				5G1	2,748,267		100,8127	2,770,603	2,748,267		2,748,267			12.500	12,489	JAJJ	162,127	300,004	04/30/2018	01/01/2023
41242*-AM-4	Hardwood Funding LLC Senior Note Ser				1FE	11,100,000		105,3959	11,698,945	11,100,000		11,100,000			6.000	5.997	JD	44,400	666,000	06/07/2011	06/07/2021
41242*-AT-9	Hardwood Funding LLC Senior Note Ser				1FE	12,800,000		98,5615	12,615,872	12,800,000		12,800,000			3.530	3.530	JD	30,123	451,840	06/07/2013	06/07/2025
41242*-AU-6	Hardwood Funding LLC Senior Note Ser				1FE	20,800,000		98,5913	20,506,990	20,800,000		20,800,000			3.780	3.780	JD	52,416	786,240	06/07/2013	06/07/2028
41242*-AX-0	Hardwood Funding LLC Senior Secured				1FE	19,000,000		96,3168	18,300,192	19,000,000		19,000,000			3.130	3.130	JD	39,647	594,700	04/02/2015	06/07/2025
41242*-AY-8	Hardwood Funding LLC Senior Secured				1FE	24,000,000		95,0187	22,804,488	24,000,000		24,000,000			3.230	3.230	JD	775,200	775,200	04/02/2015	06/07/2027
41242*-AZ-5	Hardwood Funding LLC Senior Secured				1FE	21,800,000		91,9170	20,037,906	21,800,000		21,800,000			3.380	3.380	JD	49,123	736,840	04/02/2015	06/07/2030
41242*-BF-8	Hardwood Funding LLC Senior Secured				1PL	9,000,000		96,4293	8,678,637	9,000,000		9,000,000			3.430	3.430	JD	166,355	308,700	06/07/2017	06/07/2027
41242*-BG-6	Hardwood Funding LLC Senior Secured				1PL	12,600,000		93,7547	11,813,092	12,600,000		12,600,000			3.530	3.530	JD	29,652	444,780	06/07/2017	06/07/2029
41242*-BH-4	Hardwood Funding LLC Senior Secured				1PL	13,000,000		93,7782	12,191,166	13,000,000		13,000,000			3.680	3.680	JD	31,893	478,400	06/07/2017	06/07/2032
413875-AN-5	HARRIS CORPORATION-SENIOR UNSECURED NOTE				2FE	1,481,275		115,7425	1,446,781	1,250,000		1,454,202	(5,078)		6.150	4.924	JD	3,417	76,875	01/01/2013	12/15/2040
413875-AQ-8	HARRIS CORP-SENIOR UNSECURED				2FE	1,646,787		99,1484	1,614,135	1,628,000		1,637,439	(7,441)		2.700	2.222	AO	7,814	43,956	09/26/2017	04/27/2020
413875-AR-6	HARRIS CORPORATION-SR UNSECURED				2FE	5,965,000		98,0892	5,851,019	5,965,000		5,965,000			3.832	3.832	AO	40,636	228,579	04/22/2015	04/27/2025
413875-AS-4	HARRIS CORPORATION-SENIOR UNSECURED				2FE	11,114,363		99,2125	10,258,575	10,340,000		11,052,762	(31,122)		4.854	4.250	AO	89,227	501,904	01/09/2017	04/27/2035
413875-AT-2	HARRIS CORPORATION-SENIOR UNSECURED				2FE	17,653,522		102,8673	16,571,919	16,110,000		17,598,934	(30,489)		5.054	4.447	AO	144,747	814,199	05/10/2017	04/27/2045
413875-AW-5	Harris Corp-SENIOR UNSECURED				2FE	22,957,932		99,5470	22,696,710	22,800,000		22,950,400	(7,532)		4.400	4.313	JD	44,587	532,253	06/06/2018	06/15/2028
416515-AP-9	Hartford Financial Servi-SR UNSECURED				2FE	2,104,525		115,2209	1,987,561	1,725,000		2,090,446	(8,173)		6.100	4.589	AO	26,306	92,656	08/01/2018	10/01/2041
416515-BA-1	Hartford Financial Servi-SR UNSECURED				2FE	2,925,437		117,9444	2,611,290	2,214,000		2,904,774	(16,318)		6.625	4.353	MS	37,077	111,252	10/04/2018	03/30/2040
416515-BB-9	HARTFORD FINANCIAL SERVI-SENIOR UNSECURE				2FE	617,483		92,8991	571,329	615,000		617,173	(247)		4.300	4.272	AO	5,583	18,869	08/01/2018	04/15/2043
416515-BD-5	Hartford Financial Servi-SENIOR UNSECURE				2FE	29,402,109		93,2667	27,700,200	29,400,000		29,404,218	2,109		4.400	4.461	MS	384,780	653,400	03/13/2018	03/15/2048
41683*-AA-6	Hartland Controls LLC-Senior Sub Note				5	2,891,646		100,0000	2,891,086	2,891,086		2,891,104	(214)		14.000	13,798	FMAN	492,177	404,752	12/31/2017	08/14/2020
41683*-AB-4	Hartland Controls Holdin Senior Sub Note				5	3,282,865		99,3489	3,261,491	3,282,865		3,282,865			12.000	11,852	FMAN	493,524	393,944	06/22/2015	08/14/2020
41810*-AA-2	HASI SYB Trust 2015-1 Class A Bonds				1FE	38,447,956		102,3505	39,351,676	38,447,956		38,447,956			4.283	4.283	JAJJ	324,771	1,632,121	09/30/2015	10/20/2045
419866-D*-6	Hawaiian Electric Compan Senior Note Ser				2	7,200,000		97,3196	7,007,011	7,200,000		7,200,000			4.720	4.720	MN	56,640	339,840		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
42225U-AD-6	HEALTHCARE TRUST OF AMER-SENIOR UNSECURE			1	2FE	2,008,600		93,991.7	1,879,822	2,006,704			(787)		3.500	3.448	FA	29,167	70,000	07/08/2016	08/01/2026
42225U-AE-4	HEALTHCARE TRUST OF AMER-SENIOR UNSECURE			1	2FE	89,944		97,197.3	90,000	89,962			10		2.950	2.963	JJ	1,328	2,655	06/01/2017	07/01/2022
42225U-AF-1	HEALTHCARE TRUST OF AMER-SENIOR UNSECURE			1	2FE	12,292,237		95,214.3	11,763,731	12,355,000			12,300,764		3.750	3.811	JJ	231,656	463,313	06/01/2017	07/01/2027
42251#-AM-6	HEB Grocery Co. L.P. Senior Note Ser			1		3,000,000		100,729.3	3,021,879	3,000,000			3,000,000		4.050	4.049	JD	5,400	121,500	12/15/2011	12/15/2027
42251#-AN-4	HEB Grocery Co. L.P. Senior Note Ser			1		4,000,000		99,644.1	3,985,764	4,000,000			4,000,000		4.250	4.249	JD	7,556	170,000	12/15/2011	12/17/2029
42251#-AP-9	HEB Grocery Co. L.P. Senior Note Ser			1		4,000,000		100,486.0	4,019,440	4,000,000			4,000,000		4.350	4.349	JD	7,733	174,000	12/15/2011	12/16/2030
42251#-AQ-7	HEB Grocery Co. L.P. Senior Note Ser			1		6,000,000		102,487.8	6,149,268	6,000,000			6,000,000		4.550	4.549	JD	12,133	273,000	12/15/2011	12/15/2032
42251#-AV-6	HE Butt Grocery Company Senior Note Ser			1		10,000,000		93,360.7	9,336,070	10,000,000			10,000,000		3.670	3.670	MS	92,769	367,000	03/30/2016	03/30/2033
42251#-AW-4	HE Butt Grocery Company Senior Note Ser			1		13,000,000		94,203.7	12,246,481	13,000,000			13,000,000		3.800	3.800	MS	124,872	494,000	03/30/2016	03/30/2035
42251#-AX-2	HE Butt Grocery Company Senior Note Ser			1		5,000,000		96,456.3	4,822,815	5,000,000			5,000,000		4.030	4.030	MS	50,935	201,500	03/30/2016	03/30/2037
42251#-AY-0	HE Butt Grocery Company Senior Note Ser			1		15,000,000		97,798.6	14,669,790	15,000,000			15,000,000		4.160	4.160	MS	157,733	624,000	03/30/2016	03/30/2039
42251#-AZ-7	HE Butt Grocery Company Senior Note Ser			1		10,000,000		98,480.0	9,848,000	10,000,000			10,000,000		4.220	4.220	MS	106,672	422,000	03/30/2016	03/30/2040
42251#-BA-1	HE Butt Grocery Company Senior Note Ser			1		15,000,000		99,257.9	14,888,685	15,000,000			15,000,000		4.290	4.290	MS	162,663	643,500	03/30/2016	03/30/2042
42251#-BB-9	HE Butt Grocery Company Senior Note Ser			1		16,000,000		99,824.1	15,971,856	16,000,000			16,000,000		4.340	4.340	MS	175,529	694,400	03/30/2016	03/30/2044
42251#-BC-7	HE Butt Grocery Company Senior Note Ser			1		10,000,000		100,050.7	10,005,070	10,000,000			10,000,000		4.360	4.360	MS	110,211	436,000	03/30/2016	03/30/2045
42251#-BD-5	HE Butt Grocery Company Senior Note Ser			1		10,000,000		100,442.0	10,044,200	10,000,000			10,000,000		4.390	4.390	MS	110,969	439,000	03/30/2016	03/30/2046
422704-AD-8	HECLA MINING CO-SENIOR UNSECURED			1	4FE	3,145,838		98,000.0	3,044,860	3,107,000			3,111,886		6.875	6.354	MN	35,601	213,606	08/24/2016	05/01/2021
42280#-AE-9	Heico Companies, LLC (Th Senior Note Ser			1	2FE	5,520,000		104,909.3	5,790,993	5,520,000			5,520,000		6.500	6.497	JD	9,967	358,800	12/21/2010	12/21/2022
42280#-AF-6	Heico Companies, LLC (Th Senior Note Ser			1	2FE	7,000,000		95,253.9	6,667,773	7,000,000			7,000,000		3.450	3.450	MN	29,517	241,500	11/17/2016	11/17/2023
42280#-AG-4	Heico Companies, LLC (Th Senior Note Ser			1	2FE	25,000,000		92,978.0	23,244,500	25,000,000			25,000,000		3.720	3.720	MN	113,667	930,000	11/17/2016	11/17/2028
42280#-AH-2	Heico Companies, LLC (Th Senior Note Ser			1	2FE	7,400,000		90,810.9	6,720,007	7,400,000			7,400,000		3.920	3.920	MN	35,454	290,080	11/17/2016	11/17/2031
423074-AF-0	Kraft Heinz Foods Co-SR UNSEC			1	2FE	6,157,338		107,933.3	7,123,598	6,600,000			6,308,184		6.375	7.018	JJ	194,013	420,750	06/22/2009	07/15/2028
423074-AH-1	Kraft Heinz Foods Co-NOTE			1	2FE	37,061,898		114,556.7	37,277,897	32,541,000			36,498,704		7.125	6.074	FA	966,061	2,318,546	10/30/2017	08/01/2039
423457-AB-6	HELMERICH & PAYNE INTL-SR UNSECURED			1	2FE	59,663		101,965.5	61,179	60,000			59,763		4.650	4.723	MS	822	2,790	08/13/2015	03/15/2025
423457-AD-6	HELMERICH & PAYNE INTL-SR UNSECURED			1	2FE	320,745		101,965.5	305,896	317,407			317,407		4.650	3.560	MS	4,108	13,950	09/13/2017	03/15/2025
427096-AG-7	HERCULES CAPITAL INC-SENIOR UNSECURED			1	2FE	261,551		97,585.0	256,648	263,000			261,849		4.625	4.750	AO	2,298	11,360	10/18/2017	10/23/2022
427866-AE-8	Hershey Co/The-DEBENTURE			1	1FE	977,712		112,424.7	1,002,828	892,000			906,938		8.800	7.919	FA	29,654	78,496	04/10/1995	02/15/2021
427866-AU-2	HERSHEY COMPANY-SR UNSECURED			1	1FE	152,111		98,429.6	147,644	150,000			151,497		3.200	3.027	FA	1,733	4,800	12/15/2015	08/21/2025
427866-AW-8	Hershey Co/The-SENIOR UNSECURED			1,5	1FE	224,406		90,063.5	220,656	245,000			224,871		3.375	3.861	FA	3,124	8,269	10/30/2017	08/15/2046
428236-BR-3	HP INC-SENIOR UNSECURED			1	2FE	763,235		99,124.7	743,435	750,000			762,854		6.000	5.859	MS	13,250	45,000	05/16/2017	09/15/2041
42824C-AW-9	HP ENTERPRISE CO-SENIOR UNSECURED			1	2FE	681,684		100,786.3	655,111	650,000			675,186		4.900	4.216	AO	6,724	29,523	12/23/2016	10/15/2025
42824C-AY-5	HP ENTERPRISE CO-SENIOR UNSECURED			1	2FE	920,439		93,343.4	849,425	910,000			920,139		6.350	6.262	AO	12,199	57,785	12/23/2016	10/15/2045
428291-AN-8	Hexcel Corp-SENIOR UNSECURED			1,5	2FE	12,604,990		97,805.9	12,333,318	12,610,000			12,605,320		3.950	3.955	FA	188,169	497,722	02/13/2017	02/15/2027
42970#-AA-2	High Noon Solar LLC Senior Secured			2	2FL	36,655,011		98,727.5	36,188,576	36,655,011			36,655,011		4.110	4.112	JD	1,111,689	1,511,799	08/08/2017	12/31/2036
42981C-AA-6	HIGH STREET FUNDING TRUS-SENIOR UNSECURE			1	2FE	8,464,573		98,204.0	8,469,113	8,624,000			8,471,320		4.111	4.348	FA	133,935	147,721	06/25/2018	02/15/2028
42981D-AA-4	HIGH STREET FUNDING TRUS-SENIOR UNSECURE			1	2FE	32,321,664		94,700.0	30,682,800	32,400,000			32,322,665		4.682	4.697	FA	573,077	700,255	05/22/2018	02/15/2048
42981D-AA-4	HIGH STREET FUNDING TRUS-SENIOR UNSECURE			1	2FE	3,943,858		94,700.0	3,650,685	3,855,000			3,943,091		4.682	4.539	FA	68,186	1,205,146	07/19/2018	02/15/2048
431282-AM-4	HIGHWOODS REALTY LP-SENIOR UNSECURED NOT			1	2FE	18,996,480		98,820.7	18,973,568	19,200,000			19,109,184		3.625	3.752	JJ	320,933	696,000	12/11/2012	01/15/2023
431282-AN-2	HIGHWOODS REALTY LP-SENIOR UNSECURED NOT			1	2FE	7,176,268		98,778.0	7,161,403	7,250,000			7,250,000		3.200	3.363	JD	10,311	232,000	05/19/2014	06/15/2021
43534*-AA-3	Hollandia Produce LP Senior Sub Note			1	6*	1,811,106		96,021.7	1,748,856	1,821,314			1,744,503		14.250	14.467	MJSD	232,758	314,915	06/30/2018	03/31/2021
437076-AS-1	Home Depot Inc/The-SENIOR UNSECURED NOTE			1	1FE	92,992,917		120,145.2	98,551,491	82,027,000			91,895,480		5.875	4.822	JD	200,795	4,819,986	08/02/2016	12/16/2036
437076-AU-6	Home Depot Inc/The-SR UNSECURED			1	1FE	530,907		114,523.3	484,434	423,000			520,693		5.400	3.803	MS	6,726	22,842	05/11/2015	09/15/2040
437076-AV-4	Home Depot Inc/The-SENIOR UNSECURED NOTE			1	1FE	34,835		122,711.0	42,949	35,000			34,851		5.950	5.984	AO	521	2,083	03/28/2011	04/01/2041
437076-AV-4	Home Depot Inc/The-SENIOR UNSECURED NOTE			1	1FE	629,331		122,711.0	552,200	617,394			617,394		5.950	3.494	AO	6,694	26,775	08/02/2016	04/01/2041
437076-AW-2	HOME DEPOT INC-SR UNSECURED			1	1FE	221,013		102,984.8	205,970	200,000			208,714		4.400	2.162	AO	2,200	8,800	12/15/2015	04/01/2021
437076-BA-9	Home Depot Inc/The-SR UNSECURED			1	1FE	5,338,873		98,292.7	4,878,264	4,963,000			5,312,776		4.200	3.745	AO	52,112	208,446	08/02/2016	04/01/2043
437076-BC-5	HOME DEPOT INC-SR UNSECURED			1	1FE	158,654		102,248.6	153,373	150,000			155,591		3.750	2.924	FA	2,125	5,625	12/15/2015	02/15/2024
437076-BD-3	Home Depot Inc/The-SR UNSECURED			1	1FE	4,693,199		106,732.1	4,213,782	3,948,000			4,656,377		4.875	3.750	FA	72,709	177,471	08/01/2018	02/15/2044
437076-BE-1	HOME DEPOT INC-SR UNSECURED																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
438516-AT-3	HONEYWELL INTERNATIONAL -SENIOR NOTE			1	1FE	24,294,686		23,869,588	19,775,000	23,933,075		(100,725)			5.700	4.054	MS	331,890	977,202	07/16/2018	03/15/2037
438516-BA-3	HONEYWELL INTERNATIONAL-SR UNSECURED			1	1FE	329,318		102,8179	300,000	312,645		(5,637)			4.250	2.245	MS	4,250	12,750	12/15/2015	03/01/2021
438516-BB-1	HONEYWELL INTERNATIONAL -SENIOR UNSECURED			1	1FE	35,308,991		118,0321	29,030,000	34,504,665		(137,506)			5.375	4.074	MS	520,121	1,515,571	06/27/2018	03/01/2041
438516-BS-4	Honeywell International -SENIOR UNSECURE			1	1FE	556,966		94,9293	425,000	554,059		(2,907)			3.812	2.342	MN	1,800	79,126	01/31/2018	11/21/2047
438516-BS-4	Honeywell International -SENIOR UNSECURE			1	1FE	15,151,955		94,9293	15,600,000	15,156,080		4,125			3.812	3.978	MN	66,075	14,851	06/26/2018	11/21/2047
44107H-AC-6	NY Society for Relief of-SECURED			1	1FE	4,898,504		100,7818	4,940,000	4,900,464		1,960			3.737	3.840	AO	46,152	91,278	06/05/2018	04/01/2028
44107H-AD-4	NY Society for Relief of-SECURED			1	1FE	4,424,408		100,6041	4,365,000	4,422,682		(1,725)			4.081	3.981	AO	44,534	88,078	03/29/2018	04/01/2038
44107H-AE-2	NY Society for Relief of-SECURED			1	1FE	7,770,212		93,9319	7,712,000	7,769,030		(1,182)			4.131	4.087	AO	79,646	454,954	04/09/2018	04/01/2048
44107H-AE-2	NY Society for Relief of-SECURED			1	1FE	28,761,015		93,9319	28,800,000	28,761,268		253			4.131	4.139	AO	297,432	237,168	07/23/2018	04/01/2048
44107T-AT-3	Host Hotels & Resorts LP-SENIOR UNSECURE			1,5	2FE	15,308,006		102,1701	15,586,000	15,446,759		29,158			4.750	4.988	MS	246,778	740,335	09/06/2013	03/01/2023
44107T-AT-3	Host Hotels & Resorts LP-SENIOR UNSECURE			1,5	2FE	21,446,309		102,1701	20,210,000	20,831,596		(144,190)			4.750	3.896	MS	319,992	959,975	06/12/2014	03/01/2023
44107T-AV-8	HOST HOTELS & RESORTS LP-SENIOR UNSECURE			1	2FE	307,392		97,1046	300,000	305,557		(783)			4.000	3.664	JD	533	11,840	08/02/2016	06/15/2025
44107T-AW-6	HOST HOTELS & RESORTS LP-SENIOR UNSECURE			1	2FE	13,297,312		99,3256	13,340,000	13,307,527		3,753			4.500	4.540	FA	250,125	600,300	10/08/2015	02/01/2026
44107T-AW-6	HOST HOTELS & RESORTS LP-SENIOR UNSECURE			1	2FE	418,763		99,3256	400,000	414,807		(1,858)			4.500	3.787	FA	7,500	18,000	10/20/2016	02/01/2026
443510-AF-9	Hubbell Inc-SENIOR UNSECURED NOTE			1	2FE	29,259,057		99,7545	29,000,000	29,162,442		(39,023)			3.625	3.468	MN	134,326	1,051,250	07/02/2015	11/15/2022
44416*-AB-2	Hudson Transmission Part Senior Secured			1	2PL	37,220,361		101,8992	37,305,911	37,241,702		6,134			4.420	4.440	FMAN	141,990	1,645,041	04/09/2014	05/31/2033
444454-AD-4	HUGHES SATELLITE SYSTEMS-FIRST LIEN			1	3FE	8,213,466		91,6250	8,440,000	8,245,624		19,779			5.250	5.624	FA	184,625	443,100	05/11/2017	08/01/2026
444454-AF-9	HUGHES SATELLITE SYSTEMS-SENIOR UNSECURE			1	4FE	10,832,688		91,6250	10,883,000	10,839,917		4,109			6.625	6.691	FA	300,416	720,999	05/11/2017	08/01/2026
444859-AZ-5	Humana Inc-BOND			1,5	2FE	46,885		135,4880	50,000	47,242		53			8.150	8.744	JD	181	4,075	09/30/2009	06/15/2038
444859-BA-9	Humana Inc-SENIOR UNSECURED NOTE			1	2FE	17,006,559		97,9640	17,328,000	17,186,388		33,175			3.150	3.374	JD	45,486	545,832	04/10/2013	12/01/2022
444859-BA-9	Humana Inc-SENIOR UNSECURED NOTE			1	2FE	7,964,814		97,9640	7,900,000	7,927,719		(7,015)			3.150	3.340	JD	248,850	248,850	04/26/2013	12/01/2022
444859-BB-7	Humana Inc-SENIOR UNSECURED NOTE			1	2FE	20,133,410		98,8636	19,884,000	20,124,230		(5,799)			4.625	4.540	JD	76,636	919,635	10/30/2017	12/01/2042
444859-BE-1	Humana Inc-SR UNSECURED			1	2FE	1,998,190		102,7191	1,870,000	1,989,970		(1,989,970)			4.950	4.518	AO	23,141	86,948	08/01/2018	10/01/2044
444859-BG-6	HUMANA INC-SENIOR UNSECURED			1	2FE	9,209,020		100,0788	9,000,000	9,202,380		(3,619)			4.800	4.653	MS	127,200	432,000	04/06/2017	03/15/2047
445658-CC-9	JB HUNT TRANSPRT SVCS-SENIOR UNSECURED N			1	2FE	9,745,808		99,8292	9,750,000	9,749,650		863			2.400	2.409	MS	68,900	234,000	03/03/2014	03/15/2019
445658-CD-7	JB HUNT TRANSPRT SVCS-SENIOR UNSECURED N			1	2FE	19,863,466		101,2440	19,875,000	19,868,061		1,095			3.850	3.857	MS	225,305	765,188	03/04/2014	03/15/2024
445658-CD-7	JB HUNT TRANSPRT SVCS-SENIOR UNSECURED N			1	2FE	13,485,478		101,2440	13,375,000	13,436,431		(11,114)			3.850	3.747	MS	151,620	514,938	05/06/2014	03/15/2024
445658-CE-5	JB HUNT TRANSPRT SVCS-SR UNSECURED			1	2FE	21,052,449		99,1871	21,105,000	21,075,928		7,294			3.300	3.340	FA	263,109	696,465	08/03/2015	08/15/2022
446438-FM-7	HUNTINGTON NATIONAL BANK-SR UNSECURED			2	1FE	246,579		98,9366	250,000	248,955		807			2.400	2.741	AO	1,500	6,000	12/15/2015	04/01/2020
448579-AE-2	Hyatt Hotels Corp-SENIOR UNSECURED NOTE			1	2FE	14,166,221		98,4382	14,400,000	14,284,767		22,901			3.375	3.567	JJ	224,100	486,000	12/02/2013	07/15/2023
44919*-AC-2	J 595 Express, LLC Senior Secured			1	1PL	59,833,901		96,0347	59,833,901	59,833,901					3.310	3.310	MJSD	507,085	1,957,123	10/15/2015	12/31/2031
449298-AN-4	ICRE REIT Holdings Senior Note Ser			1	2	8,900,000		98,0192	8,900,000	8,900,000					3.660	3.660	JJ	159,251	325,740	07/05/2017	07/05/2027
449298-AP-9	ICRE REIT Holdings Senior Note Ser			1	2	22,200,000		95,6231	22,200,000	22,200,000					3.760	3.760	JJ	408,085	834,720	07/05/2017	07/05/2029
450319-A6-7	ITC Midwest LLC First Mortgage			1	1	7,100,000		106,6399	7,100,000	7,100,000					7.270	7.266	JD	259,519	516,170	12/22/2008	12/22/2020
450319-AA-6	ITC MIDWEST LLC-SECURED NOTE			1,5	1FE	47,470		116,2534	35,000	45,394		(361)			6.150	3.924	JJ	903	2,153	08/13/2012	01/31/2038
450636-AC-9	ITR CONCESSION CO LLC-SECURED			1	2FE	55,000,000		96,8597	55,000,000	55,000,000					5.183	5.182	JJ	1,314,466	2,850,650	07/16/2015	07/15/2035
45138L-AX-1	IDAHO POWER CORP-SECURED MORTGAGE NOTE			1	1FE	6,517,316		100,3049	6,550,000	6,542,980		3,537			3.400	3.459	MN	37,117	222,700	08/25/2010	11/01/2020
45138L-AX-1	IDAHO POWER CORP-SECURED MORTGAGE NOTE			1	1FE	6,840,409		100,3049	6,474,000	6,559,042		(51,969)			3.400	2.548	MN	36,886	220,116	01/01/2013	11/01/2020
45138L-BD-4	IDAHO POWER CORP-SECURED NOTE			1	1FE	30,328,271		90,6265	31,420,000	30,345,309		10,830			3.650	3.856	MS	382,277	1,069,268	07/31/2018	03/01/2045
45167R-AE-4	IDEX Corp-SENIOR UNSECURED NOTE			1	2FE	30,408,164		101,8427	30,800,000	30,707,484		43,818			4.500	4.661	JD	61,600	1,386,000	01/10/2011	12/15/2020
45167R-AF-1	IDEX Corp-SENIOR UNSECURED NOTE			1	2FE	22,842,521		101,4665	23,235,819	22,880,064		6,079			4.200	4.231	JD	42,747	961,800	12/08/2011	12/15/2021
45174X-AA-0	INC Health Services Inc-SECURED			1	1FE	42,300,000		98,8154	42,300,000	42,300,000					4.131	4.131	MN	223,281	631,010	06/26/2018	05/15/2048
452308-AJ-8	Illinois Tool Works Inc-SENIOR UNSECURED			1	1FE	5,603,513		100,7639	4,500,000	4,546,721		(185,229)			6.250	2.049	AO	70,313	281,250	01/01/2013	04/01/2019
452308-AQ-2	Illinois Tool Works Inc-SENIOR UNSECURED			1	1FE	4,305,014		108,9176	4,207,335	4,227,243		(14,136)			4.875	3.946	MS	53,398	181,350	01/01/2013	09/15/2041
452308-AR-0	Illinois Tool Works Inc-SR UNSECURED			1	1FE	1,045,946		98,4374	1,002,500	1,042,713		(1,113)			3.900	3.640	MS	13,033	534,215	08/02/2016	09/01/2042
452308-AR-0	Illinois Tool Works Inc-SR UNSECURED			1	1FE	37,464,602		98,4374	37,491,373	38,086,500		7,843			3.900	4.006	MS	495,125	742,697	07/23/2018	09/01/2042
452308-AT-6	ILLINOIS TOOL WORKS INC-SR UNSECURED			1	1FE	154,432		101,5327	150,000	152,870		(533)			3.500	3.078	MS	1,750	5,250	12/15/2015	03/01/2024
452308-AX-7	Illinois Tool Works Inc-SENIOR UNSECURED			1	1FE	12,175,615		92,9221	13,050,000	12,126,338		12,216,705			2.650	3.588	MN	44,189	172,912	07/17/2018	11/15/2026
452598-AB-7	Impact Confections, Inc. Senior Sub Note			2	6*	2,418,745		0.0000	3,251,367		(2,418,323)</										

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
455434-BT-6	INDIANAPOLIS PIWR & LIGHT-SECURED			1	1FE	27,385,832	.91	33,337	27,570,000	27,392,660			3,452		4.050	4.089	MM	186,098	1,116,585	05/17/2016	05/01/2046
45685E-AJ-5	VOYA FINANCIAL INC-SR UNSECURED			1	2FE	680,033	107	98,766	600,000	676,299	(1,602)				5.700	4.811	JJ	15,770	34,200	08/02/2016	07/15/2043
456866-AK-8	INGERSOLL-RAND CO-DEBENTURE			1	2FE	5,185,401	112	38,966	4,550,000	4,887,270	(29,097)				6.391	5.330	MM	37,157	290,791	01/26/2005	11/15/2027
456866-AM-4	INGERSOLL-RAND CO-DEBENTURE			1	2FE	37,966,726	112	4,963	32,150,000	35,204,599	(267,605)				6.443	5.100	MM	264,682	2,071,425	02/10/2005	11/15/2027
45687A-AG-7	INGERSOLL-RAND GL HLD CO-SENIOR UNSECURE			1	2FE	43,821,470	114	7,509	38,100,000	43,635,844	(117,508)				5.750	4.727	JD	97,367	2,213,563	02/22/2018	06/15/2043
45687A-AN-2	INGERSOLL-RAND Global Ho-SENIOR UNSECURE			1	2FE	11,061,039	93	3,202	10,358,545	11,061,087		48			4.300	4.321	FA	172,358	238,650	02/13/2018	02/21/2048
457187-AB-8	INGREDION INC-SENIOR UNSECURED			1	2FE	2,017,173	92	9,847	2,150,000	2,023,367		6,194			3.200	4.094	AO	17,200	50,920	07/17/2018	10/01/2026
458140-AJ-9	INTEL CORP-SR UNSECURED			1	1FE	362,139	101	0,590	353,706	356,006		(2,082)			3.300	2.648	AO	2,888	11,550	12/15/2015	10/01/2021
458140-AK-6	INTEL CORP-SENIOR UNSECURED NOTE			1	1FE	76,168,882	108	6,358	70,167,000	75,549,761	(140,094)				4.800	4.267	AO	842,004	3,368,016	10/30/2017	10/01/2041
458140-AN-0	INTEL CORP-SR UNSECURED			1	1FE	1,818,416	102	4,286	1,715,000	1,808,346	(5,153)				4.000	3.501	JD	3,049	68,600	10/30/2017	12/15/2032
458140-AP-5	INTEL CORP-SR UNSECURED			1	1FE	6,843,623	97	8,756	6,575,000	6,827,755	(6,287)				4.250	3.998	JD	12,419	279,438	05/10/2016	12/15/2042
458140-AQ-3	INTEL CORP-SR UNSECURED			1	1FE	296,626	99	5,993	295,000	295,575	(356)				2.450	2.323	JJ	3,052	7,228	12/15/2015	07/29/2020
458140-AR-1	INTEL CORP-SR UNSECURED			1	1FE	152,667	100	10,534	150,000	151,505	(395)				3.100	2.803	JJ	1,963	4,650	12/15/2015	07/29/2022
458140-AS-9	INTEL CORP-SR UNSECURED			1	1FE	1,184,791	100	8,733	1,150,000	1,174,697	(3,450)				3.700	3.321	JJ	17,966	42,550	12/15/2015	07/29/2025
458140-AT-7	INTEL CORP-SR UNSECURED			1	1FE	798,322	108	7,835	705,000	793,578	(1,870)				4.900	4.110	JJ	14,586	(290,498)	05/11/2016	07/29/2045
458140-AV-2	INTEL CORP-SENIOR UNSECURED			1	1FE	423,771	97	16,999	400,000	422,735	(483)				4.100	3.762	MM	1,913	16,400	10/20/2016	05/19/2046
458140-AV-2	INTEL CORP-SENIOR UNSECURED			1	1FE	9,943,600	97	16,999	10,000,000	9,945,868		1,043			4.100	4.133	MM	47,833	410,000	05/12/2016	05/19/2046
458140-BG-4	Intel Corp-SENIOR UNSECURED			1	1FE	1,435,346	92	5,919	1,547,000	1,435,855		509			3.734	4.163	JD	3,691	33,126	10/04/2018	12/08/2047
458140-BG-4	Intel Corp-SENIOR UNSECURED			1	1FE	15,711,000	92	5,919	15,711,000	15,711,000					3.734	3.734	JD	37,480	255,844	06/18/2018	12/08/2047
45866F-AA-2	INTERCONTINENTAL EXCHANGE-SENIOR UNSECURE			1	1FE	14,986,792	102	3,900	15,153,720	14,919,332	(22,759)				4.000	3.811	AO	124,978	506,837	07/02/2015	10/15/2023
45866F-AC-8	INTERCONTINENTAL EXCHANGE-SR UNSECURED			1	1FE	250,280	99	3,421	250,000	250,110	(58)				2.750	2.725	JD	5,735	6,875	12/15/2015	12/01/2020
45866F-AD-6	INTERCONTINENTAL EXCHANGE-SENIOR UNSECURE			1	1FE	646,658	100	4,629	600,000	636,178	(4,879)				3.750	2.754	JD	1,875	50,000	10/20/2016	12/01/2025
45866F-AD-6	INTERCONTINENTAL EXCHANGE-SENIOR UNSECURE			1	1FE	8,804,136	100	4,629	8,800,000	8,804,010	(126)				3.750	3.742	JD	27,500	165,000	07/20/2018	12/01/2025
45866F-AF-1	Intercontinental Exchange-SENIOR UNSECURE			1	1FE	11,719,934	94	9,147	11,866,236	11,756,361		36,427			3.100	3.915	MS	114,115	193,781	06/25/2018	09/15/2027
45866F-AH-7	Intercontinental Exchange-SENIOR UNSECURE			1	1FE	26,199,384	97	8,860	26,233,448	26,200,963		1,579			4.250	4.384	MS	436,617		10/24/2018	09/21/2048
459200-AG-6	International Business M-DEBENTURE			1	1FE	7,104,665	104	4,270	5,000,000	5,270,495	(319,552)				8.375	1.800	MM	69,792	418,750	01/01/2013	11/01/2019
459200-BB-6	IBM CORP-SENIOR UNSECURED			1	1FE	401,900	116	4,410	310,000	391,361	(4,480)				5.875	3.479	MM	1,619	18,213	08/02/2016	11/29/2032
459200-GS-4	IBM CORP-SENIOR UNSECURED NOTE			1	1FE	5,116	110	8,428	4,000	5,041	(32)				5.600	3.787	MM	19	224	08/02/2016	11/30/2039
459200-HF-1	International Business M-SENIOR UNSECURE			1	1FE	3,507,610	89	8,472	3,589,000	3,512,320		1,614			4.000	4.140	JD	4,387	136,223	10/04/2018	06/20/2042
459200-HG-9	IBM CORP-SR UNSECURED			1	1FE	141,439	94	4,043	150,000	145,161		1,265			1.875	2.828	FA	1,172	2,813	12/15/2015	08/01/2022
459200-HM-6	IBM CORP-SR UNSECURED			1	1FE	195,776	98	0,248	200,000	198,638		967			1.625	2.131	MM	415	3,250	12/15/2015	05/15/2020
459200-HP-9	IBM CORP-SR UNSECURED			1	1FE	227,849	98	9,077	225,000	226,796	(359)				3.375	3.186	FA	3,164	7,594	12/15/2015	08/01/2023
459200-HT-1	IBM CORP-SR UNSECURED			1	1FE	150,528	99	8,740	150,000	150,019	(171)				1.950	1.834	FA	1,129	2,925	12/15/2015	02/12/2019
459200-HU-8	International Business M-SR UNSECURED			1	1FE	749,116	99	2,762	710,000	734,130	(4,329)				3.625	2.904	FA	9,938	25,738	12/15/2015	02/12/2024
459506-AC-5	INTL FLAVOR & FRAGRANCES-SENIOR UNSECURE	1,5		2FE	9,291,816	98	7,349	9,182,345	9,300,000	9,295,988		794			3.200	3.210	MM	49,600	297,600	04/01/2013	05/01/2023
459506-AE-1	INTL FLAVOR & FRAGRANCES-SENIOR UNSECURE			1	2FE	9,496,645	91	3,584	8,706,459	9,497,403		563			4.375	4.396	JD	34,745	416,938	05/15/2017	06/01/2047
459506-AE-1	INTL FLAVOR & FRAGRANCES-SENIOR UNSECURE			1	2FE	19,242,201	91	3,584	18,700,000	19,228,400	(9,827)				4.375	4.202	JD	68,177	818,125	08/11/2017	06/01/2047
459506-AL-5	International Flavors & -SENIOR UNSECURE			1	2FE	6,968,976	99	6,041	6,899,000	6,968,955	(21)				5.000	4.934	MS	91,028	220,348	12/26/2018	09/26/2048
459506-AL-5	International Flavors & -SENIOR UNSECURE			1	2FE	16,579,426	99	6,041	16,700,000	16,578,590	(836)				5.000	5.047	MS	220,347	91,029	09/24/2018	09/26/2048
459745-OF-6	INTL LEASE FINANCE CORP-SENIOR UNSECURED			1	2FE	786,864	107	5,783	700,000	757,310	(14,044)				8.250	3.860	JD	2,567	26,217	12/18/2018	12/15/2020
459745-GL-3	INTL LEASE FINANCE CORP-SENIOR UNSECURED			1	2FE	3,674,418	100	4,079	3,685,000	3,684,283		1,215			5.875	5.911	AO	54,123	216,494	12/02/2013	04/01/2019
460146-CE-1	International Paper Co-SENIOR UNSECURED	1,5		2FE	14,907,734	110	8,131	14,576,353	13,154,000	13,700,462	(191,256)				7.500	5.753	FA	372,697	986,550	09/19/2011	08/15/2021
460146-CF-8	International Paper Co-BOND	1,5		2FE	833,973	117	8,730	748,493	635,000	823,999	(5,092)				7.300	4.984	MM	5,923	46,355	05/16/2017	11/15/2039
460146-CJ-0	International Paper Co-SENIOR UNSECURED			1	2FE	13,648,762	100	4,016	13,700,000	13,669,628		4,909			3.650	3.695	JD	22,224	500,050	06/03/2014	06/15/2024
460146-CK-7	International Paper Co-SR UNSECURED			1	2FE	1,818,070	89	6,610	1,586,999	1,815,136		(948)			4.800	4.626	JD	3,776	84,960	05/16/2017	06/15/2044
460146-CL-5	International Paper Co-SR UNSECURED			1	2FE	4,978,450	98	5,272	4,926,359	4,984,937		1,823			3.800	3.849	JJ	87,611	190,000	05/14/2015	01/15/2026
460146-CM-3	International Paper Co-SR UNSECURED			1	2FE	9,035,299	97	9,125	8,910,039	9,041,266		2,170			5.000	5.057	MS	133,972	455,000	05/14/2015	09/15/2035
460146-CM-3	International Paper Co-SR UNSECURED			1	2FE	11,342,300	97	9,125	10,000,000	11,217,042	(52,667)				5.000	3.974	MS	147,222	500,000	07/13/2016	09/15/2035
460146-CN-1	INTERNATIONAL PAPER CO-SENIOR UNSECURED			1	2FE	2,356,485	93	8,842	2,095,000	2,348,400	(4,792)				5.150	4.377	MM	13,78			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
465685-AD-7	ITC HOLDINGS CORP-SENIOR UNSECURED NOTE			1	2FE	12,506,700	117.8733	11,787,331	10,000,000	12,103,183		(75,166)			6.375	4.624	MS	161,146	637,500	01/01/2013	09/30/2036
465685-AF-2	ITC HOLDINGS CORP-SENIOR UNSECURED NOTE			1	2FE	10,014,311	101.8873	9,781,179	9,600,000	9,663,539		(58,240)			5.500	4.835	JJ	243,467	528,000	04/26/2012	01/15/2020
465685-AG-0	ITC HOLDINGS CORP-SENIOR UNSECURED NOTE			1	2FE	16,960,686	101.6312	16,811,828	16,542,000	16,758,669		(46,237)			4.050	3.714	JJ	334,976	669,951	05/15/2014	07/01/2023
465685-AH-8	ITC HOLDINGS CORP-SENIOR UNSECURED BOND			1	2FE	25,481,526	110.3321	28,189,859	25,550,000	25,487,419		1,222			5.300	5.318	JJ	677,075	1,354,150	06/26/2013	07/01/2043
465685-AH-8	ITC HOLDINGS CORP-SENIOR UNSECURED BOND			1	2FE	246,692	110.3321	231,697	210,000	245,724		(853)			5.300	4.171	JJ	5,565	11,130	10/30/2017	07/01/2043
465685-AJ-4	ITC HOLDINGS CORP NT			1	2FE	6,478,290	99.4459	6,463,984	6,500,000	6,487,166		2,073			3.650	3.690	JD	10,544	237,250	05/28/2014	06/15/2024
46574*-AA-7	ITT Holdings LLC Gtd Senior Note			1	2PL	35,540,000	96.3525	34,243,679	35,540,000	35,540,000					3.920	3.919	MN	154,796	1,393,168	05/21/2015	05/21/2025
46574*-AB-5	ITT Holdings LLC Gtd Senior Note			1	2PL	30,540,000	94.5168	28,865,431	30,540,000	30,540,000					4.020	4.020	MN	136,412	1,227,708	05/21/2015	05/21/2027
46625H-HF-0	JPMorgan Chase & Co-NOTE			1	1FE	27,163,828	121.6056	30,541,244	25,115,000	26,919,096		(56,733)			6.400	5.745	MN	205,385	1,590,542	08/01/2018	05/15/2038
46625H-HQ-6	JPMorgan Chase & Co-NOTE			1	1FE	5,430,842	102.1162	5,534,700	5,420,000	5,423,298		(2,967)			4.950	4.891	MS	71,544	268,290	12/02/2013	03/25/2020
46625H-HV-5	JPMorgan Chase & Co-SR UNSECURED			1	1FE	3,577,568	110.7657	3,237,681	2,923,000	3,523,642		(16,690)			5.500	4.068	AO	33,939	157,480	08/01/2018	10/15/2040
46625H-JB-7	JPMorgan Chase & Co-SENIOR UNSECURED NOT			1	1FE	5,391,597	112.6620	4,923,330	4,370,000	5,322,233		(25,447)			5.600	4.105	JJ	112,843	244,720	10/20/2016	07/15/2041
46625H-JC-5	JPMorgan Chase & Co-NOTE			1	1FE	8,144,703	102.3326	8,340,108	8,150,000	8,148,048		564			4.350	4.358	FA	133,932	354,525	08/03/2011	08/15/2021
46625H-JD-3	JPMorgan Chase & Co-SENIOR UNSECURED NOT			1	1FE	23,303,371	103.0386	23,704,019	23,005,000	23,236,311		(72,284)			4.500	4.319	JJ	451,473	1,035,225	09/22/2017	01/24/2022
46625H-JE-1	JPMORGAN CHASE & CO-SR UNSECURED			1	1FE	339,397	99.2059	327,380	330,000	335,850		(1,486)			3.250	2.743	MS	2,920	10,725	08/02/2016	09/23/2022
46625H-JH-4	JPMORGAN CHASE & CO-SENIOR UNSECURED			1	1FE	505,385	98.5431	492,715	500,000	503,796		(867)			3.200	3.000	JJ	6,933	16,000	02/16/2017	01/25/2023
46625H-JM-3	JPMorgan Chase & Co-SUBORDINATED NOTE			1	1FE	2,847,726	109.9293	2,605,326	2,370,000	2,814,130		(9,890)			5.625	4.374	FA	49,992	133,313	08/02/2016	08/16/2043
46625H-JR-2	JPMORGAN CHASE & CO-SR UNSECURED			1	1FE	225,691	99.9506	224,889	225,000	225,015		(228)			2.350	2.247	JJ	5,288	127,590	12/15/2015	01/28/2019
46625H-JT-8	JPMORGAN CHASE & CO-SENIOR UNSECURED			1	1FE	597,350	100.2557	551,406	550,000	583,096		(6,016)			3.875	2.603	FA	8,880	21,313	08/02/2016	02/01/2024
46625H-JU-5	JPMorgan Chase & Co-SR UNSECURED			1	1FE	13,571,421	101.8340	11,912,540	11,698,000	13,466,066		(41,009)			4.850	3.900	FA	236,397	567,353	08/02/2016	02/01/2044
46625H-JX-9	JPMorgan Chase & Co-SR UNSECURED			1	1FE	221,450	99.3340	211,581	213,000	218,292		(894)			3.625	3.119	MN	1,030	7,721	05/11/2015	05/13/2024
46625H-JY-7	JPMorgan Chase & Co-SUBORDINATED NOTE			1	1FE	11,916,396	98.3976	11,820,498	12,013,000	11,949,816		9,555			3.875	3.978	MS	143,530	465,504	08/02/2016	09/10/2024
46625H-JZ-4	JPMORGAN CHASE & CO-SUBORDINATED			1	1FE	213,526	97.5681	195,136	200,000	210,784		(1,165)			4.125	3.347	JD	367	8,250	08/02/2016	12/15/2026
46625H-KA-7	JPMORGAN CHASE & CO-SR UNSECURED			2	1FE	296,164	99.0040	297,012	300,000	298,963		949			2.250	2.581	JJ	2,963	6,750	12/15/2015	01/23/2020
46625H-KA-7	JPMORGAN CHASE & CO-SR UNSECURED			2	1FE	712,963	99.0040	693,028	700,000	703,816		(3,838)			2.250	1.686	JJ	6,913	15,750	08/02/2016	01/23/2020
46625H-KC-3	JPMorgan Chase & Co-SR UNSECURED			2	1FE	9,323,658	95.2706	8,907,802	9,350,000	9,332,588		2,540			3.125	3.159	JJ	128,238	292,188	12/15/2015	01/23/2025
46625H-KC-3	JPMorgan Chase & Co-SR UNSECURED			2	1FE	125,158	95.2706	119,088	125,000	125,114		(17)			3.125	3.108	JJ	1,714	3,906	04/12/2016	01/23/2025
46625H-LL-2	JPMorgan Chase & Co-JR SUBORDINATED			1	1FE	1,668,747	101.4137	1,495,852	1,475,000	1,660,869		(3,813)			4.950	4.159	JD	6,084	73,013	10/30/2017	06/01/2045
46625H-LI-8	JPMORGAN CHASE & CO-SR UNSECURED			2	1FE	723,477	99.4268	695,988	700,000	708,796		(6,169)			2.750	1.834	JD	428	19,250	08/02/2016	06/23/2020
46625H-LM-7	JPMORGAN CHASE & CO-SR UNSECURED			2	1FE	1,008,073	99.0925	941,379	950,000	994,122		(6,291)			3.000	3.080	JJ	17,084	37,050	10/20/2016	07/15/2025
46625H-LN-5	JPMORGAN CHASE & CO-SUBORDINATED			1	1FE	1,112,713	98.4409	1,028,707	1,045,000	1,102,656		(5,544)			4.250	3.512	AO	11,103	44,413	10/30/2017	10/01/2027
46625H-OL-3	JPMORGAN CHASE & CO-SENIOR UNSECURED			2	1FE	96,111	95.2333	95,233	100,000	96,287		177			3.300	3.892	AO	825	1,329	08/01/2018	04/01/2026
46625H-OL-3	JPMORGAN CHASE & CO-SENIOR UNSECURED			2	1FE	519,360	95.2333	485,690	510,000	517,506		(949)			3.300	3.064	AO	4,208	16,830	10/30/2017	04/01/2026
46625H-RS-1	JPMORGAN CHASE & CO-SENIOR UNSECURED			1	1FE	181,015	94.1766	169,518	180,000	180,892		(108)			3.200	3.123	JD	256	5,480	10/30/2017	06/15/2026
46625H-RS-1	JPMORGAN CHASE & CO-SENIOR UNSECURED			1	1FE	85,613	94.1766	84,759	90,000	85,809		195			3.200	3.926	JD	128	1,440	08/01/2018	06/15/2026
46625H-RX-0	JPMORGAN CHASE & CO-SUBORDINATED			2	1FE	416,861	93.0568	386,186	415,000	416,654		(179)			3.625	3.566	JD	1,254	15,044	10/30/2017	12/01/2027
46625H-RY-8	JPMORGAN CHASE & CO-SENIOR UNSECURED			1,5	1FE	1,906,387	97.0720	1,790,978	1,845,000	1,900,183		(5,365)			3.782	3.356	FA	29,074	127,359	10/30/2017	02/01/2028
46625H-RY-8	JPMORGAN CHASE & CO-SENIOR UNSECURED			1,5	1FE	3,684,636	97.0720	3,669,320	3,780,000	3,687,900		3,264			3.782	4.106	FA	59,567	127,359	08/01/2018	02/01/2028
46647P-AA-4	JPMorgan Chase & Co-SENIOR UNSECURED			1	1FE	111,790	93.0084	106,960	115,000	111,809		18			4.260	4.430	FA	1,755	218	08/01/2018	02/22/2048
46647P-AF-3	JPMorgan Chase & Co-SENIOR UNSECURED			1,5	1FE	815,088	95.3386	762,709	800,000	813,614		(1,400)			3.540	3.304	MN	4,720	28,320	12/11/2017	05/01/2028
46647P-AK-2	JPMORGAN CHASE & CO-SENIOR UNSECURED			1,5	1FE	396,753	89.4959	380,358	425,000	396,933		180			4.032	4.435	JJ	7,473	47,424	08/01/2018	07/24/2048
46647P-AK-2	JPMORGAN CHASE & CO-SENIOR UNSECURED			1,5	1FE	1,027,452	89.4959	899,434	1,005,000	1,027,027		(389)			4.032	3.904	JJ	17,672	47,424	10/30/2017	07/24/2048
46647P-AL-0	JPMorgan Chase & Co-SENIOR UNSECURED			1	1FE	18,490	88.5162	17,703	20,000	18,500		10			3.964	4.418	MN	101	218	08/01/2018	11/15/2048
46647P-AR-7	JPMorgan Chase & Co-SENIOR UNSECURED			1	1FE	9,209,200	98.0362	9,117,368	9,300,000	9,212,814		3,614			4.005	4.117	AO	70,355	196,512	06/15/2018	04/23/2029
46659*-AA-5	JM Family Enterprises, I Senior Note Ser			2	2	26,300,000	96.0267	25,255,022	26,300,000	26,300,000					3.310	3.310	MN	145,088	870,530	11/01/2017	11/01/2024
468223-AT-9	Jackson Laboratory/The-UNSECURED			1	1FE	38,324,873	101.5041	38,870,990	38,295,000	38,324,331		(542)			4.334	4.329	JJ	829,853	470,249	04/19/2018	07/01/2048
470328-AD-3	JAMES CAMPBELL CO LLC SR NT SER D			1	2	27,200,000	99.8532	27,160,070	27,200,000	27,200,000					3.980	3.980	MS	3,007	1,082,560	09/28/2011	09/30/2019
470328-AG-6	James Campbell																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
478160-AL-8	Johnson & Johnson-BOND				1FE	2,678,794		112,5740	2,680,000	2,679,035		38			4.950	4.953	MM	16,951	132,660	05/19/2003	05/15/2033
478160-AN-4	Johnson & Johnson-BOND				1FE	25,853,966		124,7957	21,395,000	25,434,101	(147,246)				5.950	4.409	FA	480,912	1,273,003	01/21/2016	08/15/2037
478160-AT-1	Johnson & Johnson-SENIOR UNSECURED NOTE				1FE	57,594		124,1430	50,000	56,246	(188)				5.850	4.853	JJ	1,349	9,925	06/25/2010	07/15/2038
478160-AV-6	Johnson & Johnson-SR UNSECURED				1FE	1,003,078		107,8722	865,000	989,806	(3,780)				4.500	3.540	MS	12,975	38,925	04/27/2015	09/01/2040
478160-BH-6	JOHNSON & JOHNSON-SR UNSECURED				1FE	160,059		101,8912	150,000	156,459	(1,219)				3.375	2.442	JD	366	5,063	12/15/2015	12/05/2023
478160-BK-9	JOHNSON & JOHNSON-SR UNSECURED				1FE	845,828		107,0756	760,000	840,130	(1,955)				4.500	3.831	JD	2,470	34,200	12/15/2015	12/05/2043
478160-BM-5	JOHNSON & JOHNSON-SR UNSECURED				1FE	300,249		99,1984	300,000	300,059	(64)				1.875	1.853	JD	406	5,625	12/15/2015	12/05/2019
478160-BU-7	JOHNSON & JOHNSON-SR UNSECURED				1FE	6,458,282		94,8102	6,425,000	6,454,548	(1,295)				3.550	3.513	MS	76,029	228,088	02/29/2016	03/01/2036
478165-AG-8	JOHNSON (S.C.) & SON INC-SENIOR UNSECURE				1FE	66,400,613		105,5309	66,864,402	65,979,043	(72,893)				4.800	4.495	MS	1,013,760	3,041,280	01/01/2013	09/01/2040
478165-AH-6	JOHNSON (S.C.) & SON INC-SENIOR UNSECURE				1FE	6,352,821		108,3483	5,639,000	6,316,798	(13,496)				4.750	4.020	AO	56,547	267,853	08/02/2016	10/15/2046
481216-AA-9	Jrd Holdings LLC Senior Note Ser				2PL	14,892,895		99,4921	14,213,157	14,386,162	(141,578)				4.040	3.122	AO	97,794	552,694	01/01/2013	04/30/2022
481216-AB-7	Jrd Holdings LLC Senior Note Ser				2PL	31,090,909		100,2984	31,183,684	31,090,909					4.650	4.649	AO	244,970	1,418,509	04/30/2012	04/30/2027
481216-AD-3	Jrd Holdings LLC Senior Note				2PL	17,225,700		99,6349	17,162,809	17,225,700					4.130	4.130	MS	185,760	680,427	03/27/2014	03/27/2024
481268-AA-1	JPMorgan Chase & Co-SR UNSECURED				1FE	6,264,763		109,8369	5,095,000	6,191,530	(28,821)				5.400	3.964	JJ	133,744	275,130	10/30/2017	01/06/2042
48127H-AA-7	JPMORGAN CHASE & CO-SR UNSECURED				1FE	247,950		99,1612	250,000	249,549		542			2.200	2.425	AO	1,054	5,500	12/15/2015	10/22/2019
48128D-AA-8	JP Morgan Chase Bk Lease-Vadanta-Amazon				6*	16,223,693		99,3861	16,124,096	16,223,693	(99,597)				2.858	2.858	MCN	137,002	327,299	12/01/2017	12/01/2020
482480-AF-7	KLA-Tencor Corp-SENIOR UNSECURED				2FE	404,435		101,9412	380,000	403,423		(548)			5.650	5.069	MM	3,578	9,122	10/04/2018	11/01/2034
483050-AA-1	Kaiser Foundation Hospit-SENIOR UNSECURE				1FE	91,723		101,6676	95,000	93,589		398			3.500	3.990	AO	831	3,150	12/02/2013	04/01/2022
483050-AB-9	Kaiser Foundation Hospit-SENIOR UNSECURE				1FE	42,723,004		112,1350	41,119,000	42,565,322	(37,381)				4.875	4.619	AO	501,138	2,004,551	01/26/2017	04/01/2042
483050-AD-5	KAISER FOUNDATION HOSPIT-UNSECURED				1FE	251,353		98,7670	235,000	250,975		(321)			4.150	3.754	MM	1,625	47,621	10/30/2017	05/01/2047
483050-AD-5	KAISER FOUNDATION HOSPIT-UNSECURED				1FE	18,681,982		98,7670	18,840,000	18,685,149		2,414			4.150	4.200	MM	130,310	688,254	05/15/2018	05/01/2047
485134-BM-1	KANSAS CITY POWER & LT-SENIOR UNSECURED				2FE	14,316,084		113,2218	15,426,467	14,250,111	(15,847)				5.300	4.952	AO	180,531	722,125	08/02/2016	10/01/2041
485134-BN-9	KANSAS CITY POWER & LT-SENIOR UNSECURED				1FE	16,711,695		98,9225	16,891,013	17,075,000		16,896,729			3.150	3.415	MS	158,371	537,863	09/12/2013	03/15/2023
485170-AQ-7	Kansas City Southern-SENIOR UNSECURED				2FE	512,850		93,0228	500,000	512,471		(302)			4.300	4.134	MM	2,747	21,500	09/22/2017	05/15/2043
485260-BL-6	KANSAS GAS & ELECTRIC CO-BOND				1FE	11,697,469		101,4733	10,195,000	10,300,169	(226,908)				6.700	4.382	JD	30,358	683,065	05/01/2012	06/15/2019
485260-BM-4	KANSAS GAS & ELECTRIC CO-SECURED				1FE	1,685,999		99,3367	1,629,121	1,682,799	(995)				4.300	4.130	JJ	32,518	70,520	12/15/2015	07/15/2044
486606-JH-4	Kayne Anderson MLP Invt Co Sr Note Serie				1FE	503,445		99,2145	500,000	502,805		(748)			3.670	3.570	AO	612	(49,086)	04/20/2017	04/16/2025
486606-JB-6	Kayne Anderson MLP Inves Senior Note Ser				1FE	3,638,736		99,2245	3,600,000	3,628,620	(8,375)				3.570	3.370	AO	68,544	(343,791)	04/20/2017	04/16/2023
486606-KF-2	KAYNE ANDERSON MLP INVT CO-SR UNSEC SER				1FE	15,600,000		100,6656	15,600,000	15,600,000					3.930	3.930	JJ	28,296	613,080	04/30/2014	07/30/2024
486606-KB-4	KAYNE ANDERSON MLP INVT CO-SR UNSEC SER				1FE	13,000,000		99,2179	13,000,000	13,000,000					3.460	3.460	JJ	20,183	449,800	07/30/2014	07/30/2021
48661E-AF-5	KAYNE ANDERSON MID/ENERGY-SR UNSEC SER				1FE	5,355,000		100,7825	5,355,000	5,355,000					4.000	4.000	MS	70,210	214,200	03/22/2012	03/22/2022
48661E-B* -8	KAYNE ANDERSON MID/ENERGY-SR UNSEC SER				1FE	36,450,000		98,3178	36,450,000	36,450,000					3.340	3.340	MM	399,047	1,217,430	05/01/2013	05/01/2023
48661E-BB-6	KAYNE ANDERSON MID/ENERGY-SR UNSEC SER				1FE	8,650,000		99,2179	8,650,000	8,650,000					3.460	3.460	JJ	98,101	299,290	04/30/2014	07/30/2021
48666* -AC-8	KCP&L Greater Missouri 0 Senior Note Ser				2	42,400,000		93,0396	42,400,000	42,400,000					4.740	4.740	FA	759,243	2,009,760	08/16/2013	08/15/2043
48730P-AC-4	KEENAN DEV ASSOCS TENN LLC LEASE REV BD				1FE	4,681,918		101,1014	4,269,324	4,453,230		(55,944)			5.020	3.554	JJ	97,749	204,373	01/01/2013	07/15/2028
487312-AC-4	Keenan Fort Detrick Ener Taxable Revenue				1FE	28,289,197		109,8183	31,066,715	28,289,197					5.896	5.895	MM	213,125	1,659,531	01/27/2011	05/15/2033
487836-BQ-0	KELLOGG CO-SENIOR UNSECURED				2FE	10,783,194		92,7639	10,213,310	11,010,000		3,944			4.500	4.629	AO	123,863	495,450	01/20/2017	04/01/2046
489170-AC-4	Kennametal Inc-SENIOR UNSECURED NOTE				2FE	6,254,050		99,6518	6,200,000	6,218,007		(5,806)			3.875	3.768	FA	90,761	240,250	02/10/2012	02/15/2022
489170-AC-4	Kennametal Inc-SENIOR UNSECURED NOTE				2FE	19,638,486		99,6518	19,650,000	19,654,231		1,210			3.875	3.882	FA	287,654	761,438	07/02/2015	02/15/2022
491674-BE-6	KENTUCKY UTILITIES CO-SECURED				1FE	250,461		100,2814	250,000	253,402		(2,084)			3.250	2.369	MM	1,354	8,125	12/15/2015	11/01/2020
491674-BG-1	KENTUCKY UTILITIES CO-SECURED				1FE	6,867,942		112,2451	6,429,397	6,804,560		(29,345)			5.125	3.824	MM	48,927	250,556	08/01/2018	11/01/2040
491674-BL-0	KENTUCKY UTILITIES CO-SECURED				1FE	650,672		101,1017	616,000	648,767		(707)			4.375	4.042	AO	6,738	26,950	08/02/2016	10/01/2045
492386-AT-4	KERR-MCGEE CORP-SENIOR UNSECURED NOTE				2FE	22,793,453		119,7550	20,921,190	17,470,000		21,484,420			7.875	5.357	MS	405,086	1,375,763	01/06/2012	09/15/2031
492386-AU-1	KERR-MCGEE CORP-SECURED BOND				1FE	265,995		111,4861	250,000	256,826		(1,008)			6.950	6.354	JJ	8,688	17,375	02/10/2006	07/01/2024
492398-AA-6	Gunnison Platform Statut Senior Note Ser				2	1,026,009		101,2377	1,026,009	1,026,009					6.720	6.713	JJ	28,920	53,311	12/30/2003	01/30/2020
492398-AB-4	Gunnison Platform Statut Senior Note Ser				2	482,381		100,9738	482,381	482,381					6.720	6.712	JJ	13,597	23,735	01/14/2004	01/30/2020
49327M-2F-0	KEY BANK NA-SR UNSECURED				1FE	150,510		99,3861	150,000	150,126		(130)			2.500	2.410	JD	167	3,750	12/15/2015	12/15/2019
49327M-2G-8	KEY BANK NA-SR UNSECURED				1FE	493,550		98,9375	500,000	498,081		1,537			2.250	2.573	MS	3,281	15,174	12/15/2015	03/16/2020
49337M-AC-4	KEYSPAN CORP-NOTE				2FE	998,440		130,7558	1,000,000	998,792		52			8.000	8.014	MM	10,222	80,000	11/15/2000	11/15/2030
49338C-AA-1	KEYSPAN GAS EAST CORP-SENIOR UNSECURED				1FE	294,309		119,1328	285,919												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
494368-BR-3	KIMBERLY-CLARK CORP-SENIOR UNSECURED	1		1	1FE	53,576	.97	58,779	50,000	52,688		(374)			3.050	2.174	FA	576	1,525	08/02/2016	08/15/2025
494368-BS-1	KIMBERLY-CLARK CORP-SR UNSECURED	1		1	1FE	199,288	.98	83,644	200,000	199,742		153			2.150	2.231	FA	1,624	4,300	12/15/2015	08/15/2020
494368-BW-2	KIMBERLY-CLARK CORP-SENIOR UNSECURED	1		1	1FE	26,885,566	.96	22,673	27,080,000	26,890,296		3,569			3.900	3.941	MN	167,219	1,056,120	05/01/2017	05/04/2047
49446R-AK-5	KIMCO REALTY CORP-SR UNSECURED	1		1	2FE	107,600	.96	71,971	110,000	108,166		.377			3.125	3.536	JD	286	3,438	12/09/2015	06/01/2023
49446R-AM-1	Kimco Realty Corp-SENIOR UNSECURED	1		1	2FE	6,160,122	.88	5,083	6,584,000	6,166,747		6,625			4.250	4.671	AO	69,955	279,820	02/22/2018	04/01/2045
49446R-AN-9	Kimco Realty Corp-SR UNSECURED	1		1	2FE	7,872,429	.98	4,302	7,900,000	7,883,944		3,792			3.400	3.456	MN	44,767	268,600	10/08/2015	11/01/2022
49446R-AQ-2	KIMCO REALTY CORP-SENIOR UNSECURED	1		1	2FE	24,803,250	.86	29,999	25,000,000	24,810,565		3,523			4.125	4.171	JD	85,938	1,031,250	11/01/2016	12/01/2046
49446R-AS-8	Kimco Realty Corp-SENIOR UNSECURED	1		1	2FE	8,574,840	.96	16,733	9,000,000	8,595,578		20,738			3.800	4.456	AO	85,500	171,000	06/21/2018	04/01/2027
494550-AT-3	KINDER MORGAN ENER PART-NOTE	1		1	2FE	3,698,619	.102	2,322	3,725,000	3,714,194		256			5.800	5.824	MS	63,615	216,050	05/16/2017	03/15/2035
494550-AV-8	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	1,170,928	.107	729,525	1,100,000	1,166,230		(2,000)			6.500	5.951	FA	29,792	71,500	08/02/2016	02/01/2037
494550-AW-6	KINDER MORGAN ENER PART-BOND	1		1	2FE	8,060,642	.111	5,349	8,000,479	8,000,479		(25,072)			6.950	5.608	JJ	221,863	402,285	08/01/2018	01/15/2038
494550-BD-7	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	26,870,639	.106	65,166	24,201,000	26,782,740		(48,548)			6.500	5.619	MS	524,355	1,378,065	05/04/2018	09/01/2039
494550-BE-5	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	9,324,504	.102	70,373	8,000,000	8,318,600		(179,891)			5.300	2.887	MS	124,844	424,000	01/01/2013	09/15/2020
494550-BF-2	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	626,353	.107	93,885	735,000	631,289		1,761			6.550	7.920	MS	14,175	48,143	12/15/2015	09/15/2040
494550-BH-8	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	157,713	.106	13,133	140,000	157,096		(392)			6.375	5.421	MS	2,975	8,925	05/16/2017	03/01/2041
494550-BK-1	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	1,026,351	.97	48,440	1,055,000	1,027,630		568			5.625	5.832	MS	19,781	59,344	08/02/2016	09/01/2041
494550-BL-9	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	704,374	.99	95,255	690,000	698,777		(2,375)			3.950	3.551	MS	9,085	27,255	08/02/2016	09/01/2022
494550-BN-5	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	6,731,849	.91	5,111	6,355,000	6,689,285		(7,962)			5.000	4.627	FA	120,039	317,750	10/30/2017	08/15/2042
494550-BP-0	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	1,609,339	.90	74,133	1,705,000	1,613,170		1,813			5.000	5.401	MS	28,417	85,250	10/20/2016	03/01/2043
494550-BU-9	KINDER MORGAN ENER PART-SR UNSECURED	1		1	2FE	1,312,431	.96	36,755	1,262,500	1,309,313		(917)			5.500	5.230	MS	23,146	69,438	04/27/2015	03/01/2044
494550-BU-9	KINDER MORGAN ENER PART-SR UNSECURED	1		1	2FE	41,187	.96	36,755	50,500	41,550		127			5.500	7.007	MS	926	2,778	12/09/2015	03/01/2044
494550-BV-7	KINDER MORGAN ENER PART-SENIOR UNSECURED	1		1	2FE	506,413	.99	4,009	500,000	504,640		(751)			4.250	4.057	MS	7,083	21,250	08/02/2016	09/01/2024
49456B-AG-6	KINDER MORGAN INC/DELAWARE-SENIOR UNSECURE	1		1	2FE	307,714	.98	0,161	320,000	308,717		428			5.300	5.638	JD	1,413	16,960	08/02/2016	12/01/2034
49456B-AG-6	KINDER MORGAN INC/DELAWARE-SENIOR UNSECURE	1		1	2FE	2,464,025	.98	0,161	2,365,000	2,457,719		(3,943)			5.300	4.933	JD	10,445	125,345	05/16/2017	12/01/2034
49456B-AH-4	Kinder Morgan Inc/DE-SR UNSECURED	1		1	2FE	1,214,598	.99	0,369	1,235,500	1,235,388		.323			5.550	5.669	JD	5,714	68,570	08/02/2016	06/01/2045
49456B-AH-4	Kinder Morgan Inc/DE-SR UNSECURED	1		1	2FE	3,247,978	.99	0,369	3,087,500	3,242,143		(2,496)			5.550	5.195	JD	14,280	154,074	08/01/2018	06/01/2045
49456B-AJ-0	Kinder Morgan Inc/DE-SR UNSECURED	1		1	2FE	932,926	.91	31,377	1,000,000	935,243		1,016			5.050	5.512	FA	19,078	50,500	08/02/2016	02/15/2046
49456B-AQ-4	Kinder Morgan Inc/DE-SR UNSECURED	1		1	2FE	60,966	.95	46,111	60,000	60,958		(8)			5.200	5.093	MS	1,040	4,853	07/27/2018	03/01/2048
49456B-AQ-4	Kinder Morgan Inc/DE-SR UNSECURED	1		1	2FE	189,542	.95	46,111	190,000	189,533		(9)			5.200	5.216	MS	3,293	2,600	02/22/2018	03/01/2048
49757#-AA-6	KIRKWALL HLDGS LLC SR SEC ND	2		2	2	3,204,049	.103	7,976	3,204,049	3,204,049				4.270	4.270	JAU	251,181	141,093	01/27/2016	10/05/2030	
50076Q-AE-6	Kraft Foods Group Inc-SENIOR UNSECURED B	1		1	2FE	11,443,602	.89	4,273	10,702,000	11,396,312		(16,860)			5.000	4.542	JD	40,133	535,100	05/16/2017	06/04/2042
50076Q-AN-6	Kraft Foods Group Inc-SENIOR UNSECURED B	1		1	2FE	37,273,145	.106	2,524	30,315,000	36,574,019		(166,327)			6.500	4.914	FA	777,243	1,947,945	10/04/2018	02/09/2040
50076Q-AR-7	KRAFT HEINZ FOODS CO-SENIOR UNSECURED	1		1	2FE	500,308	.111	5,734	359,000	490,618		(4,131)			6.875	4.162	JJ	10,627	24,681	08/02/2016	01/26/2039
50077L-AB-2	KRAFT HEINZ FOODS CO-SENIOR UNSECURED	1		1	2FE	4,504,964	.82	3,826	4,164,442	4,508,425		2,998			4.375	5.110	JD	18,430	79,857	10/04/2018	06/01/2046
50077L-AD-8	KRAFT HEINZ FOODS CO-SENIOR UNSECURED	1		1	2FE	189,214	.89	2,083	190,000	189,358		76			3.000	3.051	JD	475	5,700	02/06/2017	06/01/2026
50077L-AK-2	KRAFT HEINZ FOODS CO-SENIOR UNSECURED	1		1	2FE	992,024	.96	7,755	905,000	970,181		(9,386)			3.950	2.698	JJ	16,484	35,748	08/16/2016	07/15/2025
50077L-AL-0	KRAFT HEINZ FOODS CO-SENIOR UNSECURED	1		1	2FE	627,232	.93	8,478	630,000	627,280		48			5.000	5.039	JJ	14,525	14,525	08/01/2018	07/15/2035
50077L-AL-0	KRAFT HEINZ FOODS CO-SENIOR UNSECURED	1		1	2FE	1,358,751	.93	8,478	1,116,789	1,346,938		(6,966)			5.000	3.885	JJ	27,436	72,188	10/30/2017	07/15/2035
50077L-AM-8	KRAFT HEINZ FOODS CO-SENIOR UNSECURED	1		1	2FE	2,017,753	.91	3,783	1,715,000	2,006,263		(6,220)			5.200	4.122	JJ	41,122	89,180	05/16/2017	07/15/2045
501044-BT-7	KROGER CO/THE-SENIOR UNSECURED	1		1	2FE	42,751	.120	4,150	30,000	40,772		(842)			7.700	3.546	JD	193	2,310	08/02/2016	06/01/2029
501044-BV-2	KROGER CO-SENIOR NOTE	1		1	2FE	6,505,991	.123	2,822	6,935,000	6,644,471		12,495			8.000	8.555	MS	163,358	554,800	08/02/2016	09/15/2029
501044-CH-2	KROGER CO-SENIOR UNSECURED NOTE	1		1	2FE	4,546,367	.102	8,402	4,150,000	4,200,722		(46,563)			6.150	4.926	JJ	117,687	255,225	01/20/2010	01/15/2020
501044-CK-5	KROGER CO-SENIOR NOTE	1		1	2FE	21,241,935	.117	6,361	17,578,000	20,644,038		(87,793)			6.900	5.427	AO	256,053	1,199,525	10/04/2018	04/15/2038
501044-CN-9	KROGER CO-SENIOR UNSECURED NOTE	1		1	2FE	8,425,115	.101	6,060	8,500,000	8,435,647		1,535			5.400	5.460	JJ	211,650	459,000	07/06/2010	07/15/2040
501044-CQ-2	KROGER CO/THE-SENIOR UNSECURED	1		1	2FE	159,195	.98	9,708	150,000	155,300		(1,582)			3.400	2.252	AO	1,077	5,100	04/13/2016	04/15/2022
501044-OR-0	KROGER CO/THE-SENIOR UNSECURED	1		1	2FE	9,876,227	.95	18,255	8,102,000	9,771,041		(46,271)			5.000	3.659	AO	85,521	405,100	09/01/2016	04/15/2042
501044-CT-6	KROGER CO/THE-SR UNSECURED	1		1	2FE	8,316,065	.95	6,338	6,731,000	8,228,764		(37,862)			5.150	3.739	FA	144,436	346,647	08/17/2016	08/01/2043
501044-DC-2	KROGER CO SR NT	1		1	2FE	8,439,950	.94	8,669	8,460,000	8,445,509		1,805			3.500	3.528	FA	123,375	296,100	01/08/2016	02/01/2026
501044-DF-5	KROGER CO/THE-SENIOR UNSECURED	1		1	2FE	12,885,231	.81</														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
50512F-AE-2	LA Stadium Finance Co Sr Secured Series				2PL	15,800,000	.95	15,161,648	15,800,000	15,800,000					4.098	4.034	MJSD	843,313	818,772	04/13/2017	03/31/2027
50540R-AP-7	Laboratory Corp of Ameri-SR UNSECURED				2FE	5,945,181	.99	5,904,965	5,950,000	5,950,000		684			3.200	3.213	FA	79,333	190,400	01/21/2015	02/01/2022
50540R-AQ-5	Laboratory Corp of Ameri-SR UNSECURED				2FE	6,603,398	.96	6,495,213	6,745,000	6,613,263		9,849			3.600	3.964	FA	101,175	222,720	07/16/2018	02/01/2025
50540R-AR-3	LABORATORY CORP OF AMER-SR UNSECURE				2FE	2,016,446	.99	1,981,136	1,995,000	2,005,097		(9,133)			2.625	2.149	FA	21,820	52,369	09/28/2017	02/01/2020
50540R-AS-1	LABORATORY CORP OF AMER-SR UNSECURED				2FE	458,521	.93	395,652	425,000	457,068		(687)			4.700	4.215	FA	8,323	117,892	10/20/2016	02/01/2045
50540R-AS-1	LABORATORY CORP OF AMER-SR UNSECURED				2FE	4,701,300	.93	4,654,724	5,000,000	4,701,403		103			4.700	5.117	FA	97,917		12/21/2018	02/01/2045
50540R-AU-6	Laboratory Corp of Ameri-SR UNSECURED				2FE	2,856,750	.95	2,857,253	3,000,000	2,863,081		6,331			3.600	4.234	MS	36,000	54,000	07/02/2018	09/01/2027
505597-AD-6	SPIRE INC-SR UNSECURED				2FE	2,469,390	101	2,460,713	2,430,000	2,466,197		(756)			4.700	4.599	FA	43,146	114,210	08/15/2014	08/15/2044
505597-AD-6	SPIRE INC-SR UNSECURED				2FE	19,889,087		20,176,836	19,925,000	19,890,760		657			4.700	4.711	FA	353,779	936,475	09/16/2014	08/15/2044
50587K-AB-7	LAFARGEHOLCIM FINANCE US-SR UNSECURE				2FE	53,437,438	.86	47,409,440	54,590,000	53,473,923		18,460			4.750	4.885	MS	713,082	2,593,025	11/23/2016	09/22/2046
50587K-AB-7	LAFARGEHOLCIM FINANCE US-SR UNSECURE				2FE	4,307,307	.86	3,688,366	4,247,000	4,305,336		(1,054)			4.750	4.660	MS	55,476	201,733	04/05/2017	09/22/2046
512807-AN-8	LAM RESEARCH CORP-SR UNSECURED				2FE	7,741,747	100	7,745,404	7,745,000	7,742,521		301			3.800	3.805	MS	86,658	294,310	03/05/2015	03/15/2025
516806-AE-6	Laredo Petroleum Inc-SR UNSECURED				4FE	2,506,250	.89	2,243,750	2,500,000	2,505,153		(1,097)			6.250	6.143	MS	46,007	78,125	07/05/2018	03/15/2023
521070-AF-2	LAZARD GROUP LLC-SR UNSECURED NOTE		1,5		1FE	1,865,435	101	1,829,012	1,805,000	1,805,000		(31,491)			4.250	2.394	MN	10,015	93,998	09/21/2017	11/14/2020
521070-AG-0	LAZARD GROUP LLC-SR UNSECURED				1FE	14,398,063	.96	14,150,583	14,589,000	14,434,543		20,103			3.750	3.946	FA	182,363	541,406	07/12/2018	02/13/2025
521070-AH-8	LAZARD GROUP LLC-SR UNSECURED		1,5		1FE	4,193,542	.94	4,173,854	4,438,000	4,204,618		11,030			3.625	4.397	MS	53,626	134,880	07/12/2018	03/01/2027
521070-AJ-4	LAZARD GROUP LLC-SR UNSECURED				1FE	16,833,522	100	16,938,196	16,990,000	16,835,972		2,450			4.500	4.616	MS	216,623		09/12/2018	09/19/2028
521865-AY-1	Lear Corp-SR UNSECURED				2FE	1,195,064	.91	1,182,933	1,295,000	1,197,006		1,942			3.800	4.876	MS	14,490		10/04/2018	09/15/2027
524901-AR-6	Legg Mason Inc-SR UNSECURED BOND				2FE	16,895,770	.98	15,631,016	15,839,000	16,865,954		(19,940)			5.625	5.160	JJ	410,824	890,944	09/20/2017	01/15/2044
524901-AT-2	Legg Mason Inc-SR UNSECURED NOTE				2FE	6,388,288	.98	6,308,062	6,400,000	6,392,976		1,099			3.950	3.972	JJ	116,569	252,800	06/23/2014	07/15/2024
524908-7N-4	LEHMAN BROTHERS HOLDINGS-SUBORDINATED NO				6*			0.0100	4,265,000						7.500	7.500	MN			08/29/2011	05/11/2038
524908-R4-4	LEHMAN BROTHERS HOLDINGS-JR SUBORDINATED				6*	8		0.0100	80,000						6.875	6.875	JJ			11/17/2008	07/17/2037
526057-BN-3	Lennar Corp-SR UNSECURED NOTE				3FE	5,025,109	.97	4,914,990	5,067,000	5,046,648		4,606			4.750	4.864	MN	30,754	222,881	09/05/2013	11/15/2022
526057-BY-9	Lennar Corp-SR UNSECURED				3FE	599,250	.96	576,000	600,000	599,318		68			4.125	4.165	JJ	11,413		10/04/2018	01/15/2022
526057-CR-3	Lennar Corp-SR UNSECURED				3FE	3,424,387	100	3,320,000	3,320,000	3,415,983		(8,404)			5.875	5.249	MN	24,923	81,271	06/15/2018	11/15/2024
526057-CV-4	Lennar Corp-SR UNSECURED				3FE	1,810,364	.91	1,653,450	1,812,000	1,810,398		34			5.000	5.013	JD	4,027	45,300	06/15/2018	06/15/2027
527288-BF-0	Jefferies Financial Group Inc				2FE	11,853,720	.97	11,710,933	12,000,000	11,861,696		2,105			6.625	6.720	AO	150,167	795,000	10/21/2013	10/23/2043
530715-AD-3	LIBERTY INTERACTIVE LLC-SR UNSECURED DEBENTURE				3FE	8,361,738	100	7,954,575	7,915,000	8,209,945		(17,426)			8.500	7.969	JJ	310,224	672,775	07/19/2005	07/15/2029
53079E-AV-6	Liberty Mutual Group Inc-SR UNSECURE				2FE	4,546,345	102	4,344,188	4,230,000	4,331,612		(39,374)			5.000	3.947	JD	17,625	211,500	01/01/2013	06/01/2021
53079E-AZ-7	LIBERTY MUTUAL GROUP INC-SR UNSECURE		1,5		2FE	2,793,553	118	2,638,660	2,225,000	2,779,617		(9,677)			6.500	4.723	MN	24,104	104,447	08/01/2018	05/01/2042
53079E-BE-3	Liberty Mutual Group Inc-SR UNSECURE				2FE	3,433,915	100	3,231,333	3,205,000	3,381,453		(36,589)			4.250	2.923	JD	6,054	136,213	10/30/2017	06/15/2023
53079E-BF-0	LIBERTY MUTUAL GROUP INC-SR UNSECURE				2FE	873,673	.97	102,144	850,000	825,506		(481)			4.850	4.670	FA	17,177	31,761	10/04/2018	08/01/2044
53117C-AP-7	LIBERTY PROPERTY LP-SR UNSECURED NOT				2FE	6,286,286	.98	6,205,481	6,300,000	6,293,137		1,368			3.375	3.401	JD	9,450	212,625	12/02/2013	06/15/2023
53117C-AQ-5	LIBERTY PROPERTY LP-SR UNSECURED NOT				2FE	9,471,405	102	9,753,997	9,500,000	9,483,624		2,717			4.400	4.437	FA	157,911	418,000	09/24/2013	02/15/2024
53117C-AR-3	LIBERTY PROPERTY LP-SR UNSECURED				2FE	8,469,740	.97	8,281,277	8,500,000	8,479,477		2,807			3.750	3.793	AO	79,688	318,750	03/17/2015	04/01/2025
53217V-AC-3	LIFE TECHNOLOGIES CORP-SR UNSECURED				2FE	5,925,955	102	5,139,971	5,000,000	5,164,764		(136,811)			6.000	3.098	MS	100,000	300,000	01/01/2013	03/01/2020
53217V-AE-9	LIFE TECHNOLOGIES CORP-SR UNSECURED				2FE	2,253,826	102	2,049,153	2,000,000	2,063,924		(34,170)			5.000	3.150	JJ	46,111	100,000	01/01/2013	01/15/2021
532457-AZ-1	Eli Lilly & Co-SR UNSECURED				1FE	12,898,339	112	12,728,743	11,339,000	12,826,179		(72,161)			5.500	3.636	MS	183,629	311,822	07/11/2018	03/15/2027
532457-BA-5	Eli Lilly & Co-SR UNSECURED				1FE	534,437	117	524,371	445,000	525,906		(2,937)			5.550	4.120	MS	7,272	24,698	12/15/2015	03/15/2037
532457-BG-2	Eli Lilly & Co-SR UNSECURED				1FE	5,441,450	108	5,423,110	5,000,000	5,436,921		(4,529)			4.650	4.088	JD	10,333	116,250	07/12/2018	06/15/2044
532457-BH-0	ELI LILLY & CO-SR UNSECURED				1FE	148,489	.96	144,482	150,000	148,929		150			2.750	2.872	JD	344	4,125	12/15/2015	06/01/2025
532457-BJ-6	ELI LILLY & CO-SR UNSECURED				1FE	737,590	.93	657,416	700,000	735,744		(862)			3.700	3.400	MS	8,633	103,600	10/20/2016	03/01/2045
532457-BJ-6	ELI LILLY & CO-SR UNSECURED				1FE	6,344,295	.93	6,231,366	6,635,000	6,348,605		3,579			3.700	3.966	MS	81,832	128,945	07/16/2018	03/01/2045
532457-BP-2	Eli Lilly & Co-SR UNSECURED				1FE	306,424	.96	309,823	320,000	306,719		294			3.100	3.680	MN	1,268	909	10/04/2018	05/15/2027
532457-BR-8	ELI LILLY & CO-SR UNSECURED				1FE	18,509,320	.97	18,194,739	18,610,000	18,511,728		1,831			3.950	3.981	MN	93,929	735,095	05/04/2017	05/15/2047
534187-AY-5	LINCOLN NATIONAL CORP-SR UNSECURED				2FE	2,737,286	103	2,580,374	2,500,000	2,613,101		(98,596)			6.250	2.146	FA	99,028	156,250	09/26/2017	02/15/2020
534187-BA-6	LINCOLN NATIONAL CORP-SR UNSECURED				2FE	32,197,774	125	31,514,630	25,063,000	32,097,611		(100,163)			7.000	4.875	JD	77,974	1,463,315	10/04/2018	06/15/2040
534187-BG-3	Lincoln National Corp-SR UNSECURED				2FE	442,214	.92	442,857	480,000	442,338		123			4.350	4.855	MS	8,960		10/04/2018	03/01/2048
534187-BH-1	Lincoln National Corp-SR UNSECURED				2FE	15,963,878	.96	16,196,809	16,700,000	15,981,184		17,306			3.800						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
539830-BD-0	LOCKHEED MARTIN CORP-SR UNSECURED			1	2FE	2,180,860	.911154	2,115,700	2,322,000	2,185,783		2,235			3.800	4.168	MS	29,412	74,384	10/04/2018	03/01/2045
539830-BH-1	LOCKHEED MARTIN CORP-SENIOR UNSECURED			1	2FE	273,687	.992291	248,073	250,000	267,973		(2,410)			3.550	2.396	JJ	4,092	6,992	08/02/2016	01/15/2026
539830-BK-4	LOCKHEED MARTIN CORP-SENIOR UNSECURED			1	2FE	1,214,242	103.1828	1,147,393	1,112,000	1,206,727		(3,568)			4.500	3.804	MN	6,394	32,759	10/04/2018	05/15/2036
539830-BL-2	LOCKHEED MARTIN CORP-SENIOR UNSECURED			1	2FE	8,819,115	104.2031	8,383,140	8,045,000	8,800,820		(8,013)			4.700	4.114	MN	48,315	131,821	12/20/2018	05/15/2046
539830-BN-8	LOCKHEED MARTIN CORP-SENIOR UNSECURED			1	2FE	397,285	.933411	389,232	417,000	397,331		46			4.090	4.358	MS	5,022		10/04/2018	09/15/2052
540424-AR-9	Loews Corp-SR UNSECURED			1	1FE	109,359	.913778	100,516	110,000	109,404		14			4.125	4.160	MN	580	4,538	04/27/2015	05/15/2043
54246#-AA-5	Long Beach Judicial Part Senior Secured			2	1FE	58,919,592	128.9907	76,000,794	58,919,592	58,919,592					6.880	6.879	JD	2,052,815	4,041,469	11/26/2013	12/31/2047
546676-AV-9	LOUISVILLE GAS & ELEC-SECURED			1	1FE	5,384,311	105.1834	5,183,439	4,928,000	5,358,439		(10,298)			4.650	4.078	MN	29,281	229,152	02/02/2017	11/15/2043
546676-AX-5	LOUISVILLE GAS & ELEC-SECURED			1	1FE	378,247	.992419	348,339	351,000	376,763		(572)			4.375	3.920	AO	3,839	15,356	08/02/2016	10/01/2045
548661-CI-5	LOWE'S COMPANIES INC-SR UNSECURED			1	2FE	359,151	.982790	343,977	350,000	354,765		(1,486)			3.120	2.651	AO	2,305	10,920	12/15/2015	04/15/2022
548661-CX-3	LOWE'S COS INC-SENIOR UNSECURED NOTE			1	2FE	9,161,728	.944187	8,686,516	9,200,000	9,165,661		788			4.650	4.676	AO	90,313	427,800	04/16/2012	04/15/2042
548661-CX-3	LOWE'S COS INC-SENIOR UNSECURED NOTE			1	2FE	1,222,780	.944187	1,004,614	1,064,000	1,210,671		(4,046)			4.650	3.743	AO	10,445	49,476	08/02/2016	04/15/2042
548661-DD-6	LOWE'S COS INC-SR UNSECURED			1,5	2FE	872,516	.968463	798,982	825,000	858,751		(5,783)			3.125	2.318	MS	7,591	25,781	08/02/2016	09/15/2024
548661-DE-4	LOWE'S COS INC-SR UNSECURED			1,5	2FE	408,997	.884541	334,356	378,000	406,667		(672)			4.250	3.780	MS	4,730	112,547	05/11/2015	09/15/2044
548661-DE-4	LOWE'S COS INC-SR UNSECURED			1,5	2FE	7,603,833	.884541	6,819,807	7,710,000	7,605,057		1,224			4.250	4.338	MS	96,482	163,838	06/11/2018	09/15/2044
548661-DJ-3	LOWE'S COS INC-SR UNSECURED			1	2FE	3,081,541	.897970	2,649,012	2,950,000	3,076,924		(2,661)			4.375	4.103	MS	38,002	120,440	08/01/2018	09/15/2045
548661-DN-4	LOWE'S COS INC-SR UNSECURED			1	2FE	4,733,583	.815538	4,179,632	5,125,000	4,737,070		3,488			3.700	4.167	AO	40,032	94,812	07/16/2018	04/15/2046
548661-DO-7	LOWE'S COS INC-SR UNSECURED			1	2FE	23,410,227	.862291	20,324,202	23,570,000	23,413,865		2,862			4.050	4.089	MN	153,794	954,585	04/28/2017	05/03/2047
55279H-AJ-9	MANUF & TRADERS TRUST CO-SR UNSECURED			2	1FE	492,169	.989260	494,630	500,000	497,833		1,919			2.100	2.502	FA	4,229	10,500	12/15/2015	02/06/2020
55279H-AK-6	MANUF & TRADERS TRUST CO-SR UNSECURED			2	1FE	242,562	.960818	240,205	250,000	244,788		760			2.900	3.260	FA	2,920	7,250	12/15/2015	02/06/2025
55336V-AA-8	MPLX LP SR NT			1	2FE	2,789,920	.971202	2,719,366	2,800,000	2,793,265		937			4.000	4.044	FA	42,311	112,000	02/09/2015	02/15/2025
55336V-AE-0	MPLX LP-SENIOR UNSECURED			1	2FE	100,826	101.0011	101,001	100,000	100,571		(118)			4.500	4.353	JJ	2,075	4,500	09/27/2016	07/15/2023
55336V-AL-4	MPLX LP-SENIOR UNSECURED			1	2FE	31,425,688	.920497	28,053,994	30,477,000	31,407,146		(15,722)			5.200	4.993	MS	528,268	1,651,973	08/01/2018	03/01/2047
55336V-AL-4	MPLX LP-SENIOR UNSECURED			1	2FE	9,220,376	.920497	8,546,817	9,285,000	9,221,845		955			5.200	5.246	MS	160,940	482,820	02/07/2017	03/01/2047
55336V-AM-2	MPLX LP-SENIOR UNSECURED			1	2FE	552,745	.873347	506,541	580,000	553,125		380			4.500	4.873	AO	5,510	5,003	08/01/2018	04/15/2038
55336V-AN-0	MPLX LP-SENIOR UNSECURED			1	2FE	10,817,772	.868505	9,492,762	10,930,000	10,819,509		1,738			4.700	4.764	AO	108,450	330,478	10/04/2018	04/15/2048
55336V-AS-9	MPLX LP-SENIOR UNSECURED			1	2FE	79,546	.997537	79,803	80,000	79,546					4.800	4.872	FA	491		11/07/2018	02/15/2029
55374V-AA-1	MSN 1357 LLC Senior Secured Notes Class			2	2FE	17,370,936	100.8770	17,523,279	17,370,936	17,370,936					4.210	4.210	MON	63,337		11/30/2018	01/24/2028
55374V-AB-9	MSN 1357 LLC Senior Secured Notes Class			2	2FE	7,444,687	101.4277	7,550,975	7,444,687	7,444,687					5.000	5.000	MON	32,238		11/30/2018	01/24/2028
553794-AC-2	MUFG AMERICAS HLDGS CORP-SR UNSECURED			1	1FE	153,054	.958991	153,439	160,000	155,111		704			3.000	3.561	FA	1,880	4,330	12/15/2015	02/10/2025
55384#-AA-6	Mtd Products Inc. Senior Note Ser			2		8,000,000	.913484	7,307,872	8,000,000	8,000,000					3.420	3.420	JJ	116,280	273,600	07/28/2016	07/28/2026
55384#-AB-4	Mtd Products Inc. Senior Note Ser			2		17,000,000	.899422	15,290,174	17,000,000	17,000,000					3.520	3.520	JJ	254,320	598,400	07/28/2016	07/28/2028
559080-AE-6	MAGELLAN MID PARTNERS LP-SENIOR UNSECURE			1	2FE	1,497,800	101.4764	1,400,375	1,380,000	1,389,501		(17,203)			6.550	5.232	JJ	41,680	90,390	04/18/2012	07/15/2019
559080-AG-1	MAGELLAN MIDSTREAM PARTN-SENIOR UNSECURE			1	2FE	166,324	100.3486	151,526	151,000	165,562		(326)			5.150	4.493	AO	1,642	7,777	08/02/2016	10/15/2043
559080-AH-9	MAGELLAN MID PARTNERS LP-SR UNSECURED			1	2FE	10,261,745	.944185	9,701,505	10,275,000	10,266,044		1,239			3.200	3.215	MS	96,813	328,800	02/25/2015	03/15/2025
559080-AJ-5	MAGELLAN MIDSTREAM PARTN-SENIOR UNSECURE			1	2FE	145,914	.880600	132,090	150,000	146,096		78			4.200	4.367	MS	1,855	6,300	08/02/2016	03/15/2045
559080-AL-0	MAGELLAN MIDSTREAM PARTN-SENIOR UNSECURE			1	2FE	16,415,153	.909880	15,099,466	16,595,000	16,421,414		3,187			4.250	4.315	MS	207,668	705,288	09/08/2016	09/15/2046
559080-AL-0	MAGELLAN MIDSTREAM PARTN-SENIOR UNSECURE			1	2FE	8,699,661	.909880	7,865,916	8,645,000	8,697,703		(1,033)			4.250	4.212	MS	108,183	367,413	12/08/2017	09/15/2046
559080-AM-8	Magellan Midstream Partn-Senior Unsecure			1	2FE	3,759,074	.889191	3,378,925	3,800,000	3,759,680		606			4.200	4.264	AO	39,013	159,600	02/02/2018	10/03/2047
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED			2	1FE	412,567	.983877	406,424	413,084	412,557		90			3.300	3.323	MS	19,691	14,877	03/22/2017	03/20/2032
56081#-AL-4	Major League Baseball Tr Senior Note Ser			1	1FE	7,938,819	100.6695	7,991,969	7,938,819	7,938,819					3.800	3.799	JD	17,598	301,675	09/12/2011	12/10/2021
56081#-AZ-3	Major League Baseball Tr Senior Secured			1	1FE	34,125,000	.918946	31,359,032	34,125,000	34,125,000					3.410	3.410	JD	67,880	1,163,663	06/10/2015	12/10/2030
56081#-BP-4	Major League Baseball Tr Senior Secured			1	1FE	7,900,000	.958801	7,574,528	7,900,000	7,900,000					4.010	4.010	JD	175,994		06/11/2018	12/10/2038
564759-OB-7	MANUF & TRADERS TRUST CO-SUBORDINATED NO			2	1FE	10,803,996	.990215	10,396,311	10,500,000	10,508,846		(3,778)			2.121	2.119	MJSD	189,266	(363,296)	01/01/2013	12/01/2021
565122-AB-4	Keurig Dr Pepper Inc-SENIOR UNSECURED			1,5	2FE	8,596,779	.992456	8,435,874	8,500,000	8,593,153		(3,626)			4.597	4.450	MN	39,075	195,372	07/20/2018	05/25/2028
565122-AC-2	Keurig Dr Pepper Inc-SENIOR UNSECURED			1,5	2FE	574,563	.996539	573,010	575,000	574,592		29			4.057	4.074	MN	2,333	11,664	09/21/2018	05/25/2023
565122-AD-0	Keurig Dr Pepper Inc-SENIOR UNSECURED			1,5	2FE	9,246,552	.995373	9,157,427	9,200,000	9,243,342		(3,210)			4.417	4.330	MN	40,636	203,182	06/20/2018	05/25/2025
565122-AE-8	Keurig Dr Pepper Inc-SENIOR UNSECURED			1,5	2FE	4,600,000	.973022	4,475,903	4,600,000	4,600,000					4.985	4.985	MN	22,931	11		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	Code	For Eig n	Bond Char	NAIC Designation and Admini- strative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor- tization) Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
56585A-AM-4	MARATHON PETROLEUM CORP-SENIOR UNSECURED			1	2FE	3,762,531	98.7302	3,638,208	3,685,000	3,760,679		(1,213)			5.850	5.698	JD	9,581	215,573	05/26/2017	12/15/2045
56585A-AS-1	Marathon Petroleum Corp-SENIOR UNSECURED			1.5	2FE	104,851	93.8436	98,536	105,000	104,850		(1)			3.800	3.818	AO	998		10/02/2018	04/01/2028
56585A-AT-9	Marathon Petroleum Corp-SENIOR UNSECURED			1.5	2FE	7,729,075	83.9375	6,580,702	7,840,000	7,729,031		(44)			4.500	4.588	AO	88,200		10/02/2018	04/01/2048
57169*-AT-4	Mars, Inc. Senior Note Ser			1	1	11,000,000	98.5754	10,843,294	11,000,000	11,000,000					3.490	3.490	AO	85,311	383,900	10/11/2012	10/11/2044
57169*-AU-1	Mars, Inc. Senior Note Ser			1	1	25,200,000	98.4998	24,821,950	25,200,000	25,200,000					3.740	3.740	AO	209,440	942,480	10/11/2012	10/11/2027
57169*-AX-5	Mars, Inc. Senior Note Ser			1	1	500,000	92.1203	460,602	500,000	500,000					2.720	2.720	MS	3,551	13,600	09/27/2016	09/27/2026
57169*-AY-3	Mars, Inc. Senior Note Ser			1	1	500,000	90.8670	454,335	500,000	500,000					2.820	2.820	MS	3,682	14,100	09/27/2016	09/27/2028
57169*-AZ-0	Mars, Inc. Senior Note Ser			1	1	500,000	87.2004	436,002	500,000	500,000					2.970	2.970	MS	3,878	14,850	09/27/2016	09/27/2031
57169*-BA-4	Mars, Inc. Senior Note Ser			1	1	41,000,000	88.1610	36,146,010	41,000,000	41,000,000					3.340	3.340	MS	357,566	1,369,400	09/27/2016	09/27/2036
57169*-BC-0	Mars, Inc. Senior Note Ser			1	1	20,000,000	90.3370	18,067,400	20,000,000	20,000,000					3.750	3.750	MS	195,833	750,000	09/27/2016	09/27/2046
57169*-BM-8	Mars, Inc. Senior Notes Se			1	1	56,000,000	98.9730	55,424,880	56,000,000	56,000,000					4.270	4.270	MS	611,084	2,391,200	03/29/2017	03/29/2042
57174*-AK-8	Marsh & McLennan Cos Inc-BOND			1	1FE	27,299,725	116.8385	29,793,824	25,500,000	26,910,431		(67,397)			5.875	5.308	FA	624,219	1,498,125	12/02/2013	08/01/2033
57174*-AR-3	Marsh & McLennan Cos Inc-SENIOR NOTE			1	1FE	4,347,041	103.0573	4,122,292	4,000,000	4,226,747		(95,443)			4.800	2.246	JJ	88,533	190,783	09/22/2017	07/15/2021
57174*-AX-0	Marsh & McLennan Cos Inc-SENIOR UNSECURE			1	1FE	5,887,365	98.2360	5,895,745	5,910,000	5,895,441		2,038			3.500	3.540	MS	63,779	206,850	09/03/2014	03/10/2025
57174*-AZ-5	Marsh & McLennan Cos Inc-SR UNSECURED			1	1FE	8,793,224	98.8198	8,696,139	8,800,000	8,794,704		585			3.750	3.759	MS	98,083	330,000	09/09/2015	03/14/2026
57174*-AZ-5	Marsh & McLennan Cos Inc-SR UNSECURED			1	1FE	12,827,801	98.8198	12,550,110	12,700,000	12,794,803		(11,808)			3.750	3.752	MS	141,552	476,250	02/23/2016	03/14/2026
57174*-BA-9	MARSH & MCLENNAN COS INC SR NT			1	1FE	24,972	98.8780	24,720	25,000	24,982		4			3.300	3.318	MS	245	825	03/09/2016	03/14/2023
57174*-BC-5	MARSH & MCLENNAN COS INC-SENIOR UNSECURE			1	1FE	1,112,542	93.2553	997,831	1,070,000	1,111,323		(795)			4.350	4.114	JJ	19,523	48,464	05/16/2017	01/30/2047
57174*-BC-5	MARSH & MCLENNAN COS INC-SENIOR UNSECURE			1	1FE	189,573	93.2553	187,443	201,000	189,621		48			4.350	4.716	JJ	3,667		10/04/2018	01/30/2047
57174*-BD-3	Marsh & McLennan Cos Inc-SENIOR UNSECURE			1	1FE	26,893,024	90.8248	24,613,517	27,100,000	26,894,194		1,170			4.200	4.245	MS	379,400	569,100	06/28/2018	03/01/2048
571903-AK-9	Marrriott International I-SENIOR UNSECURE			1	2FE	2,771,087	97.9318	2,746,987	2,805,000	2,790,260		3,637			3.250	3.401	MS	26,842	91,163	12/02/2013	09/15/2022
571903-AM-5	MARRIOTT INTERNATIONAL-SENIOR UNSECURED			1	2FE	312,654	99.2052	297,616	300,000	306,663		(2,524)			3.125	2.220	AO	1,979	9,375	08/02/2016	10/15/2021
571903-AR-4	MARRIOTT INTERNATIONAL-SENIOR UNSECURED			1	2FE	2,472,625	96.1394	2,403,485	2,500,000	2,480,375		6,128			2.300	2.570	JJ	26,514	57,129	09/22/2017	01/15/2022
571903-AU-7	MARRIOTT INTERNATIONAL-SENIOR UNSECURED			1	2FE	9,536,876	103.0767	8,786,255	8,524,000	8,848,089		(344,216)			7.150	2.913	JD	50,789	609,466	12/20/2016	12/01/2019
573284-AJ-5	MARTIN MARIETTA MATERIAL-SENIOR UNSECURE			1	2FE	1,728,000	111.3352	2,672,045	2,400,000	1,810,986		12,321			6.250	9.008	MN	25,000	150,000	06/15/2009	05/01/2037
573284-AR-7	MARTIN MARIETTA MATERIAL-SENIOR UNSECURE			1	2FE	1,095,256	99.4605	1,084,120	1,090,000	1,092,756		(1,972)			3.327	3.177	FIAN	12,262	30,744	09/28/2017	05/22/2020
574599-BL-9	MASCO CORP-SENIOR UNSECURED			1	2FE	9,156,208	100.0113	9,201,043	9,200,000	9,166,095		3,823			4.375	4.434	AO	100,625	402,500	03/10/2016	04/01/2026
575634-AS-9	MASSACHUSETTS ELECTRIC-SENIOR UNSECURED			1	1FE	44,977,646	119.0218	42,708,592	35,883,000	44,642,983		(198,267)			5.900	4.141	MN	270,518	2,347,410	04/11/2018	11/15/2039
575634-AT-7	MASSACHUSETTS ELECTRIC-SENIOR UNSECURED			1	1FE	22,480,000	94.0953	21,152,621	22,480,000	22,480,000					4.004	4.004	FA	340,037	900,099	08/02/2016	08/15/2046
575634-AT-7	MASSACHUSETTS ELECTRIC-SENIOR UNSECURED			1	1FE	17,846,872	94.0953	17,313,533	18,400,000	17,644,481		10,083			4.004	4.182	FA	278,323	736,736	04/07/2017	08/15/2046
575718-AA-9	MASS INSTITUTE OF TECH-NOTE			1	1FE	13,027,120	127.8780	13,911,853	10,879,000	13,021,716		(2,037)			5.600	4.662	JJ	304,612	609,224	07/19/2016	07/01/2111
575718-AB-7	MASS INSTITUTE OF TECH-UNSECURED BOND			1	1FE	40,998,572	109.7449	41,245,425	37,583,000	40,990,016		(3,057)			4.678	4.281	JJ	879,066	1,758,133	05/16/2017	07/01/2114
575718-AF-8	MASS INSTITUTE OF TECH-UNSECURED			1	1FE	10,481,337	91.0795	9,861,175	10,827,000	10,481,731		263			3.885	4.015	JJ	210,314	420,829	04/23/2018	07/01/2116
57633#-AA-9	Master Cutlery LLC Senior Secured			1	2FE	1,798,548	30.0000	1,079,129	3,597,096	1,079,129		179,855		1,798,548	13.000	13.000	JAJD	557,566	471,330	04/17/2015	04/17/2020
57636Q-AA-2	MASTERCARD INC-SR UNSECURED			1	1FE	150,178	99.7143	149,572	150,000	150,012		(56)			2.000	1.962	AO	750	3,000	12/15/2015	04/01/2019
57636Q-AB-0	MasterCard Inc-SR UNSECURED			1	1FE	454,441	100.6241	437,715	435,000	447,100		(2,120)			3.375	2.800	AO	3,670	14,681	12/15/2015	04/01/2024
577081-BB-7	Mattel Inc-SENIOR UNSECURED			1	4FE	2,338,000	89.2190	2,085,940	2,338,000	2,338,000					6.750	6.749	JD	79,346	157,815	12/15/2017	12/31/2025
57771*-AB-3	Maverik, Inc. Senior Note Ser			1	2	1,900,000	105.0378	1,995,718	1,900,000	1,900,000					6.110	6.109	MS	36,117	116,090	03/09/2011	03/09/2021
57771*-AC-1	Maverik, Inc. Senior Note Ser			1	2	7,700,000	109.4341	8,426,426	7,700,000	7,700,000					6.280	6.279	MS	150,441	483,560	03/09/2011	03/09/2023
578454-AB-6	MAYO CLINIC-UNSECURED NOTE			1	1FE	22,040,583	97.6198	21,671,596	22,200,000	22,054,722		3,681			3.774	3.816	MN	107,056	837,828	11/14/2014	11/15/2043
578454-AD-2	MAYO CLINIC-UNSECURED			1	1FE	28,275,000	100.6217	28,450,795	28,275,000	28,275,000					4.128	4.128	MN	149,141	1,167,192	03/10/2016	11/15/2052
579780-AH-0	MCCORMICK & CO-SR UNSECURED			1	2FE	160,462	100.9303	151,395	150,000	154,677		(1,980)			3.900	2.491	JJ	5,850		12/15/2015	07/15/2021
579780-AL-1	MCCORMICK & CO INC/MID-SENIOR UNSECURED			1	2FE	4,528,965	96.9658	4,363,463	4,500,000	4,521,723		(5,794)			2.700	2.556	FA	45,900	121,500	09/29/2017	08/15/2022
579780-AN-7	MCCORMICK & CO INC/MID-SENIOR UNSECURED			1	2FE	30,304,711	94.4668	30,321,017	32,097,000	30,392,690		87,979			3.400	4.138	FA	412,268	545,649	06/28/2018	08/15/2027
579780-AP-2	MCCORMICK & CO INC/MID-SENIOR UNSECURED			1	2FE	6,528,321	93.3855	6,121,418	6,555,000	6,528,723		477			4.200	4.224	FA	104,006	269,010	08/09/2017	08/15/2047
579780-AP-2	MCCORMICK & CO INC/MID-SENIOR UNSECURED			1	2FE	13,686,407	93.3855	12,607,039	13,500,000	13,681,372		(3,353)			4.200	4.119	FA	214,200	573,000	08/10/2017	08/15/2047
58013M-EC-4	McDonald's Corp-BOND			1	2FE	42,951,451	116.8305	41,865,027	35,834,000	42,230,892		(213,620)			6.300	4.					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
58013M-FH-3	MCDONALD'S CORP-SENIOR UNSECURED	1		2FE		4,469,920		95,6101	4,203,019	4,396,000		(1,302)			4.450	4.348	MS	65,207	202,068	04/12/2018	03/01/2047
58013M-FH-2	McDonald's Corp-SENIOR UNSECURED	1		2FE		4,818,500		95,1283	4,756,414	5,000,000		57			4.450	4.677	MS	84,056		12/21/2018	09/01/2048
581557-AM-7	McKesson Corp-DEBTURE	1		2FE		7,603,217		121,8160	7,369,870	6,050,000		(89,321)			7.650	5.297	MS	154,275	462,825	08/26/2010	03/01/2027
581557-BC-8	McKesson Corp-SENIOR UNSECURED NOTE	1		2FE		2,494,586		96,2415	2,141,372	2,225,000		(5,796)			4.883	4.146	MS	31,970	108,647	10/30/2017	03/15/2044
581557-BE-4	McKesson Corp-SENIOR UNSECURED NOTE	1		2FE		14,025,000		98,9386	13,876,139	14,025,000					3.796	3.796	MS	156,759	532,389	03/05/2014	03/15/2024
581557-BE-4	McKesson Corp-SENIOR UNSECURED NOTE	1		2FE		4,621,712		98,9386	4,551,176	4,600,000		(2,155)			3.796	3.798	MS	51,415	174,616	03/14/2014	03/15/2024
581550-AE-3	McKesson Corp-SENIOR UNSECURED NOTE	1		2FE		34,488		110,7188	38,752	35,000		9			6.000	6.105	MS	700	2,100	02/23/2011	03/01/2041
581550-AG-8	MCKESSON CORP-SR UNSECURED	1		2FE		106,281		96,5943	106,254	110,000		493			2.850	3.379	MS	923	3,135	12/09/2015	03/15/2023
582839-AE-6	MEAD JOHNSON NUTRITION C-SENIOR UNSECURE	1		1FE		4,011,525		101,3474	3,562,359	3,515,000		(76,643)			4.900	2.628	MN	28,706	172,235	01/01/2013	11/01/2019
582839-AF-3	MEAD JOHNSON NUTRITION C-SENIOR UNSECURE	1		1FE		37,346,123		122,5815	44,043,538	35,930,000		(35,077)			5.900	5.611	MN	353,312	2,119,870	12/02/2013	11/01/2039
582839-AG-1	MEAD JOHNSON NUTRITION C-SR UNSECURED	1		1FE		492,272		102,6185	543,878	530,000		679			4.600	5.075	JD	2,032	28,370	12/15/2015	06/01/2044
582839-AG-1	MEAD JOHNSON NUTRITION C-SR UNSECURED	1		1FE		1,270,908		102,6185	1,210,898	1,180,000		(1,957)			4.600	4.127	JD	4,523	54,280	08/02/2016	06/01/2044
585055-AQ-9	MEDTRONIC INC-SENIOR UNSECURED NOTE	1		1FE		10,640,435		126,9023	11,209,282	8,893,000		(42,033)			6.500	5.127	MS	169,054	574,145	05/11/2015	03/15/2039
585055-AT-3	MEDTRONIC INC-SENIOR NOTE	1		1FE		38,754,670		116,4454	43,602,976	37,445,000		(35,217)			5.550	5.294	MS	611,914	2,078,198	01/01/2013	03/15/2040
585055-AW-6	MEDTRONIC INC-SR UNSECURED	1		1FE		178,973		102,2745	166,707	163,000		(395)			4.500	3.901	MS	2,160	7,335	05/11/2015	03/15/2042
585055-AX-4	MEDTRONIC INC-SR UNSECURED	1		1FE		150,957		99,6177	149,427	150,494		(158)			3.125	3.008	MS	1,380	4,688	12/15/2015	03/15/2022
585055-BC-9	MEDTRONIC INC-SR UNSECURED	1		1FE		1,124,961		100,9588	1,095,402	1,085,000		(4,766)			3.625	3.101	MS	11,581	39,331	12/09/2015	03/15/2024
585055-BD-7	MEDTRONIC INC-SR UNSECURED	1		1FE		973,319		103,7591	918,268	885,000		(1,923)			4.625	4.029	MS	12,052	40,931	12/09/2015	03/15/2044
585055-BG-0	MEDTRONIC INC-SR UNSECURED	1		1FE		453,116		99,4880	447,696	450,000		(745)			2.500	2.327	MS	3,313	11,250	12/15/2015	03/15/2020
585055-BR-6	MEDTRONIC INC-SR UNSECURED	1		1FE		302,546		99,7239	299,172	300,000		(402)			3.150	2.999	MS	2,783	9,450	12/15/2015	03/15/2022
585055-BS-4	MEDTRONIC INC-SR UNSECURED	1		1FE		829,582		99,6049	796,839	800,000		(2,929)			3.500	3.049	MS	8,244	28,000	12/15/2015	03/15/2025
585055-BT-2	MEDTRONIC INC-SR UNSECURED	1		1FE		8,053,612		102,3840	7,787,324	7,606,000		(17,080)			4.375	3.924	MS	97,980	317,216	08/01/2018	03/15/2035
585055-BU-9	MEDTRONIC INC-SR UNSECURED	1		1FE		89,991,806		104,8442	82,575,295	78,760,000		(233,978)			4.625	3.803	MS	1,072,558	3,618,619	08/01/2018	03/15/2045
586054-AA-6	MEMORIAL SLOAN-KETTERING-SR UNSECURED	1		1FE		9,199,253		114,3862	9,125,730	7,978,000		(17,555)			5.000	4.006	JJ	199,450	398,900	06/20/2018	07/01/2042
586054-AB-4	MEMORIAL SLOAN-KETTERING-SR UNSECURED	1		1FE		1,038,275		99,8177	1,091,008	1,040,363		677			4.125	4.401	JJ	22,543	45,086	12/15/2015	07/01/2052
586054-AC-2	MEMORIAL SLOAN-KETTERING-SR UNSECURE	1		1FE		8,099,422		100,5252	7,926,410	7,885,000		(1,323)			4.200	4.057	JJ	165,585	295,785	07/24/2018	07/01/2055
589331-AD-9	MERCK SHARP & DOHME CORP-DEBTURE	1		1FE		5,633,545		122,5909	6,344,077	5,175,000		(19,767)			6.400	5.731	MS	110,400	331,200	03/19/2003	03/01/2028
589331-AM-9	MERCK SHARP & DOHME CORP-NOTE	1		1FE		6,234,089		121,5475	6,922,132	5,695,000		(14,642)			5.750	5.094	MN	41,842	327,463	06/07/2010	11/15/2036
589331-AQ-0	MERCK SHARP & DOHME CORP-SENIOR UNSECURE	1		1FE		4,930,998		127,1223	5,707,789	4,490,000		(9,967)			5.850	5.191	JD	132,062	262,665	12/02/2013	06/30/2039
589331-AS-6	MERCK & CO INC-SR UNSECURED	1		1FE		647,829		94,4577	628,144	665,000		244			3.600	3.759	MS	7,049	18,458	08/01/2018	09/15/2042
589331-AT-4	MERCK & CO INC-SR UNSECURED	1		1FE		1,703,727		97,7383	1,690,873	1,730,000		3,801			2.400	2.647	MS	12,225	41,520	12/15/2015	09/15/2022
58933Y-AA-3	MERCK & CO INC-SENIOR UNSECURED NOTE	1		1FE		1,951,542		102,0487	1,785,853	1,750,000		(28,119)			3.875	2.177	JJ	31,269	67,813	12/15/2015	01/15/2021
58933Y-AF-2	MERCK & CO INC-SENIOR UNSECURED NOTE	1		1FE		149,297		98,6535	147,980	150,000		91			2.800	2.870	MN	502	4,200	12/15/2015	05/18/2023
58933Y-AJ-4	MERCK & CO INC-SR UNSECURED	1		1FE		2,368,817		101,5277	2,317,877	2,283,000		(1,904)			4.150	3.925	MN	11,317	74,175	10/04/2018	05/18/2043
58933Y-AQ-8	MERCK & CO INC-SR UNSECURED	1		1FE		147,630		98,0614	147,092	150,000		380			2.350	2.630	FA	1,381	3,525	12/15/2015	02/10/2022
58933Y-AR-6	MERCK & CO INC-SR UNSECURED	1		1FE		289,848		96,7388	290,216	300,000		1,038			2.750	3.180	FA	3,231	8,250	12/15/2015	02/10/2025
58933Y-AS-4	MERCK & CO INC-SR UNSECURED	1		1FE		348,472		99,1045	346,866	350,000		372			1.850	1.960	FA	2,536	6,475	12/15/2015	02/10/2020
58933Y-AT-2	MERCK & CO INC-SR UNSECURED	1		1FE		1,940,897		96,0427	1,824,812	1,900,000		(937)			3.700	3.575	FA	27,534	70,966	10/30/2017	02/10/2045
58933Y-AT-2	MERCK & CO INC-SR UNSECURED	1		1FE		2,360,983		96,0427	2,390,503	2,489,000		1,792			3.700	4.007	FA	36,070	56,610	10/04/2018	02/10/2045
59022C-AJ-2	Bank of America Corp-SUBORDINATED NOTE	1		2FE		6,264,922		109,9037	6,179,884	5,623,000		(20,387)			6.110	5.195	JJ	145,061	343,565	08/02/2016	01/29/2037
59023V-AA-8	Bank of America Corp-BOND	1		2FE		8,393,115		129,3281	9,089,176	8,288,312		(45,064)			7.750	6.011	MN	71,110	544,670	08/02/2016	05/14/2038
590488-AA-6	Mesa Air Group, Inc. Class A Notes	1		1FL		37,702,670		98,9471	37,287,730	37,684,510		(2,878)			4.750	4.740	JJ	825,395	1,740,276	06/02/2016	01/15/2028
590738-AA-4	Mesquite Power LLC Senior Secured	1		2FE		40,158,917		103,0766	41,394,446	40,158,917					4.640	4.640	MJSD	936,863	1,178,028	04/09/2015	12/31/2039
590738-AB-2	Mesquite Power LLC Senior Secured	2		2FE		16,063,031		101,7712	16,347,539	16,063,031					4.640	4.641	MJSD	374,733	745,325	11/22/2017	12/31/2046
59156R-AE-8	METLIFE INC-SR UNSECURED	1		1FE		302,783		122,4538	300,012	245,000		(2,547)			6.500	4.500	JD	708	15,925	12/09/2015	12/15/2032
59156R-AX-6	MetLife Inc-SENIOR UNSECURED NOTE	1		1FE		5,712,425		103,1827	5,141,593	4,983,000		(101,977)			4.750	2.550	FA	167,920	282,706	12/15/2015	02/08/2021
59156R-BB-3	METLIFE INC-SR UNSECURED	1		1FE		160,343		102,9527	154,429	150,000		(1,276)			4.368	3.352	MJSD	291	6,552	12/15/2015	09/15/2023
59156R-BD-9	METLIFE INC-SR UNSECURED	1		1FE		2,212,678		93,6305	2,172,228	2,320,000		1,352			4.125	4.432	FA	36,685	64,790	10/04/2018	08/13/2042
59156R-BG-2	METLIFE INC-SR UNSECURED	1		1FE		2,300,691		104,3438	2,227,741	2,135,000		(3,536)			4.875	4.378	MN	13,878	104,081	05/16/2017	11/13/2043</

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
594918-AC-8	Microsoft Corp-SENIOR UNSECURED NOTE				1FE	8,069,656		100,6343	7,044,401	7,000,000	7,072,914		(173,140)		4.200	1.678	JD	24,500	294,000	01/01/2013	06/01/2019
594918-AD-6	Microsoft Corp-SENIOR UNSECURED NOTE				1FE	14,799,099		117,5143	17,162,967	14,605,000	14,605,000		(4,957)		5.200	5.107	JD	63,288	759,460	08/02/2016	06/01/2039
594918-AJ-3	Microsoft Corp-SENIOR NOTE				1FE	45,323,394		107,3986	44,402,890	41,344,000	45,137,898		(87,469)		4.500	3.867	AO	465,120	1,703,758	08/01/2018	10/01/2040
594918-AL-8	Microsoft Corp-SENIOR UNSECURED NOTE				1FE	218,699		102,7605	205,521	200,000	207,906		(3,643)		4.000	2.068	FA	3,178	(71,444)	12/15/2015	02/08/2021
594918-AM-6	Microsoft Corp-SENIOR UNSECURED NOTE				1FE	853,829		119,1176	825,485	693,000	843,213		(4,314)		5.300	3.830	FA	14,590	36,729	08/02/2016	02/08/2041
594918-AQ-7	MICROSOFT CORP-SR UNSECURED	1			1FE	144,922		97,6083	146,412	150,000	147,034		717		2.125	2.665	MN	407	3,188	12/15/2015	11/15/2022
594918-AR-5	Microsoft Corp-SR UNSECURED	1			1FE	2,905,091		93,0222	2,895,782	3,113,000	2,918,700		4,751		3.500	3.901	MN	13,922	108,955	08/02/2016	11/15/2042
594918-AU-8	MICROSOFT CORP-SR UNSECURED	1			1FE	1,157,064		96,5208	1,216,162	1,260,000	1,163,514		2,225		3.750	4.258	MN	7,875	47,250	12/15/2015	05/01/2043
594918-AX-2	Microsoft Corp-SR UNSECURED	1			1FE	313,440		112,3605	303,373	270,000	310,153		(971)		4.875	3.922	JD	585	13,163	12/09/2015	12/15/2043
594918-AY-0	MICROSOFT CORP-SR UNSECURED	1			1FE	598,890		99,1493	594,896	600,000	599,690		269		1.850	1.896	FA	4,286	11,100	12/15/2015	02/12/2020
594918-BA-1	MICROSOFT CORP-SR UNSECURED	1			1FE	396,722		98,7884	395,153	400,000	398,272		525		2.375	2.520	FA	3,668	9,500	12/15/2015	02/12/2022
594918-BB-9	MICROSOFT CORP-SR UNSECURED	1			1FE	194,342		96,9898	193,980	200,000	196,043		580		2.700	3.057	FA	2,085	5,400	12/15/2015	02/12/2025
594918-BC-7	Microsoft Corp-SR UNSECURED	1			1FE	808,743		95,4406	757,798	794,000	807,520		(651)		3.500	3.359	FA	10,730	27,416	10/30/2017	02/12/2035
594918-BC-7	Microsoft Corp-SR UNSECURED	1			1FE	250,782		95,4406	248,146	260,000	251,585		299		3.500	3.769	FA	3,514	7,175	08/01/2018	02/12/2035
594918-BD-5	MICROSOFT CORP-SR UNSECURED	1			1FE	1,288,037		96,7435	1,228,642	1,270,000	1,287,213		(401)		3.750	3.668	FA	18,389	47,078	10/30/2017	02/12/2045
594918-BD-5	MICROSOFT CORP-SR UNSECURED	1			1FE	1,065,908		96,7435	1,064,178	1,100,000	1,067,162		674		3.750	3.933	FA	15,927	38,438	08/01/2018	02/12/2045
594918-BE-3	MICROSOFT CORP-SR UNSECURED	1			1FE	1,477,350		98,2038	1,404,314	1,430,000	1,476,379		(605)		4.000	3.832	FA	22,086	57,200	10/30/2017	02/12/2055
594918-BE-3	MICROSOFT CORP-SR UNSECURED	1			1FE	8,206,966		98,2038	8,352,229	8,505,000	8,214,954		3,261		4.000	4.182	FA	131,355	340,200	05/16/2017	02/12/2055
594918-BK-9	MICROSOFT CORP-SR UNSECURED	1			1FE	4,872,813		103,6661	4,851,574	4,680,000	4,867,185		(4,840)		4.200	3.866	MN	31,668	143,897	06/07/2018	11/03/2035
594918-BL-7	MICROSOFT CORP-SR UNSECURED	1			1FE	2,513,208		106,0641	2,490,384	2,348,000	2,504,845		(3,407)		4.450	4.031	MN	16,834	104,486	08/02/2016	11/03/2045
594918-BM-5	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	2,271,616		111,9626	2,258,286	2,017,000	2,264,770		(2,927)		4.750	4.097	MN	15,436	95,808	08/02/2016	11/03/2055
594918-BR-4	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	1,590,667		93,2347	1,501,079	1,610,000	1,591,620		470		2.400	2.563	FA	15,349	35,602	12/17/2018	08/08/2026
594918-BS-2	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	919,319		94,1860	852,383	905,000	918,657		(585)		3.450	3.333	FA	12,402	28,690	10/30/2017	08/08/2036
594918-BS-2	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	728,631		94,1860	711,104	755,000	729,031		400		3.450	3.718	FA	10,347	13,024	08/01/2018	08/08/2036
594918-BT-0	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	1,555,980		95,7983	1,465,714	1,530,000	1,555,374		(546)		3.700	3.603	FA	22,487	146,333	10/30/2017	08/08/2046
594918-BT-0	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	11,117,355		95,7983	11,097,279	11,584,000	11,124,036		5,272		3.700	3.937	FA	170,253	243,812	10/04/2018	08/08/2046
594918-BU-7	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	22,982,240		97,5675	23,006,416	23,580,000	22,996,339		6,469		3.950	4.079	FA	369,977	931,410	05/16/2017	08/08/2056
594918-BU-7	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	826,622		97,5675	780,540	800,000	826,267		(320)		3.950	3.784	FA	12,552	31,600	10/30/2017	08/08/2056
594918-BZ-6	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	4,156,055		102,6161	3,950,720	3,850,000	4,144,742		(10,054)		4.100	3.511	FA	63,578	116,346	08/01/2018	02/06/2037
594918-CB-8	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	34,896,750		106,5464	37,291,224	35,000,000	34,897,213		988		4.500	4.516	FA	634,375	1,630,009	01/30/2017	02/06/2057
594918-CB-8	MICROSOFT CORP-SENIOR UNSECURED	1			1FE	6,564,526		106,5464	6,536,619	6,135,000	6,560,008		(3,385)		4.500	4.135	FA	111,197	207,788	06/26/2018	02/06/2057
595017-AF-1	MICROCHIP TECHNOLOGY INC-MCHP 1 5/8 02/1	8			4FE	5,000,000		97,6793	4,883,965	5,000,000	4,883,965		(116,035)		1.625	1.625	FA	30,694	50,556	02/10/2017	02/15/2027
59523U-AA-5	MID-AMERICA APT LP-SENIOR UNSECURED NOTE	1			2FE	9,373,527		102,5130	7,196,410	7,020,000	7,228,617		(41,610)		4.300	3.585	AO	63,726	301,860	05/07/2015	10/15/2023
59523U-AA-5	MID-AMERICA APT LP-SENIOR UNSECURED NOTE	1			2FE	9,310,418		102,5130	9,636,218	9,400,000	9,351,664		8,780		4.300	4.419	AO	85,331	404,200	10/08/2013	10/15/2023
59523U-AN-7	MID-AMERICA APARTMENTS L-SENIOR UNSECURE	1			2FE	8,479,237		96,5022	8,217,162	8,515,000	8,484,199		3,056		3.600	3.650	JD	25,545	306,540	05/02/2017	06/01/2027
595418-AB-6	Mid-Kansas Electric Co L 1st Mtg Bond Se	2			1FE	18,708,331		92,2647	17,261,185	18,708,331	18,708,331				4.130	4.129	JD	388,473	757,115	07/22/2013	06/30/2043
595620-AB-1	MIDAMERICAN ENERGY CO-SECURED	1			1FE	803,880		128,9784	748,075	580,000	766,947		(11,092)		6.750	3.619	JD	19,684	39,150	08/02/2016	12/30/2031
595620-AJ-4	MIDAMERICAN ENERGY CO-SECURED	1			1FE	454,174		99,8919	449,514	450,000	450,164		(1,354)		2.400	2.094	MS	3,180	10,800	12/15/2015	03/15/2019
595620-AK-1	MIDAMERICAN ENERGY CO-SECURED	1			1FE	156,225		101,1635	151,745	150,000	153,877		(800)		3.700	3.075	MS	1,634	5,550	12/15/2015	09/15/2023
595620-AM-7	MIDAMERICAN ENERGY CO-SECURED	1			1FE	204,870		101,6745	203,349	200,000	203,307		(538)		3.500	3.172	AO	1,478	7,000	12/15/2015	10/15/2024
595620-AR-6	MIDAMERICAN ENERGY CO-SECURED	1			1FE	481,033		96,8071	440,472	455,000	480,450		(515)		3.950	3.631	FA	7,489	26,961	10/30/2017	08/01/2047
595620-AR-6	MIDAMERICAN ENERGY CO-SECURED	1			1FE	544,729		96,8071	546,960	565,000	544,864		134		3.950	4.164	FA	9,299		08/01/2018	08/01/2047
59562E-AH-8	MIDAMERICAN ENERGY CO-SECURED	1			1FE	727,472		119,9356	701,623	585,000	722,723		(4,231)		5.800	3.945	AO	12,818	26,136	08/01/2018	10/15/2036
59562H-AJ-7	MIDAMERICAN FUNDING LLC-SECURED	1			1FE	77,949		125,0673	68,787	55,000	74,174		(1,597)		6.927	2.935	MS	1,270	3,810	08/02/2016	03/01/2029
59562V-AM-9	BERKSHIRE HATHAWAY ENERG-SR UNSECURED	1			1FE	7,898,283		119,7015	7,200,047	6,015,000	7,706,820		(67,976)		6.125	3.873	AO	92,105	368,419	08/02/2016	04/01/2036
59562V-AP-2	BERKSHIRE HATHAWAY ENERG-BOND	1			1FE	1,542,502		116,9592	1,497,077	1,280,000	1,524,242		(8,658)		5.950	4.410	MN	9,732	76,160	05/16/2017	05/15/2037
59562V-AR-8	BERKSHIRE HATHAWAY ENERG-SENIOR UNSECURE	1			1FE	6,624,693		123,2362	6,084,172	4,937,000	6,471,736		(53,983)		6.500	4.099	MS	94,489	320,905	08/02/2016	09/15/2037
59562V-BD-8	BERKSHIRE HATHAWAY ENERG-SR UNSECURED	1			1FE	1,481,281		106,7208	1,321,204	1,238,000</											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
607059-AT-9	Mobil Corp-DEBENTURE				1FE	2,237,880		114,4762	2,289,524	2,000,000				(16,763)	8.625	7.549	FA	65,167	172,500	03/31/1997	08/15/2021
607369-D*-3	Mobile Gas Service Corpo 1st Mtg Bond				1	9,710,710		99,6557	9,500,000	9,500,000				(25,084)	4.140	3.838	MS	99,418	393,300	01/01/2013	09/30/2021
60871R-AD-2	MOLSON COORS BREWING CO-SENIOR UNSECURED	1			2FE	62,594,722		94,1276	52,278,485	55,540,000				(166,833)	5.000	4.188	MN	462,833	2,777,000	04/20/2017	05/01/2042
60871R-AF-7	MOLSON COORS BREWING CO-SENIOR UNSECURED	1			2FE	4,515,443		96,4153	4,406,178	4,570,000				13,957	2.100	2.431	JJ	44,253	95,970	09/29/2017	07/15/2021
60871R-AG-5	MOLSON COORS BREWING CO-SENIOR UNSECURED	1			2FE	20,607,041		89,0593	20,145,209	22,620,000				116,564	3.000	4.313	JJ	312,910	652,819	08/01/2018	07/15/2026
60871R-AH-3	MOLSON COORS BREWING CO-SENIOR UNSECURED	1			2FE	33,981,954		83,0803	29,280,828	35,244,000				20,350	4.200	4.418	JJ	682,559	1,447,017	10/04/2018	07/15/2046
610202-BP-7	MONONGAHELA POWER CO-SECURED	1			1FE	46,138,615		116,5053	45,130,652	38,737,000				(84,364)	5.400	4.165	JD	92,969	1,105,440	12/19/2018	12/15/2043
615369-AB-1	Moody's Corp-SENIOR UNSECURED NOTE	1			2FE	12,303,032		102,8626	12,754,967	12,400,000				9,941	4.500	4.598	MS	186,000	558,000	08/15/2012	09/01/2022
615369-AC-9	Moody's Corp-SENIOR UNSECURED NOTE	1			2FE	13,174,608		105,2218	13,941,883	13,250,000				6,965	4.875	4.945	FA	244,021	645,938	08/07/2013	02/15/2024
615369-AE-5	MOODY'S CORPORATION-SENIOR UNSECURED	1			2FE	486,608		107,8010	431,204	400,000				(1,847)	5.250	3.957	JJ	9,683	21,000	10/20/2016	07/15/2044
617446-7X-1	MORGAN STANLEY-SUBORDINATED	1			2FE	265,924		101,9667	244,720	240,000				(2,514)	5.000	3.622	MN	1,233	12,000	08/02/2016	11/24/2025
617446-7Y-9	Morgan Stanley-SUBORDINATED NOTE	1			2FE	1,196,024		97,1804	1,102,998	1,135,000				(5,524)	4.350	3.688	MS	15,497	49,373	10/30/2017	09/08/2026
617446-8C-6	MORGAN STANLEY-SR UNSECURED	1			1FE	1,570,295		98,6550	1,469,960	1,490,000				(9,015)	4.000	3.235	JJ	26,158	59,600	10/30/2017	07/23/2025
617446-HD-4	Morgan Stanley-SR UNSECURED	1			1FE	3,052,013		125,9169	2,809,206	2,231,000				(39,544)	7.250	4.116	AO	40,437	161,748	08/02/2016	04/01/2032
61744Y-AL-2	MORGAN STANLEY-SENIOR UNSECURED	1,5			1FE	558,905		91,1260	501,193	550,000				(291)	3.971	3.852	JJ	9,646	45,992	10/30/2017	07/22/2038
61744Y-AL-2	MORGAN STANLEY-SENIOR UNSECURED	1,5			1FE	1,426,846		91,1260	1,376,003	1,510,000				1,053	3.971	4.388	JJ	26,483		08/01/2018	07/22/2038
61744Y-AP-3	Morgan Stanley-SENIOR UNSECURED	1			1FE	17,723,220		95,6775	17,604,656	18,400,000				27,341	3.772	4.205	JJ	302,682	348,952	06/26/2018	01/24/2029
61744Y-AR-9	Morgan Stanley-SENIOR UNSECURED	1			1FE	195,000		96,8188	188,797	195,000					4.457	4.457	AO	1,666	4,297	04/19/2018	04/22/2039
61746B-CY-0	Morgan Stanley-SENIOR UNSECURED NOTE	1			1FE	824,200		110,7320	730,831	660,000				(788,975)	6.250	3.314	FA	16,271	41,250	08/02/2016	08/09/2026
61746B-DJ-2	Morgan Stanley-SR UNSECURED	1			1FE	1,588,377		99,8237	1,522,312	1,525,000				(8,372)	3.750	3.111	FA	20,016	57,188	02/16/2017	02/25/2023
61746B-DM-5	MORGAN STANLEY-SR UNSECURED	1			1FE	227,065		99,9592	224,908	225,000				(684)	2.500	2.191	JJ	2,453	5,625	12/15/2015	01/24/2019
61746B-DQ-6	Morgan Stanley-SR UNSECURED	1			1FE	2,733,523		99,5221	2,592,550	2,605,000				(14,236)	3.875	3.212	AO	17,385	100,944	08/02/2016	04/29/2024
61746B-EF-9	MORGAN STANLEY-SENIOR UNSECURED	1			1FE	219,210		95,0398	204,336	215,000				(411)	3.625	3.376	JJ	3,486	7,686	08/01/2018	01/20/2027
61746B-EG-7	MORGAN STANLEY-SENIOR UNSECURED	1			1FE	6,894,743		94,6440	6,521,916	6,891,000				(216)	4.375	4.371	JJ	133,154	292,910	10/04/2018	01/22/2047
61747Y-CG-8	Morgan Stanley-SENIOR UNSECURED NOTE	1			1FE	1,791,792		101,5178	1,522,768	1,500,000				(73,479)	7.300	2.276	MN	14,600	109,500	04/27/2015	05/13/2019
61747Y-CM-5	MORGAN STANLEY-SENIOR UNSECURED	1			1FE	1,004,946		102,2719	920,447	900,000				(30,251)	5.500	2.014	JJ	21,313	49,500	08/02/2016	01/26/2020
61747Y-DW-2	MORGAN STANLEY-SR UNSECURED	1			1FE	348,544		99,2494	347,373	350,000				359	2.650	2.758	JJ	3,968	9,275	12/15/2015	01/27/2020
61747Y-DY-8	MORGAN STANLEY-SR UNSECURED	1			1FE	11,846,303		93,5345	10,830,360	11,579,000				(5,646)	4.300	4.158	JJ	212,989	494,559	08/01/2018	01/27/2045
61748Z-V9-2	Morgan Stanley-SENIOR UNSECURED BOND	1			1FE	8,808,058		122,3797	8,278,985	6,765,000				(44,560)	6.375	4.425	JJ	188,081	419,657	08/01/2018	07/24/2042
61761J-3R-8	MORGAN STANLEY-SENIOR UNSECURED	1			1FE	379,065		92,4634	360,607	390,000				79	3.125	3.518	JJ	5,214	5,295	08/01/2018	07/27/2026
61761J-VL-0	Morgan Stanley-SR UNSECURED	1			1FE	1,527,011		98,3390	1,430,833	1,455,000				(7,940)	3.700	3.035	AO	10,169	53,835	08/02/2016	10/23/2024
61761J-ZN-2	Morgan Stanley-SUBORDINATED	1			2FE	1,271,117		94,2794	1,192,635	1,260,000				(563)	3.950	3.888	AO	9,438	49,968	08/02/2016	04/23/2027
61945C-AA-1	MOSAIC CO/THE-SENIOR UNSECURED NOTE	1			2FE	33,668,970		100,4565	32,261,596	32,115,000				(185,399)	3.750	3.110	MN	153,884	1,204,313	06/04/2013	11/15/2021
61980A-AC-7	MOTIVA ENTERPRISES LLC-NOTE	1			2FE	4,328,177		101,7525	3,636,633	3,574,000				(3,693,683)	5.750	2.464	JJ	94,761	(20,340)	12/02/2013	01/15/2020
61980A-AD-5	MOTIVA ENTERPRISES LLC-SENIOR UNSECURED	1			2FE	27,942,255		104,3999	24,220,768	23,200,000				(108,904)	6.850	5.401	JJ	732,798	1,589,200	05/16/2017	01/15/2040
620076-BE-8	MOTOROLA SOLUTIONS INC-SENIOR UNSECURED	1			2FE	295,223		90,8761	272,628	300,000				295,387	5.500	5.613	MS	5,500	16,500	10/20/2016	09/01/2044
628530-BC-0	MYLAN INC-SENIOR UNSECURED	1			2FE	18,151,649		84,6320	13,689,221	16,175,000				(41,082)	5.400	4.602	MN	77,640	873,450	07/13/2016	11/29/2043
62912X-AF-1	NGPL PIPECO LLC-SENIOR UNSECURED	1			3FE	704,000		94,2500	663,520	704,000				704,000	4.875	4.875	FA	12,965	34,320	07/25/2017	08/15/2027
629276-AA-6	NHL U.S. Funding LP Senior Secured	1			2PL	3,500,000		98,0381	3,431,334	3,500,000				3,500,000	4.180	4.180	MJSD	7,721	146,300	09/29/2014	09/29/2024
629276-AB-4	NHL U.S. Funding LP Senior Secured	1			2PL	23,100,000		96,9207	22,388,682	23,100,000				23,100,000	4.330	4.330	MJSD	52,790	1,000,230	09/29/2014	09/26/2026
629276-AC-2	NHL U.S. Funding LP Senior Note US Serie	1			1PL	2,299,065		96,5936	2,220,750	2,299,065				2,299,065	3.980	3.980	JAJD	27,705	15,250	07/12/2018	07/12/2025
629276-AE-8	NHL U.S. Funding LP Senior Note US Serie	1			1PL	21,712,707		92,9090	20,173,059	21,712,707				21,712,707	4.220	4.220	JAJD	277,428	152,713	07/12/2018	07/12/2030
62963F-AA-9	NRP (Operating) LLC Senior Note Ser	1			4	2,156,054		96,3851	2,078,115	2,156,054				2,156,054	5.550	5.547	JD	3,989	61,090	09/19/2003	06/19/2023
62963F-AD-3	NRP (Operating) LLC Senior Note Ser	1			4	1,276,595		97,6167	1,246,170	1,276,595				1,276,595	5.050	5.046	JJ	29,011	(55,741)	01/19/2006	07/19/2020
62963F-AF-8	NRP (Operating) LLC Senior Note Ser	1			4	599,880		100,1914	601,028	599,880				599,880	8.380	8.378	MS	13,405	(142,563)	03/25/2009	03/25/2019
62963F-AG-6	NRP (Operating) LLC Senior Note Ser	1			4	2,465,646		103,0239	2,540,205	2,465,646				2,465,646	8.920	8.919	MS	58,650	206,614	03/25/2009	03/25/2024
62963F-AH-4	NRP (Operating) LLC Senior Note Ser	1			4	1,849,395		93,0808	1,721,432	1,849,395				1,849,395	4.730	4.728	JD	60,123	50,545	04/20/2011	12/01/2023
62963F-AJ-0	NRP (Operating) LLC Senior Note Ser	1			4	2,578,142		91,3671	2,355,574	2,578,142				2,578,142	5.030	5.028	JD	75,647	116,271	04/20/2011	12/01/2026
62963F-AK-7	NRP (OPER) LLC SR NT SER J	1			4	2,277,536		91,3671	2,080,919	2,277,536				2,277,536	5.030	5.028	JD	7			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
637071-AJ-0	NATIONAL OILWELL VARCO I-SR UNSECURED			1	2FE	262,711	94.3974	283,192	300,000	277,486		5,117			2.600	4.721	JD	650	7,800	12/15/2015	12/01/2022
637071-AK-7	National Oilwell Varco I-SR UNSECURED			1	2FE	21,122,612	79.8072	19,822,509	24,838,000	21,202,762		50,585			3.950	5.005	JD	81,758	721,059	10/15/2018	12/01/2042
637417-AE-6	NATL RETAIL PROPERTIES-SENIOR UNSECURED			1	2FE	7,165,761	100.5141	7,287,269	7,250,000	7,214,548		8,431			3.800	3.939	AO	58,161	275,500	08/08/2012	10/15/2022
637417-AG-1	NATL RETAIL PROPERTIES-SENIOR UNSECURED			1	2FE	10,877,982	100.0522	10,905,691	10,900,000	10,887,102		2,055			3.900	3.924	JD	18,893	425,100	05/05/2014	06/15/2024
637417-AL-0	National Retail Properti-SENIOR UNSECURE			1	2FE	6,369,325	100.4929	6,446,620	6,415,000	6,369,899		573			4.300	4.388	AO	72,026		09/18/2018	10/15/2028
637432-CT-0	NATIONAL RURAL UTIL COOP-NOTE			1	1FE	406,634	137.6173	378,447	275,000	384,952		(6,215)			8.000	4.051	MS	7,333	22,000	04/27/2015	03/01/2032
637432-MQ-5	NATIONAL RURAL UTIL COOP COLL TR BD			1	1FE	536,227	99.6439	515,159	517,000	524,517		(2,494)			3.050	2.522	FA	5,957	15,769	07/20/2016	02/15/2022
637432-MS-1	NATIONAL RURAL UTIL COOP-SECURED			1	1FE	708,912	103.1600	689,109	668,000	702,075		(1,971)			4.023	3.539	MN	4,479	26,874	05/11/2015	11/01/2032
637432-MS-1	NATIONAL RURAL UTIL COOP-SECURED			1	1FE	750,539	103.1600	778,858	755,000	751,126		203			4.023	4.071	MN	5,062	30,374	12/15/2015	11/01/2032
637432-MU-6	NATIONAL RURAL UTIL COOP-SECURED			1	1FE	148,253	98.9800	148,470	150,000	149,409		393			2.350	2.627	JD	157	3,525	12/15/2015	06/15/2020
637432-NB-7	NATIONAL RURAL UTIL COOP-SECURED			1	1FE	185,083	99.4282	183,942	185,000	185,017		(22)			2.300	2.288	MN	544	4,255	12/09/2015	11/15/2019
637432-NB-7	NATIONAL RURAL UTIL COOP-SECURED			1	1FE	166,696	99.4282	166,045	167,000	166,928		79			2.300	2.349	MN	491	3,841	12/15/2015	11/15/2019
637432-NC-5	NATIONAL RURAL UTIL COOP-SECURED			1	1FE	196,298	99.0539	198,108	200,000	198,998		913			2.000	2.478	JJ	1,711	4,000	12/15/2015	01/27/2020
637432-ND-3	NATIONAL RURAL UTIL COOP-SECURED			1	1FE	146,378	96.4371	144,656	150,000	147,470		372			2.850	3.157	JJ	1,829	4,275	12/15/2015	01/27/2025
639612-AK-7	NATIONWIDE FINANCIAL SER-SENIOR UNSECURE			1	2FE	2,667,275	103.6182	2,590,455	2,500,000	2,551,317		(21,487)			5.375	4.397	MS	35,833	134,375	01/01/2013	03/25/2021
63946B-AD-2	NBCUNIVERSAL MEDIA LLC-NOTE			1	1FE	8,655,271	102.6620	8,880,267	8,650,000	8,652,812		(2,571)			5.150	5.118	AO	75,483	445,475	12/15/2015	04/30/2020
63946B-AE-0	NBCUNIVERSAL MEDIA LLC-SR UNSECURED			1	1FE	380,838	102.4978	358,742	350,000	363,658		(5,827)			4.375	2.577	AO	3,828	15,313	12/15/2015	04/01/2021
63946B-AF-7	NBCUNIVERSAL MEDIA LLC-NOTE			1	1FE	45,473,053	117.5794	49,016,496	41,688,000	45,099,789		(87,022)			6.400	5.715	AO	452,083	2,668,032	04/30/2017	04/30/2040
63946B-AG-5	NBCUNIVERSAL MEDIA LLC-SR UNSECURED			1	1FE	7,028,451	114.7763	6,069,372	5,288,000	6,917,360		(45,639)			5.950	3.869	AO	78,659	314,636	05/16/2017	04/01/2041
63946B-AH-3	NBCUNIVERSAL MEDIA LLC-SR UNSECURED			1	1FE	247,917	98.1722	245,431	250,000	248,755		285			2.875	3.007	JJ	3,314	7,188	12/15/2015	01/15/2023
63946B-AJ-9	NBCUNIVERSAL MEDIA LLC-SENIOR UNSECURED			1	1FE	4,020,702	96.3930	3,812,344	3,955,000	4,015,790		(1,519)			4.450	4.344	JJ	81,154	175,998	08/02/2016	01/15/2043
64116F-AA-1	Netrality Property Trust Senior Note Ser			2	2FE	25,000,000	100.9023	25,225,575	25,000,000	25,000,000					4.760	4.760	AO	280,972	1,190,000	04/06/2017	04/06/2021
64116F-AC-7	Netrality Property Trust Senior Note Ser			2	2FE	23,000,000	102.0258	23,465,934	23,000,000	23,000,000					5.110	5.110	AO	277,501	1,175,300	04/06/2017	04/06/2023
64128X-AG-5	NEUBERGER BERMAN GRP/FIN-SENIOR UNSECURE			1	2FE	17,980,906	99.9111	18,108,895	18,125,000	18,001,109		12,067			4.500	4.600	MS	240,156	815,625	03/09/2017	03/15/2027
641423-BP-2	NEVADA POWER CO-SECURED NOTE			1	1FE	43,158,897	129.7202	50,336,614	38,804,000	42,386,784		(137,254)			6.650	5.753	AO	645,117	2,580,466	12/09/2015	04/01/2036
641423-BU-1	NEVADA POWER CO-SENIOR NOTE			1	1FE	2,203,249	129.5940	2,773,312	2,140,000	2,199,473		(2,523)			6.750	6.450	JJ	72,225	144,450	12/09/2015	07/01/2037
641423-BY-3	NEVADA POWER CO-SENIOR NOTE			1	1FE	9,836,481	100.8337	8,399,443	8,330,000	8,375,079		(217,346)			7.125	4.405	MS	174,756	593,513	03/29/2011	03/15/2019
641423-BZ-0	NEVADA POWER CO-BOND			1	1FE	4,984,450	111.5146	5,575,731	5,000,000	4,986,217		318			5.375	5.396	MS	79,132	269,929	09/09/2010	09/15/2040
641423-BZ-0	NEVADA POWER CO-BOND			1	1FE	5,980,456	111.5146	5,782,033	5,185,000	5,876,611		(19,327)			5.375	4.398	MS	82,060	273,319	10/04/2018	09/15/2040
641423-CA-4	Nevada Power Co-SECURED			1,5	1FE	1,133,898	115.1514	1,057,090	918,000	1,118,463		(5,722)			5.450	3.946	MN	6,393	50,031	05/16/2017	05/15/2041
64716F-AA-5	New Mexico Gas Company, Senior Secured			2		10,350,000	101.7572	10,531,870	10,350,000	10,350,000					4.870	4.868	FA	200,218	504,405	02/08/2011	02/08/2021
649322-AA-2	NY & PRESBYTERIAN HOSPIT-UNSECURED			1	1FE	4,844,155	97.2321	4,833,407	4,971,000	4,846,772		1,325			4.024	4.180	FA	83,347	101,539	08/01/2018	08/01/2045
649322-AC-8	New York and Presbyteria-UNSECURED			1	1FE	22,703,492	93.3438	22,236,357	23,822,000	22,722,986		19,494			3.563	3.929	FA	353,657	378,605	08/01/2018	08/01/2036
649322-AD-6	New York and Presbyteria-UNSECURED			1	1FE	10,294,572	96.6647	10,086,961	10,435,000	10,295,139		568			4.063	4.133	FA	176,656	95,379	09/17/2018	08/01/2056
64952W-CX-9	New York Life Global Fun-SECURED			1	1FE	9,319,367	95.6469	9,435,562	9,865,000	9,342,071		22,704			3.000	3.696	JJ	140,576		07/10/2018	01/10/2028
649840-C*-4	New York State Electric Senior Note Ser			1		25,050,000	102.9677	25,793,409	25,050,000	25,050,000					4.550	4.550	MS	341,933	1,139,775	09/13/2012	09/13/2042
651229-AV-8	Newell Brands Inc-SENIOR UNSECURED			1,5	2FE	587,910	98.5345	591,207	600,000	588,533		623			3.850	4.346	AO	5,775	11,550	09/21/2018	04/01/2023
651229-AX-4	Newell Brands Inc-SENIOR UNSECURED			1,5	2FE	1,572,716	95.1439	1,312,966	1,380,000	1,561,168		(7,286)			5.375	4.269	AO	18,544	74,175	05/16/2017	04/01/2036
651229-AY-2	NEWELL BRANDS INC-SENIOR UNSECURED			1,5	2FE	17,307,399	94.9359	14,382,786	15,150,000	17,229,600		(39,004)			5.500	4.602	AO	208,313	833,250	05/16/2017	04/01/2046
651639-AE-6	Newmont Mining Corp-SENIOR UNSECURED NOT			1	2FE	9,571,546	107.6304	9,638,303	8,955,000	9,465,699		(19,776)			5.875	5.341	AO	131,527	526,106	10/30/2017	04/01/2035
651639-AM-8	Newmont Mining Corp-SENIOR UNSECURED NOT			1	2FE	23,352,138	109.5033	23,721,701	21,663,000	23,165,132		(36,507)			6.250	5.669	AO	338,484	1,316,798	08/01/2018	10/01/2039
651639-AN-6	Newmont Mining Corp-SENIOR UNSECURED NOT			1	2FE	8,250,912	98.9564	7,916,511	8,000,000	8,090,558		(8,822)			3.500	3.096	MS	82,444	280,000	01/01/2013	03/15/2022
651639-AP-1	Newmont Mining Corp-SENIOR UNSECURED NOT			1	2FE	6,179,472	94.5581	5,673,487	6,000,000	6,158,733		(3,869)			4.875	4.684	MS	86,125	292,500	01/01/2013	03/15/2042
65339K-AX-8	NextEra Energy Capital H-SENIOR UNSECURE			2	2FE	8,142,077	99.8876	8,125,860	8,135,000	8,141,019		(1,058)			3.053	2.987	MJSD	73,612		11/05/2018	09/03/2019
65364U-AA-4	NIAGARA MOHAWK POWER-SENIOR UNSECURED NO			1,5	1FE	2,335,690	100.8857	2,017,715	2,000,000	2,033,558		(53,083)			4.881	2.148	FA	36,879	97,620	01/01/2013	08/15/2019
65364U-AE-6	NIAGARA MOHAWK POWER-SENIOR UNSECURED NO			1	1FE	19,000,000	96.5246	18,339,665	19,000,000	19,000,000					4.119	4.119	MN	71,739	782,610	11/20/2012	11/28/2042
65364U-AH-9	NIAGARA MOHAWK POWER-SR UNSECURED			1	1FE	179,740	100.4831	180,870	180,000	179,768		10			4.278	4.289	AO	1,925	7,700	12/09/2015	10/01/2034
65364U-AH-9	NIAGARA MOHAWK POWER-SR UNSECURED			1	1FE	241,															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
654730-BB-8	NISOURCE FINANCE CORP-SENIOR UNSECURED B			1	2FE	1,189,567		1,026,768	1,000,000	1,174,511					5.250	4.090	FA	19,833	52,500	04/27/2015	02/15/2043
654730-BC-6	NISOURCE FINANCE CORP-SENIOR UNSECURED B			1	2FE	247,296		261,403	270,000	249,025					4.800	5.363	FA	4,896	12,960	12/02/2013	02/15/2044
654730-BC-6	NISOURCE FINANCE CORP-SENIOR UNSECURED B			1	2FE	1,493,041		1,276,034	1,318,000	1,479,797					4.800	4.011	FA	23,900	63,264	05/11/2015	02/15/2044
654730-BD-4	NISOURCE FINANCE CORP-SENIOR UNSECURED B			1	2FE	14,901,150		16,330,579	15,000,000	14,906,055					5.650	5.696	FA	353,125	855,435	10/03/2013	02/01/2045
654730-BD-4	NISOURCE FINANCE CORP-SENIOR UNSECURED B			1	2FE	17,354,067		15,755,743	14,472,000	17,243,222					5.650	4.394	FA	340,695	781,508	10/04/2018	02/01/2045
654730-BF-9	NISOURCE FINANCE CORP-SENIOR UNSECURED			1	2FE	806,530		707,023	760,000	805,501					4.375	4.016	MN	4,249	33,250	10/30/2017	05/15/2047
654730-BG-7	NISOURCE FINANCE CORP-SENIOR UNSECURED			1	2FE	18,032,511		16,081,532	18,085,000	18,032,509					3.950	3.966	MS	180,574	705,108	10/04/2018	03/30/2048
655044-AE-5	NOBLE ENERGY INC-SENIOR UNSECURED NOTE			1	2FE	6,644,808		5,402,692	5,535,000	6,509,855					6.000	4.695	MS	110,700	332,100	08/02/2016	03/01/2041
655044-AG-0	NOBLE ENERGY INC NT			1	2FE	166,379		142,021	160,000	166,329					5.250	4.968	MN	1,073	4,200	08/01/2018	11/15/2043
655044-AG-0	NOBLE ENERGY INC NT			1	2FE	1,058,727		966,630	1,089,000	1,059,356					5.250	5.449	MN	7,305	16,442	10/04/2018	11/15/2043
655044-AJ-4	NOBLE ENERGY INC-SENIOR UNSECURED			1	2FE	1,235,212		86,1367	1,190,000	1,234,301					5.050	4.794	MN	7,679	44,261	08/01/2018	11/15/2044
655044-AN-5	Noble Energy Inc-SENIOR UNSECURED			1	2FE	411,935		350,406	405,000	411,872					4.950	4.839	FA	7,574	8,213	08/01/2018	08/15/2047
655044-AN-5	Noble Energy Inc-SENIOR UNSECURED			1	2FE	676,132		614,292	710,000	676,250					4.950	5.273	FA	13,277	2,510	10/04/2018	08/15/2047
655663-EF-5	Nordson Corp. Senior Note Ser			2		17,600,000		16,690,133	17,600,000	17,600,000					3.190	3.190	JJ	238,612	561,440	07/28/2015	07/28/2027
655844-AF-5	NORFOLK SOUTHERN CORP-BOND			1	2FE	8,903,407		8,844,576	8,875,000	8,644,608					7.050	4.903	MN	80,781	484,688	05/27/2016	05/01/2037
655844-AV-0	NORFOLK SOUTHERN CORP-SENIOR UNSECURED			1	2FE	113,121		106,5158	91,000	113,079					6.000	4.100	MS	1,608	5,460	08/02/2016	03/15/2105
655844-AW-8	NORFOLK SOUTHERN CORP-SENIOR UNSECURED			1	2FE	864,313		968,026	874,000	868,279					5.590	5.713	MN	5,971	48,857	08/27/2010	05/17/2025
655844-BH-0	NORFOLK SOUTHERN CORP-SENIOR UNSECURED N			1	2FE	25,074,451		29,914,134	28,875,000	25,420,793					4.837	5.664	AO	349,171	1,396,684	04/28/2017	10/01/2041
655844-BL-1	NORFOLK SOUTHERN CORP SR NT			1	2FE	496,419		481,566	490,000	493,438					2.903	2.711	FA	5,374	14,225	04/07/2015	02/15/2023
655844-BL-1	NORFOLK SOUTHERN CORP SR NT			1	2FE	3,743,583		4,067,757	4,139,000	3,951,927					2.903	4.105	FA	45,392	118,993	02/10/2016	02/15/2023
655844-BM-9	NORFOLK SOUTHERN CORP-SENIOR UNSECURED N			1	2FE	2,231,191		2,003,434	2,185,000	2,228,401					3.950	3.820	AO	21,577	86,308	06/24/2016	10/01/2042
655844-BM-9	NORFOLK SOUTHERN CORP-SENIOR UNSECURED N			1	2FE	21,119,525		19,447,522	21,210,000	21,122,615					3.950	3.977	AO	209,449	837,795	04/19/2017	10/01/2042
655844-BN-7	NORFOLK SOUTHERN CORP-SENIOR UNSECURED			1,5	2FE	11,753,384		10,371,457	10,408,000	11,690,846					4.800	3.996	FA	(31,477)	499,584	05/18/2017	08/15/2043
655844-BQ-0	NORFOLK SOUTHERN CORP-SENIOR UNSECURED			1	2FE	14,501,383		13,015,092	13,287,000	14,441,938					4.450	3.913	JD	26,279	591,272	04/11/2017	06/15/2045
655844-BR-8	Norfolk Southern Corp-SENIOR UNSECURED			1,5	2FE	292,910		305,793	300,000	293,308					4.650	4.798	JJ	6,433	15,541	12/15/2015	01/15/2046
655844-BR-8	Norfolk Southern Corp-SENIOR UNSECURED			1,5	2FE	632,227		570,814	560,000	629,828					4.650	3.891	JJ	12,007	22,088	08/01/2018	01/15/2046
655844-BV-9	Norfolk Southern Corp-SENIOR UNSECURED			1	2FE	2,686,357		2,549,762	2,855,000	2,687,469					4.050	4.383	FA	43,682	16,173	08/01/2018	08/15/2052
655844-BX-5	Norfolk Southern Corp-SENIOR UNSECURED			1	2FE	52,458		50,6631	55,000	52,476					3.942	4.218	MN	361	512	08/01/2018	11/01/2047
655855-FA-7	SOUTHERN RAILWAY CO-DEBENTURE			1	1FE	11,559,156		12,681,394	11,600,000	11,591,025					9.750	9.801	JD	50,267	1,131,000	08/27/2004	06/15/2020
662325-BB-7	North Shore Gas Co. First Mtg Bond			1		13,363,420		13,513,556	14,000,000	13,589,966					3.430	3.847	AO	120,050	480,200	01/01/2013	04/01/2027
662352-A*-4	North Shore-Long Island Senior Secured			2		25,490,000		25,938,649	25,490,000	25,490,000					4.200	4.200	MN	178,430	1,070,580	10/08/2014	05/01/2030
662352-AB-9	NORTH SHORE LONG ISLAND-SECURED			1	1FE	290,601		277,336	230,000	286,370					6.150	4.500	MN	2,358	14,145	04/27/2015	11/01/2043
664397-AK-2	EVERSOURCE ENERGY-UNSECURED NOTE			1	2FE	44,085,964		43,131,002	44,200,000	44,145,386					2.800	2.830	MN	206,267	1,237,600	05/08/2013	05/01/2023
664397-AK-2	EVERSOURCE ENERGY-UNSECURED NOTE			1	2FE	548,133		522,061	535,000	543,493					2.800	2.390	MN	2,497	14,980	08/02/2016	05/01/2023
664675-AS-4	Northeastern University-UNSECURED			1	1FE	12,785,000		12,798,237	12,785,000	12,785,000					4.119	4.119	AO	131,654	128,727	06/20/2018	10/01/2048
665501-AK-8	NORTHERN NATURAL GAS CO-SENIOR UNSECURED			1	1FE	1,968,424		1,911,339	2,000,000	1,971,133					4.100	4.196	MS	24,144	82,000	10/06/2014	09/15/2042
665772-CA-5	NORTHERN STATES PWR-MINN 1ST MTG BD			1	1FE	4,042,143		4,533,634	4,050,000	4,044,131					5.250	5.263	JJ	98,044	212,625	07/14/2005	07/15/2035
665772-CB-3	NORTHERN STATES PWR-MINN-NOTE			1	1FE	5,139,700		6,320,787	5,000,000	5,111,280					6.250	6.041	JD	26,042	312,500	07/01/2008	06/01/2036
665772-CG-2	NORTHERN STATES PWR-MINN-SECURED			1	1FE	307,088		109,4193	250,000	303,102					4.850	3.428	FA	4,581	12,125	08/02/2016	08/15/2040
665772-CJ-6	NORTHERN STATES PWR-MINN-SECURED			1	1FE	13,303,196		12,135,059	13,465,000	13,317,507					3.400	3.468	FA	172,950	452,124	08/01/2018	08/15/2042
665772-CK-3	NORTHERN STATES PWR-MINN-SECURED			1	1FE	730,815		683,837	705,000	721,283					2.600	1.977	MN	2,342	18,330	08/02/2016	05/15/2023
665772-CL-1	NORTHERN STATES PWR-MINN-SECURED BOND			1	1FE	8,536,393		8,640,671	8,560,000	8,538,115					4.125	4.141	MN	45,118	353,100	12/15/2015	05/15/2044
665772-CL-1	NORTHERN STATES PWR-MINN-SECURED BOND			1	1FE	242,109		216,017	214,000	240,529					4.125	3.384	MN	1,128	8,828	08/02/2016	05/15/2044
665772-CM-9	NORTHERN STATES PWR-MINN-SECURED			1	1FE	149,409		147,968	150,000	149,786					2.200	2.289	FA	1,247	3,300	12/15/2015	08/15/2020
665772-CN-7	NORTHERN STATES PWR-MINN-SECURED			1	1FE	391,147		341,079	350,000	388,970					4.000	3.356	FA	5,289	14,000	08/02/2016	08/15/2045
665789-AX-1	NORTHERN STATES PWR-WISC-SECURED NOTE			1	1FE	10,215,231		9,482,642	10,300,000	10,225,507					3.700	3.746	AO	95,275	381,100	10/02/2012	10/01/2042
665789-AZ-6	Northern States Power Co-SECURED			1	1FE	25,950,266		24,467,633	26,020,000	25,950,948					3.750	3.765	JD	81,313	975,750	11/27/2017	12/01/2047
665789-BA-0	Northern States Power Co-SECURED			1	1FE	6,675,143		6,589,808	6,700,000	6,674,920					4.200	4.222	MS	85,202		09/05/2018	09/01/2048
665859-AL-8	Northern Trust Corp-SENIOR UNSECURED NOT			1	1FE	1,978,225		1,855,773	1,837,000	1,873,161					3.450	2.350	MN	10,035	63,377	12/15/2015	11/04/2020
665859-AM-6	NORTHERN TRUST CORP-SR UNSECURED			1	1FE	416,875		402,872	400,000	408,171					3.375	2.570	FA	4,800	13,500	12/1	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest			Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
666807-BJ-0	NORTHROP GRUMMAN CORP-SR UNSECURED			1	2FE	13,603,091	.88 2876	12,788,458	14,485,000	13,625,385					3.850	4.225	AO	117,731	461,423	07/12/2018	04/15/2045
666807-BN-1	Northrop Grumman Corp-SENIOR UNSECURED			1	2FE	4,069,735	.93 3001	4,011,906	4,300,000	4,078,957					3.250	3.931	JJ	64,440		07/12/2018	01/15/2028
666807-BP-6	NORTHROP GRUMMAN CORP-SENIOR UNSECURED			1	2FE	28,885,477	.90 9510	26,539,513	29,180,000	28,887,157					4.030	4.089	AO	248,257	1,098,970	08/01/2018	10/15/2047
66704J-AF-5	Northstar Education Fina-REVENUE BONDS			4,5	1FE	5,715,625	.96 5796	5,698,198	5,900,000	5,727,742					4.205	3.713	MCN	103,700	2,829	08/08/2018	04/01/2042
66704J-AH-1	Northstar Education Fina-REVENUE BONDS			4,5	1FE	8,238,688	.96 5988	8,210,897	8,500,000	8,236,255					6.089	3.916	MCN	119,427	123,642	08/08/2018	04/01/2042
66704J-AH-1	Northstar Education Fina-REVENUE BONDS			4,5	1FE	8,519,500	.96 5988	8,500,694	8,800,000	8,527,113					6.089	3.915	MCN	123,642	119,427	10/04/2018	04/01/2042
66704J-AJ-7	Northstar Education Fina-REVENUE BONDS			4,5	1FE	8,433,563	.96 5771	8,402,210	8,700,000	8,431,500					5.860	3.831	MCN	124,939	111,295	08/08/2018	04/01/2042
66704J-AJ-7	Northstar Education Fina-REVENUE BONDS			4,5	1FE	7,502,969	.96 5771	7,484,728	7,750,000	7,508,116					3.979	4.430	MN	111,295	124,939	10/04/2018	04/01/2042
667274-AA-2	NORTHWELL HEALTHCARE INC-SECURED			1	1FE	245,429	.91 0963	241,405	265,000	245,963					3.979	4.430	MN	1,757	10,544	05/16/2017	11/01/2046
667469-AA-8	NORTHWEST FLORIDA TIMBER-SECURED			1	1FE	233,041	.92 2180	228,240	247,500	235,907					4.750	5.352	MS	3,592	11,756	04/27/2015	03/04/2029
668444-AC-6	NORTHWESTERN UNIVERSITY-SENIOR UNSECURED			1	1FE	6,601,455	.111 6325	7,209,224	6,458,000	6,591,778					4.643	4.486	JD	24,987	299,845	10/30/2017	12/01/2044
668444-AM-4	NORTHWESTERN UNIVERSITY-UNSECURED			1	1FE	572,092	.96 2301	543,700	565,000	571,362					3.688	3.602	JD	1,736	20,837	12/15/2015	12/01/2038
66988A-AE-4	NOVARTIS HEALTH INC-UNSECURED			1	1FE	140,714	.99 6957	137,580	138,000	140,512					4.371	4.251	MN	1,005	8,032	05/11/2015	11/01/2043
66989H-AD-0	NOVARTIS CAPITAL CORP-SENIOR NOTE			1	1FE	4,586,700	.102 1681	4,699,731	4,600,000	4,600,845					4.400	4.380	AO	37,669	202,400	12/15/2015	04/24/2020
66989H-AE-8	NOVARTIS CAPITAL CORP-SR UNSECURED			1	1FE	295,875	.97 6799	293,040	300,000	297,633					2.400	2.623	MS	2,000	7,200	12/15/2015	09/21/2022
66989H-AG-3	NOVARTIS CAPITAL CORP-SR UNSECURED			1	1FE	517,245	.100 5701	502,851	500,000	511,488					3.400	2.932	MN	2,597	17,000	12/15/2015	05/06/2024
66989H-AH-1	NOVARTIS CAPITAL CORP-SR UNSECURED			1	1FE	62,721,804	.106 8257	58,006,348	54,300,000	62,213,515					4.400	3.523	MN	365,017	2,389,200	05/09/2016	05/06/2044
66989H-AJ-7	NOVARTIS CAPITAL CORP-SR UNSECURED			1	1FE	147,832	.96 8686	145,303	150,000	148,422					3.000	3.171	MN	513	4,500	12/15/2015	11/20/2025
66989H-AK-4	NOVARTIS CAPITAL CORP-SR UNSECURED			1	1FE	156,554	.100 2533	160,405	160,000	156,742					4.000	4.126	MN	729	6,400	12/15/2015	11/20/2045
66989H-AK-4	NOVARTIS CAPITAL CORP-SR UNSECURED			1	1FE	351,899	.100 2533	345,874	345,000	351,662					4.000	3.882	MN	1,572	13,800	05/16/2017	11/20/2045
67021C-AF-4	NSTAR ELECTRIC CO-SR UNSECURED			1	1FE	11,649,609	.115 6120	10,838,622	9,375,000	11,335,533					5.500	4.024	MS	151,823	515,625	01/01/2013	03/15/2040
67021C-AJ-6	NSTAR ELECTRIC CO-SENIOR UNSECURED BOND			1	1FE	12,711,552	.103 4584	13,242,670	12,800,000	12,718,401					4.400	4.442	MS	187,733	563,200	03/04/2014	03/01/2044
67022*-AA-1	NSTAR Gas Co. First Mortgage			1		20,500,000	.100 8830	20,681,015	20,500,000	20,500,000					4.460	4.458	JJ	457,150	914,300	01/28/2010	01/01/2020
670346-AH-8	NUCOR CORP-SENIOR UNSECURED NOTE			1	1FE	40,410,230	.119 3987	43,132,771	36,125,000	39,952,446					6.400	5.470	JD	192,667	2,312,000	01/25/2017	12/01/2037
670346-AN-5	NUCOR CORP-SENIOR UNSECURED			1	1FE	44,721,498	.106 0515	41,556,270	39,185,000	44,552,489					5.200	4.282	FA	849,008	1,886,820	08/07/2018	08/01/2043
670346-AP-0	Nucor Corp-SENIOR UNSECURED			1	1FE	6,491,290	.98 9021	6,428,634	6,500,000	6,491,664					3.950	3.966	MN	42,792	131,941	06/01/2018	05/01/2028
670346-AQ-8	Nucor Corp-SENIOR UNSECURED			1	2FE	20,971,204	.96 6004	20,532,415	21,255,000	20,973,667					4.400	4.481	MN	155,870	480,599	06/25/2018	05/01/2048
67073Y-AA-4	NV ENERGY INC-SENIOR UNSECURED NOTE			1	2FE	5,000,000	.105 0655	5,253,273	5,000,000	5,000,000					6.250	6.248	MN	39,931	312,500	11/17/2010	11/15/2020
67103H-AA-5	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED			1	2FE	5,620,394	.102 6799	5,801,416	5,650,000	5,642,637					4.875	4.942	JJ	127,772	275,438	01/12/2011	01/14/2021
67103H-AA-5	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED			1	2FE	5,045,142	.102 6799	4,790,018	4,665,000	4,755,814					4.875	3.740	JJ	105,497	226,513	12/02/2013	01/14/2021
67103H-AB-3	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED			1	2FE	3,843,301	.102 6515	3,952,083	3,850,000	3,847,618					4.625	4.647	MS	52,400	178,063	09/14/2011	09/15/2021
67103H-AC-1	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED			1	2FE	3,686,199	.101 0764	3,739,827	3,700,000	3,694,201					3.800	3.845	MS	46,867	138,700	08/16/2012	09/01/2022
67103H-AD-9	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED			1	2FE	137,847	.100 4926	141,695	141,000	139,369					3.850	4.136	JD	241	5,429	12/02/2013	06/15/2023
67103H-AD-9	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED			1	2FE	10,207,523	.100 4926	9,954,795	9,906,000	10,065,649					3.850	3.436	JD	16,950	381,381	09/05/2014	06/15/2023
67103H-AF-4	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED			1	2FE	30,301,440	.95 2745	28,915,810	30,350,000	30,306,360					3.600	3.619	MS	364,200	1,092,600	08/10/2017	09/01/2027
67103H-AG-2	O'Reilly Automotive Inc-SENIOR UNSECURED			1	2FE	254,317	.99 5751	253,916	255,000	254,347					4.350	4.383	JD	924	5,978	05/10/2018	06/01/2028
671056-AF-8	OSI Group, LLC Senior Secured			1	2PL	34,300,000	.96 5929	33,131,365	34,300,000	34,300,000					4.350	4.350	MS	410,314	746,025	03/22/2018	03/22/2028
674003-A*-9	Oaktree Capital Managem Senior Note Ser			1	1FE	17,100,000	.100 7145	17,222,180	17,100,000	17,100,000					3.910	3.910	MS	219,155	668,610	09/03/2014	09/03/2024
674003-A8-7	Oaktree Capital Managem Senior Note Ser			1	1FE	14,825,000	.100 5892	14,912,349	14,825,000	14,825,000					4.010	4.010	MS	194,858	594,483	09/03/2014	09/03/2026
674003-B*-8	Oaktree Capital Managem Senior Notes			1		19,300,000	.94 2300	18,186,390	19,300,000	19,300,000					3.690	3.689	JJ	233,434	712,170	07/12/2016	07/12/2031
674599-BY-0	Occidental Petroleum Cor-SENIOR UNSECURE			1	1FE	14,013,313	.101 7282	12,482,045	12,270,000	12,705,763					4.100	2.115	FA	209,613	503,070	12/15/2015	02/01/2021
674599-CQ-7	OCCIDENTAL PETROLEUM COR-SR UNSECURED			1	1FE	147,926	.99 4388	149,158	150,000	148,892					3.125	3.375	FA	1,771	4,688	12/15/2015	02/15/2022
674599-CF-0	OCCIDENTAL PETROLEUM COR-SENIOR UNSECURE			1	1FE	1,000,325	.99 2831	891,562	898,000	995,371					4.625	3.953	JD	1,846	41,533	08/02/2016	06/15/2045
674599-CG-8	OCCIDENTAL PETROLEUM COR-SR UNSECURED			1	1FE	887,799	.98 9488	875,697	885,000	886,977					3.500	3.460	JD	1,377	30,975	12/09/2015	06/15/2025
674599-CG-8	OCCIDENTAL PETROLEUM COR-SR UNSECURED			1	1FE	196,775	.98 9488	197,898	200,000	197,683					3.500	3.703	JD	311	7,000	12/15/2015	06/15/2025
674599-CJ-2	OCCIDENTAL PETROLEUM COR-SENIOR UNSECURE			1	1FE	985,263	.97 2949	875,654	900,000	981,562					4.400	3.854	AO	8,360	39,600	10/20/2016	04/15/2046
674599-CN-3	Occidental Petroleum Cor-SENIOR UNSECURE			1	1FE	50,435	.95 5743	47,787	50,000	50,431					4.200	4.148	MS	618	2,323	07/27/2018	03/15/2048
677347-CF-1	OHIO EDISON CO-FIRST MORTGAGE			1	1FE	5,330,233	.143 8234	9,262,225	6,440,000	6,342,220					8.250	8.398	AO	112,163	531,300	12/02/2013	10/15/2038
67740Q-AF-3																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
680033-AC-1	Old National Bancorp/IN-SENIOR UNSECURED				1FE	8,700,000	100.4018	8,734,954	8,700,000	8,700,000					4.125	4.124	FA	135,575	358,875	08/12/2014	08/15/2024
68018#-AA-1	Old Pageland-Monroe Road Senior Secured			2		3,230,124	103.0222	3,237,745	3,230,124	3,230,124					4.130	4.189	JAJO	248,947	139,532	11/30/2015	10/05/2030
681919-AZ-9	Omnicom Group Inc-SENIOR UNSECURED NOTE			1	2FE	9,031,881	98.6160	9,087,466	9,215,000	9,134,185		21,792			3.625	3.904	MN	55,674	334,044	07/02/2015	05/01/2022
681919-BA-3	Omnicom Group Inc-SENIOR UNSECURED NOTE			1	2FE	6,778,512	96.8565	6,586,245	6,800,000	6,786,286		2,033			3.650	3.688	MN	41,367	248,200	10/22/2014	11/01/2024
681919-BA-3	Omnicom Group Inc-SENIOR UNSECURED NOTE			1	2FE	4,654,367	96.8565	4,319,802	4,460,000	4,581,407		(19,615)			3.650	3.115	MN	27,132	162,790	02/08/2015	11/01/2024
682134-AC-5	Omnicom Group Inc-SENIOR UNSECURED NOTE			1	2FE	5,416,650	101.7076	5,085,381	5,000,000	5,090,251		(53,396)			4.450	3.296	FA	84,056	222,500	04/17/2012	08/15/2020
68233D-AP-2	ONCOR ELECTRIC DELIVERY-SENIOR SECURED N			1	1FE	10,394,262	132.8217	12,033,645	9,060,000	10,108,120		(46,009)			7.250	6.010	JJ	302,881	651,221	08/01/2018	01/15/2033
68233D-AT-4	ONCOR ELECTRIC DELIVERY-FIRST LIEN			1	1FE	619,675	129.0504	645,252	500,000	603,990		(5,438)			7.000	4.861	MN	5,833	35,000	12/15/2015	05/01/2032
68233J-AF-1	ONCOR ELECTRIC DELIVERY-SECURED NOTE			1	1FE	1,475,202	139.8175	1,524,011	1,090,000	1,430,989		(11,287)			7.500	4.899	MS	27,250	81,750	10/06/2014	09/01/2038
68233J-AH-7	ONCOR ELECTRIC DELIVERY-FIRST LIEN			1	1FE	526,385	114.1359	513,612	450,000	523,134		(2,050)			5.250	4.112	MS	5,972	23,625	05/16/2017	09/30/2040
68233J-AR-5	ONCOR ELECTRIC DELIVERY-SENIOR SECURED N			1	1FE	5,275,271	102.4361	4,957,909	4,840,000	5,003,894		(48,631)			4.100	2.972	JD	16,537	198,440	01/01/2013	06/01/2022
68233J-AS-3	ONCOR ELECTRIC DELIVERY-SENIOR SECURED B			1	1FE	11,072,382	113.6374	12,613,748	11,100,000	11,073,920		540			5.300	5.317	JD	49,025	585,672	08/23/2012	06/01/2042
68233J-AS-3	ONCOR ELECTRIC DELIVERY-SENIOR SECURED B			1	1FE	3,099,331	113.6374	2,937,526	2,585,000	3,083,858		(11,936)			5.300	4.004	JD	11,417	123,490	08/01/2018	06/01/2042
68233J-AT-1	ONCOR ELECTRIC DELIVERY-SENIOR SECURED B			1	1FE	5,233,634	104.2661	5,468,756	5,245,000	5,235,057		237			4.550	4.563	JD	19,887	233,693	12/09/2015	12/01/2041
68233J-AT-1	ONCOR ELECTRIC DELIVERY-SENIOR SECURED B			1	1FE	8,792,757	104.2661	8,758,351	8,400,000	8,767,237		(9,094)			4.550	4.241	JD	31,850	356,720	08/01/2018	12/01/2041
68233J-BB-9	ONCOR ELECTRIC DELIVERY -FIRST LIEN			1	1FE	449,784	94.9236	422,410	445,000	449,653		(1,07)			3.750	3.687	AO	4,172	14,518	10/30/2017	04/01/2045
68233J-BB-9	ONCOR ELECTRIC DELIVERY -FIRST LIEN			1	1FE	569,997	94.9236	564,795	595,000	570,207		210			3.750	4.008	AO	5,578	11,156	08/01/2018	04/01/2045
68233J-BF-0	Oncor Electric Delivery -SECURED			1	1FE	10,090,102	99.8667	10,086,536	10,100,000	10,089,253		(849)			4.100	4.106	MN	52,913	109,276	08/07/2018	11/15/2048
68235P-AF-5	ONE GAS INC-SR UNSECURED			1	1FE	11,549,236	106.1124	12,255,984	11,550,000	11,549,526		1			4.658	4.658	FA	224,166	537,999	10/07/2014	02/01/2044
68235P-AF-5	ONE GAS INC-SR UNSECURED			1	1FE	830,808	106.1124	838,288	790,000	828,141		(870)			4.658	4.335	FA	15,333	36,798	12/09/2015	02/01/2044
68244V-AA-2	1155 ISLAND AVENUE LLC-SR UNSECURED PIK			1	6*	2,404,977	100.0090	2,683,138	2,682,896	2,476,584		20,836			12.500	14.456	MJSD	583,480	335,362	10/01/2017	12/11/2024
68244V-AB-0	1155 IS AVE LLC SR SEC0 NT			1	6*	243,578	100.0090	272,740	272,716	254,719		2,562			11.375	13.279	AO	69,798	31,021	12/15/2014	10/01/2023
68268N-AC-7	ONEOK PARTNERS LP-SR UNSECURED			1	2FE	105,394	111.8777	134,253	120,000	106,367		345			6.650	7.845	AO	1,995	7,980	12/09/2015	10/01/2036
68268N-AG-8	ONEOK PARTNERS LP-SENIOR UNSECURED NOTE			1	2FE	8,422,034	103.0302	7,249,201	7,036,000	8,253,890		(31,564)			6.125	4.825	FA	179,565	430,955	10/06/2014	02/01/2041
68268N-AM-5	ONEOK PARTNERS LP-SENIOR UNSECURED NOTE			1	2FE	1,171,664	107.1869	1,071,869	1,000,000	1,158,744		(3,294)			6.200	5.055	MS	18,256	62,000	10/06/2014	09/15/2043
68276K-AA-7	YORK RISK SERVICES HLDG-SR UNSECURED			1	5FE	3,670,000	69.5000	2,550,650	3,670,000	3,670,000					8.500	8.500	AO	77,988	311,950	12/02/2014	10/01/2022
68276K-AA-7	YORK RISK SERVICES HLDG-SR UNSECURED			1	5FE	255,725	69.5000	184,175	265,000	257,967		1,489			8.500	9.347	AO	5,631	22,525	06/12/2017	10/01/2022
68278#-AB-4	OneSteel US Investments Gtd Senior Note			1	6	1,157,785	0.0000		1,157,148						7.330	0.000	JJ			07/09/2008	07/09/2019
68278#-AC-2	OneSteel US Investments Gtd Senior Note			1	6	491,375	0.0000		660,783						7.430	0.000	JJ			07/09/2008	07/09/2020
68389X-AE-5	ORACLE CORP-SR UNSECURED			1	1FE	2,168,776	124.5049	1,967,177	1,580,000	2,113,814		(18,132)			6.500	3.975	AO	21,681	102,700	08/02/2016	04/15/2038
68389X-AH-8	ORACLE CORP-SENIOR UNSECURED NOTE			1	1FE	23,421,863	120.0321	25,152,735	20,955,000	23,089,544		(65,454)			6.125	5.266	JJ	616,790	1,283,944	12/15/2015	07/08/2039
68389X-AK-1	ORACLE CORP-SENIOR UNSECURED NOTE			1	1FE	1,753,774	101.5150	1,578,559	1,555,000	1,598,070		(27,283)			3.875	2.037	JJ	27,785	60,256	01/01/2013	07/15/2020
68389X-AM-7	ORACLE CORP-SENIOR UNSECURED NOTE			1	1FE	59,961,925	110.4960	60,913,118	55,127,000	59,384,909		(116,997)			5.375	4.786	JJ	1,366,307	2,963,076	05/16/2017	07/15/2040
68389X-AP-0	ORACLE CORP-SENIOR UNSECURED NOTE			1	1FE	146,355	97.3255	145,988	150,000	147,884		520			2.500	2.895	AO	792	3,750	12/15/2015	10/15/2022
68389X-AQ-8	ORACLE CORP-SR UNSECURED			1	1FE	330,594	99.9764	324,923	325,000	325,072		(1,859)			2.375	1.795	JJ	3,559	7,719	12/15/2015	01/15/2019
68389X-AV-7	ORACLE CORP-SR UNSECURED			1	1FE	1,151,667	100.3792	1,164,398	1,160,000	1,152,624		326			4.300	4.357	JJ	23,970	68,087	12/15/2015	07/08/2034
68389X-AV-7	ORACLE CORP-SR UNSECURED			1	1FE	9,861,078	100.3792	9,191,719	9,157,000	9,785,644		(29,782)			4.300	3.698	JJ	189,219	339,700	10/04/2018	07/08/2034
68389X-AW-5	ORACLE CORP-SENIOR UNSECURED BOND			1	1FE	2,795,339	100.1242	2,678,321	2,675,000	2,790,218		(2,298)			4.500	4.217	JJ	57,847	71,024	10/04/2018	07/08/2044
68389X-BA-2	ORACLE CORP-SR UNSECURED			1	1FE	353,299	99.5151	348,303	350,000	351,558		(591)			2.800	2.616	JJ	4,709	9,800	12/15/2015	07/08/2021
68389X-BB-0	ORACLE CORP-SR UNSECURED			1	1FE	244,652	97.8533	244,633	250,000	247,057		819			2.500	2.868	MN	799	6,250	12/15/2015	05/15/2022
68389X-BC-8	ORACLE CORP-SR UNSECURED			1	1FE	193,538	95.6946	191,389	200,000	195,400		637			2.950	3.353	MN	754	5,900	12/15/2015	05/15/2025
68389X-BE-4	ORACLE CORP-SR UNSECURED			1	1FE	1,850,003	95.7224	1,876,159	1,960,000	1,861,732		4,051			3.900	4.330	MN	9,767	76,440	12/15/2015	05/15/2035
68389X-BE-4	ORACLE CORP-SR UNSECURED			1	1FE	663,105	95.7224	631,768	660,000	662,881		(131)			3.900	3.863	MN	3,289	25,740	05/16/2017	05/15/2035
68389X-BF-1	ORACLE CORP-SR UNSECURED			1	1FE	2,683,358	94.6208	2,643,705	2,794,000	2,686,525		1,257			4.125	4.371	MN	61,301	104,218	10/04/2018	05/15/2045
68389X-BF-1	ORACLE CORP-SR UNSECURED			1	1FE	4,486,052	94.6208	4,106,543	4,340,000	4,480,280		(3,120)			4.125	3.924	MN	22,875	179,025	10/30/2017	05/15/2045
68389X-BG-9	ORACLE CORP-SR UNSECURED			1	1FE	908,833	98.0292	945,982	965,000	910,451		560			4.375	4.701	MN	5,395	42,219	12/15/2015	05/15/2055
68389X-BG-9	ORACLE CORP-SR UNSECURED			1	1FE	2,485,889	98.0292	2,367,405	2,415,000	2,484,068		(820)			4.375	4.219	JJ	13,501	105,656	05/16/2017	05/15/2055
68389X-BJ-3	ORACLE CORP-SENIOR UNSECURED			1	1FE	3,394,754	93.3085	3,247,137	3,480,000	3,396,389		1,057									

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
690742-AE-1	OWENS CORNING-SENIOR UNSECURED NOTE	1		2FE		4,143,711	99.2048	4,191,403	4,225,000	4,172,822		7,536			4.200	4.439	JD	14,788	177,240	11/04/2014	12/01/2024
690742-AF-8	OWENS CORNING-SENIOR UNSECURED	1		2FE		7,478,984	91.3192	6,858,070	7,510,000	7,510,000		2,766			3.400	3.449	FA	96,462	255,340	08/03/2016	08/15/2026
69318F-AG-3	PBF Holding Co LLC / PBF-SENIOR UNSECURE	1		4FE		1,765,450	94.0000	1,666,620	1,773,000	1,766,239		783			7.250	7.324	JD	5,713	125,878	12/08/2017	06/15/2025
69327R-AJ-0	PDC Energy Inc-SENIOR UNSECURED	1		4FE		4,725,000	89.0000	4,205,249	4,724,999	4,725,062		62			5.750	5.748	MN	34,716	83,015	07/25/2018	05/15/2026
693304-AH-0	PECO ENERGY CO-BOND	1		1FE		4,786,442	119.3008	5,851,703	4,905,000	4,795,701		3,150			5.950	6.154	AO	72,962	291,848	12/09/2015	10/01/2036
693304-AR-8	PECO ENERGY CO-SECURED	1		1FE		158,971	106.3247	141,412	133,000	156,883		(601)			4.800	3.676	AO	1,348	5,384	05/11/2015	10/15/2043
693304-AS-6	PECO ENERGY CO-SECURED	1		1FE		7,425,111	100.7112	7,350,912	7,299,000	7,420,176		(2,027)			4.150	4.043	AO	75,727	233,396	08/01/2018	10/01/2044
693304-AT-4	PECO ENERGY CO-SECURED	1		1FE		200,302	97.6500	195,300	200,000	200,217		(29)			3.150	3.131	AO	1,330	6,300	12/15/2015	10/15/2025
693304-AW-7	PECO Energy Co-SECURED	1		1FE		14,216,129	95.5475	14,102,810	14,760,000	14,217,552		1,423			3.900	4.117	MS	191,880		12/20/2018	03/01/2048
693476-BF-9	PNC FUNDING CORP-SENIOR UNSECURED NOTE	1		1FE		10,206,672	101.5773	8,126,182	8,000,000	8,160,826		(359,020)			6.700	2.099	JD	31,267	536,000	01/01/2013	06/10/2019
693476-BJ-1	PNC FUNDING CORP-SR UNSECURED	1		1FE		165,366	102.1130	153,169	150,000	154,258		(3,765)			5.125	2.927	FA	3,054	7,688	12/15/2015	02/08/2020
693476-BL-6	PNC FUNDING CORP-SENIOR NOTE	1		1FE		18,604,455	101.8374	17,816,458	17,495,000	17,750,905		(154,524)			4.375	3.426	FA	297,658	765,406	12/15/2015	08/11/2020
69349L-AK-4	PNC BANK NA-SUBORDINATED	2		1FE		242,840	97.3919	243,480	250,000	245,678		970			2.950	3.407	JJ	3,093	7,375	12/15/2015	01/30/2023
69349L-AQ-1	PNC BANK NA-SUBORDINATED	2		1FE		283,598	102.3625	255,906	250,000	275,499		(3,420)			4.200	2.566	MN	1,750	10,500	08/02/2016	11/01/2025
693506-BC-0	PPG INDUSTRIES INC-SENIOR UNSECURED BOND	1		1FE		30,685,967	134.9666	39,781,419	29,475,000	30,505,746		(24,468)			7.700	7.354	MS	668,264	2,269,575	12/07/2009	03/15/2038
693506-BE-6	PPG INDUSTRIES INC-SENIOR UNSECURED NOTE	1		1FE		14,906,328	109.0630	13,894,624	12,740,000	14,755,121		(54,270)			5.500	4.369	MN	89,534	700,700	03/31/2017	11/15/2040
69351U-AH-6	PPL ELECTRIC UTILITIES-SENIOR NOTE	1		1FE		24,243,430	125.0861	29,714,198	23,755,000	24,154,584		(11,154)			6.450	6.294	FA	578,830	1,532,198	06/03/2008	08/15/2037
69351U-AM-5	PPL ELECTRIC UTILITIES-SECURED	1		1FE		713,931	126.3596	631,798	500,000	698,451		(6,581)			6.250	3.507	MN	3,993	31,250	08/02/2016	05/15/2039
69351U-AN-3	PPL ELECTRIC UTILITIES-SECURED BOND	1		1FE		18,890,749	112.0564	18,056,772	16,114,000	18,712,547		(71,665)			5.200	4.083	JJ	386,378	837,928	04/06/2017	07/15/2041
69351U-AR-4	PPL ELECTRIC UTILITIES-SECURED	1		1FE		1,118,879	108.6935	1,083,674	997,000	1,114,200		(2,871)			4.750	3.985	JJ	21,837	47,358	05/16/2017	07/15/2043
69351U-AV-5	PPL Electric Utilities C-SECURED	1		1FE		7,306,490	99.7349	7,280,651	7,300,000	7,306,339		(151)			4.150	4.145	JD	13,464	182,381	06/11/2018	06/15/2048
69351U-AV-5	PPL Electric Utilities C-SECURED	1		1FE		16,224,237	99.7349	16,256,795	16,300,000	16,224,679		442			4.150	4.177	JD	30,064	165,781	06/11/2018	06/15/2048
69352P-AH-6	PPL CAPITAL FUNDING INC-SR UNSECURED	1		2FE		116,565	97.9450	112,637	115,000	116,466		(33)			4.700	4.611	JD	450	5,405	12/09/2015	06/01/2043
69352P-AJ-2	PPL CAPITAL FUNDING INC-SENIOR UNSECURED	1		2FE		59,926	101.9333	61,160	60,000	59,927		1			5.000	5.008	MS	883	3,000	03/05/2014	03/15/2044
69352P-AJ-2	PPL CAPITAL FUNDING INC-SENIOR UNSECURED	1		2FE		1,968,516	101.9333	1,763,446	1,730,000	1,950,804		(5,148)			5.000	4.162	MS	25,469	86,500	12/15/2015	03/15/2044
69352P-AL-7	PPL CAPITAL FUNDING INC-SENIOR UNSECURED	1		2FE		179,770	93.7310	168,716	180,000	179,819		21			3.100	3.115	MN	713	5,580	05/12/2016	05/15/2026
69353R-DD-7	PNC BANK NA-SR UNSECURED	2		1FE		100,306	99.6417	99,642	100,000	100,039		(90)			2.250	2.158	JJ	1,119	2,250	12/15/2015	07/02/2019
69353R-DZ-8	PNC BANK NA-SR UNSECURED	2		1FE		402,944	99.4093	397,637	400,000	400,579		(799)			2.400	2.194	AO	9,600	9,600	12/15/2015	10/18/2019
69353R-EQ-7	PNC Bank NA-SENIOR UNSECURED	2		1FE		19,548,400	97.0454	19,409,075	20,000,000	19,574,695		26,295			3.250	3.624	JD	54,167	325,000	07/18/2018	06/01/2025
69353R-FG-8	PNC Bank NA-SENIOR UNSECURED	2		1FE		7,787,130	95.3894	7,821,934	8,200,000	7,808,686		21,556			3.100	3.740	AO	46,603	127,100	05/30/2018	10/25/2027
69359*-AA-0	PGA Tour Investments Fin Senior Note	1		2FE		891,310	101.4188	903,956	891,310	891,310					7.400	7.388	JD	2,931	60,404	07/02/1999	06/15/2019
693627-AY-7	DUKE ENERGY INDIANA INC-SR UNSECURED	1		1FE		276,355	123.2090	262,435	213,000	268,376		(2,282)			6.120	3.961	AO	2,752	13,036	05/11/2015	10/15/2035
693876-AA-4	PPC EVENT SERVICES, INC. SR SUB NT	2		5		3,391,795	99.0727	3,358,493	3,389,927	3,390,661		(443)			14.000	13.966	FIAN	792,441	474,590	12/31/2017	05/20/2020
69392*-AA-5	PRSS FinCo LP-SENIOR SECURED NOTE	1		2		35,800,053	100.0222	35,808,001	35,800,053	35,800,053					4.036	4.036	MJSD	365,236	1,444,890	03/15/2016	06/30/2040
69394*-AA-3	PGA TOUR, Inc. Senior Note Ser	2		1FE		23,400,000	91.9162	21,508,391	23,400,000	23,400,000					3.430	3.430	MN	69,114	802,620	11/30/2017	05/30/2041
69394*-AB-1	PGA TOUR, Inc. Senior Note Ser	2		1FE		10,650,000	91.1897	9,711,703	10,650,000	10,650,000					3.350	3.350	MN	30,722	356,775	11/30/2017	05/30/2041
694032-AT-0	PACIFIC BELL TELEPHONE-SENIOR UNSECURED	1		2FE		4,759,263	112.9481	5,018,285	4,443,000	4,630,806		(20,470)			7.125	6.374	MS	93,210	316,564	05/11/2015	03/15/2026
694308-GE-1	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		46,230,331	92.6557	34,130,655	36,836,000	44,404,509		(354,008)			6.050	4.197	MS	742,859	2,228,578	08/02/2016	03/01/2034
694308-GJ-0	PACIFIC GAS & ELECTRIC-SENIOR NOTE	1		2FE		24,731,099	92.6759	18,678,822	20,155,000	24,085,336		(142,024)			5.800	4.245	MS	389,663	1,168,990	05/16/2017	03/01/2037
694308-GM-3	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		557,274	94.4275	377,710	400,000	545,153		(5,151)			6.350	3.688	FA	9,596	25,400	08/02/2016	02/15/2038
694308-GQ-4	PACIFIC GAS & ELECTRIC-SR UNSECURED	1		2FE		2,959,593	93.9323	2,064,632	2,198,000	2,891,270		(22,149)			6.250	3.962	MS	45,792	137,375	08/02/2016	03/01/2039
694308-GS-0	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		2,060,219	88.6849	1,587,459	1,790,000	2,038,741		(7,170)			5.400	4.378	JJ	44,571	96,660	08/02/2016	01/15/2040
694308-GW-1	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		42,786	92.1055	36,842	40,000	41,435		(567)			3.250	1.751	MS	383	1,300	08/02/2016	09/15/2021
694308-GY-7	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		8,470,675	78.6788	6,687,695	8,500,000	8,474,515		618			4.500	4.521	JD	17,000	382,500	11/28/2011	12/15/2041
694308-GZ-4	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		1,063,266	78.6788	734,860	934,000	1,054,381		(3,416)			4.500	3.653	JD	1,868	42,030	08/02/2016	12/15/2041
694308-GZ-4	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		4,676,077	80.1861	3,768,744	4,700,000	4,678,770		503			4.450	4.481	AO	44,154	209,150	04/11/2012	04/15/2042
694308-GZ-4	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		3,043,021	80.1861	2,329,405	2,905,000	3,034,814		(3,465)			4.450	4.142	AO	27,291	129,273	05/16/2017	04/15/2042
694308-HA-8	PACIFIC GAS & ELECTRIC-SENIOR UNSECURED	1		2FE		227,418	7														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
695114-BZ-0	PACIFIC CORP-SECURED			1	1FE	493,532		111,5090	400,000	484,744			(3,740)		5.250	3.540	JD	933	21,000	08/02/2016	06/15/2035
695114-CB-2	PACIFIC CORP-SECURED			1	1FE	472,242		120,7518	350,000	421,709			(4,474)		6.100	3.628	FA	8,896	21,350	08/02/2016	08/01/2036
695114-CD-8	PacificCorp-SECURED			1	1FE	1,026,901		119,3777	783,000	1,001,315			(8,304)		5.750	3.644	AO	11,256	45,023	08/02/2016	04/01/2037
695114-CG-1	PacificCorp-SECURED			1	1FE	777,151		124,7225	573,000	761,216			(6,786)		6.250	3.788	AO	7,560	35,813	05/16/2017	10/15/2037
695114-CL-0	PacificCorp-BOND			1	1FE	7,488,425		120,0583	5,835,000	7,357,776			(45,370)		6.000	4.077	JJ	161,435	322,688	08/01/2018	01/15/2039
695114-CM-8	PACIFIC CORP-SECURED			1	1FE	263,905		101,5513	250,000	256,105			(2,649)		3.850	2.703	JD	428	9,625	12/15/2015	06/15/2021
695114-CN-6	PacificCorp-SENIOR SECURED BOND			1	1FE	5,486,468		97,1058	5,375,000	5,472,694			(2,663)		4.100	3.977	FA	91,823	220,375	04/27/2015	02/01/2042
695114-CN-6	PacificCorp-SENIOR SECURED BOND			1	1FE	1,067,590		97,1058	1,085,000	1,068,794			409		4.100	4.202	FA	18,535	44,485	12/09/2015	02/01/2042
695114-CT-3	PacificCorp-SECURED			1	1FE	7,742,285		98,4087	7,816,000	7,742,363			78		4.125	4.180	JJ	150,458		12/20/2018	01/15/2049
695156-AP-4	PACKAGING CORP OF AMERIC-SENIOR UNSECURE			1	2FE	8,882,088		100,9649	8,890,000	8,886,733			831		3.900	3.911	JD	15,409		06/21/2012	06/15/2022
695156-AP-4	PACKAGING CORP OF AMERIC-SENIOR UNSECURE			1	2FE	6,097,113		100,9649	5,990,000	6,042,567			(15,212)		3.900	3.608	JD	10,383	233,610	07/02/2015	06/15/2022
695156-AO-2	PACKAGING CORP OF AMERIC-SENIOR UNSECURE			1,5	2FE	9,175,620		102,5069	9,200,000	9,186,430			2,366		4.500	4.533	MM	69,000	414,000	10/15/2013	11/01/2023
696429-AC-3	PALL CORP-NOTE			1	1FE	14,919,750		102,8765	15,431,478	15,000,000			14,985,279		5.000	5.069	JD	33,333	750,000	06/15/2010	06/15/2020
69764#-AA-5	Pamlico VPP Holdings LLC Senior PIK Note			2	5Z	4,259,330		96,7395	4,346,255	4,282,960			3,631		13.000	13.819	MJSD	221,297		08/14/2018	12/30/2022
69764#-AB-3	Pamlico VPP Holdings LLC HoldCo PIK DTL			2	5Z	4,259,330		96,7395	4,346,255	4,261,254			1,924		13.000	13.832	MJSD	116,142		10/19/2018	12/30/2022
698525-AA-0	PANOCHO ENERGY CENTER-SR SEC NOTE			1	3FE	10,781,920		103,2368	9,811,150	10,482,674			(123,414)		6.885	5.293	JJ	227,042	662,370	07/02/2015	07/31/2029
698636-AB-5	PANOS Brands LLC Senior Sub Note			1	5	3,385,781		98,0744	3,385,937	3,385,792			12		12.000	12.010	FMAN	817,432	776,260	09/30/2018	08/17/2022
701094-AL-8	Parker-Hannifin Corp-SENIOR UNSECURED			1	1FE	23,739,429		95,7767	23,875,000	23,742,021			2,355		4.100	4.133	MS	326,292	964,795	08/01/2018	03/01/2047
701094-AL-8	Parker-Hannifin Corp-SENIOR UNSECURED			1	1FE	44,727,815		95,7367	43,842,000	44,709,983			(17,157)		4.100	3.981	MS	599,174	1,797,522	12/12/2017	03/01/2047
70109H-AK-1	Parker-Hannifin Corp-NOTE			1	1FE	8,482,331		100,4638	8,438,956	8,452,950			(13,427)		3.500	3.316	MS	86,567	294,000	07/02/2015	09/15/2022
70109H-AL-9	PARKER-HANNIFIN CORP-SR UNSECURED			1	1FE	263,125		98,7377	260,000	262,134			(340)		3.300	3.140	MM	953	8,580	12/15/2015	11/21/2024
70109H-AM-7	Parker-Hannifin Corp-SR UNSECURED			1	1FE	366,732		98,9198	338,000	362,637			(1,183)		4.200	3.580	MM	1,577	14,196	05/11/2015	11/21/2034
70109H-AN-5	Parker-Hannifin Corp-SR UNSECURED			1	1FE	9,984,930		100,8448	9,542,000	9,971,896			(7,057)		4.450	4.158	MM	47,180	280,983	06/11/2018	11/21/2044
70213H-AB-4	PARTNERS HEALTHCARE SYST-UNSECURED NOTE			1	1FE	10,599,600		101,0153	10,101,530	10,190,485			(72,752)		3.443	2.651	JJ	172,150	344,300	01/01/2013	07/01/2021
70213H-AC-2	PARTNERS HEALTHCARE SYST-SR UNSECURED			1	1FE	19,601,827		97,4709	19,615,000	19,601,869			42		4.117	4.120	JJ	403,775	801,444	10/04/2018	07/01/2055
70213H-AD-0	Partners Healthcare Syst-SENIOR UNSECURE			1	1FE	2,727,987		90,9249	2,890,000	2,730,382			2,395		3.765	4.089	JJ	54,404	55,311	03/05/2018	07/01/2048
70342#-AF-5	Patterson Companies, Inc Senior Note Ser			1	2	17,300,000		96,4644	17,300,000	17,300,000					3.740	3.739	JD	41,337	647,020	12/08/2011	12/08/2011
70342#-AG-3	Patterson Companies, Inc Senior Note			1	2PL	44,019,526		94,1172	44,850,000	44,056,352			36,826		3.480	3.796	MS	424,879	1,439,898	08/29/2018	03/24/2025
70344#-AA-2	Patterson Companies, Inc Senior Unsecure			2	2	21,000,000		92,2431	21,000,000	21,000,000					3.790	3.790	MS	601,347		03/29/2018	03/30/2028
703481-AB-7	Patterson-UTI Energy Inc-SENIOR UNSECURE			1	2FE	5,660,863		91,6995	5,665,000	5,661,004			141		3.950	3.959	FA	93,236	114,906	09/10/2018	02/01/2028
703481-AB-7	Patterson-UTI Energy Inc-SENIOR UNSECURE			1	2FE	11,459,939		91,6995	11,425,000	11,458,941			(902)		3.950	3.911	FA	188,036	20,106	09/10/2018	02/01/2028
70466#-AA-7	PEACHTREE FUNDING TRUST-SR UNSECURED			1	2FE	18,898,036		97,0016	18,925,000	18,938,200			12,169		3.976	4.060	FA	285,764	756,434	07/02/2015	02/15/2025
70509#-AA-5	Pebblebrook Hotel Trust Senior Note Ser			2	2	23,800,000		100,5978	23,800,000	23,800,000					4.700	4.766	JD	96,324	1,137,243	12/01/2015	12/01/2023
70509#-AB-3	Pebblebrook Hotel Trust Senior Note Ser			2	2	21,800,000		101,8394	21,800,000	21,800,000					4.930	5.001	JD	92,547	1,092,652	12/01/2015	12/01/2025
708696-BY-0	PENNSYLVANIA ELECTRIC CO-SENIOR UNSECURE			1	2FE	5,328,573		116,0514	4,398,000	5,314,621			(13,951)		6.150	4.540	AO	67,619	135,239	07/02/2018	10/01/2038
708696-BX-6	Pennsylvania Electric Co-SENIOR UNSECURE			1,5	2FE	89,753		101,2201	90,000	89,852			20		4.150	4.179	AO	789	3,735	06/05/2014	04/15/2025
708696-BY-4	Pennsylvania Electric Co-SENIOR UNSECURE			1	2FE	15,621,943		93,5931	15,751,720	15,649,613			27,670		3.250	4.175	MS	161,054		09/20/2018	03/15/2028
709068-C*-9	Pennsylvania Power Co. First Mtg Serie			1	1	6,196,071		104,6988	5,300,000	5,669,096			(96,611)		6.090	3.939	JD	323,667	322,770	01/01/2013	06/30/2022
709599-AH-7	PENSKE TRUCK LEASING/PTL-SENIOR UNSECURE			1	2FE	11,030,736		103,5357	11,100,000	11,071,419			7,199		4.875	4.955	JJ	255,531	541,125	07/10/2012	07/11/2022
709599-AN-4	PENSKE TRUCK LEASING/PTL-SENIOR UNSECURE			1	2FE	4,656,334		101,5064	4,550,000	4,599,637			(11,125)		4.250	3.955	JJ	88,093	193,375	05/31/2013	01/17/2023
709599-AR-5	Penske Truck Leasing Co -SENIOR UNSECURE			1,5	2FE	4,594,571		99,5734	4,480,804	4,541,066			(42,842)		3.050	2.064	JJ	65,575	137,250	09/29/2017	01/09/2020
709599-AS-3	PENSKE TRUCK LEASING/PTL-SR UNSECURED			1	2FE	12,004,836		98,8837	12,010,000	12,007,334			736		3.375	3.382	FA	168,891	405,338	01/26/2015	02/01/2022
709599-AW-4	Penske Truck Leasing Co -SENIOR UNSECURE			1	2FE	3,134,740		93,4567	3,353,000	3,145,934			11,194		3.400	4.334	MM	14,567	57,001	07/16/2018	11/15/2026
709599-AX-2	Penske Truck Leasing Co -SENIOR UNSECURE			1,5	2FE	4,928,050		97,7934	5,000,000	4,931,505			3,455		4.200	4.399	AO	52,500	105,000	06/26/2018	04/01/2027
709599-AZ-7	Penske Truck Leasing Co -SENIOR UNSECURE			1	2FE	22,423,352		97,9623	22,139,486	22,433,932			10,580		3.950	4.085	MS	275,249	451,310	07/19/2018	03/10/2025
70959#-AG-8	PENSKE AUTOMOTIVE GROUP-SENIOR SUB NT			1	4FE	2,807,000		93,0000	2,800,000	2,805,151			(836)		5.500	5.459	MM	154,000	154,000	09/22/2016	05/15/2026
713409-AC-4	PEPSI BOTTLING GROUP INC-SR UNSECURED			1	1FE	2,279,368		128,4948	2,113,739	2,155,021			(41,541)		7.000	3.367	MS	38,383	115,150	08/02/2016	03/01/2029
713448-BN-7	PepsiCo Inc-SENIOR UNSECURED NOTE			1	1FE	5,782,210		101,8157	5,090,786	5,122,763			(115,720)		4.500	2.098	JJ	103,750	225,000	01/01/2013	01/15/2020
713448-BP-2	PepsiCo Inc-SENIOR UNSECURED NOTE			1	1FE	29,317,252		119,8095	27,183,000	29,067,178			(53,152)		5.500	4.954	JJ	889,391	1,495,065		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
713448-CZ-9	PEPSICO INC-SR UNSECURED			1	1FE	745,093	106.6164	710,065	666,000	740,809	(1,693)				4.600	3.901	JJ	13,956	30,636	08/02/2016	07/17/2045
713448-DD-7	PEPSICO INC-SR UNSECURED			1	1FE	1,853,388	104.4339	1,812,973	1,736,000	1,849,436	(1,792)				4.450	4.043	AO	16,523	34,528	10/04/2018	04/14/2046
713448-DP-0	PEPSICO INC-SR UNSECURED			1	1FE	17,687,749	88.7521	16,037,496	18,070,000	17,698,150	6,551				3.450	3.566	AO	147,195	605,077	08/01/2018	10/06/2046
714046-AE-9	PerkinElmer Inc-SENIOR UNSECURED NOTE			1	2FE	10,483,746	103.1746	10,884,916	10,550,000	10,527,066	7,042				5.000	5.080	MN	67,403	527,500	10/20/2011	11/15/2021
714046-AE-9	PerkinElmer Inc-SENIOR UNSECURED NOTE			1	2FE	173,808	103.1746	175,397	170,000	171,446	(506)				5.000	4.652	MN	1,086	8,500	12/02/2013	11/15/2021
71426V-AK-4	Pernix Therapeutics Hold-NOTE			8	6*	1,528,350	10.0000	664,500	6,645,000	664,500	(930,300)				4.250	4.250	AO	70,603	282,413	04/22/2016	04/01/2021
717081-CY-7	Pfizer Inc-SENIOR UNSECURED NOTE			1	1FE	23,616,682	138.0905	27,045,018	19,585,000	23,144,652	(108,655)				7.200	5.606	MS	415,202	1,405,142	04/10/2018	03/15/2039
717081-DE-0	Pfizer Inc-SR UNSECURED			1	1FE	1,124,060	101.9529	1,070,505	1,050,000	1,118,314	(1,651)				4.300	3.885	JD	2,007	45,150	04/27/2015	06/15/2043
717081-DH-3	Pfizer Inc-SR UNSECURED			1	1FE	203,783	99.5725	199,145	200,000	202,343	(489)				3.000	2.719	JD	267	6,000	12/15/2015	06/15/2023
717081-DK-6	Pfizer Inc-SR UNSECURED			1	1FE	15,323,807	104.1349	14,998,551	14,403,000	15,291,012	(19,903)				4.400	4.010	MN	80,977	627,660	05/16/2017	05/15/2044
717081-DL-4	Pfizer Inc-SR UNSECURED			1	1FE	405,163	99.7382	398,953	400,000	400,577	(1,542)				2.100	1.707	MN	1,073	8,400	12/15/2015	05/15/2019
717081-DR-1	Pfizer Inc-SR UNSECURED			1,5	1FE	77,491	103.5845	77,688	75,000	75,896	(526)				5.200	4.422	FA	1,506	3,900	10/01/2015	08/12/2020
717081-DT-7	Pfizer Inc-SR UNSECURED			1	1FE	9,255,685	121.3985	10,578,669	8,714,000	9,217,972	(12,804)				5.600	5.149	MS	143,684	487,984	10/20/2016	09/15/2040
717081-ET-3	Pfizer Inc-SR UNSECURED			1	1FE	1,202,632	98.9985	1,222,632	1,235,000	1,239,744	(2,524)				4.000	3.598	JD	2,196	39,008	08/01/2018	12/15/2036
717081-ED-1	Pfizer Inc-SR UNSECURED			1	1FE	2,031,889	100.3873	1,927,436	1,920,000	2,029,255	(2,194)				4.125	3.792	JD	3,520	79,200	10/30/2017	12/15/2046
71713U-AT-9	PHARMACIA CORP-SR UNSECURED			1	1FE	910,004	122.7800	896,294	730,000	872,480	(12,917)				6.750	4.121	JD	2,190	49,275	12/15/2015	12/15/2027
71713U-AW-2	PHARMACIA CORP-DEBENTURE			1	1FE	162,817	122.3840	152,980	125,000	155,458	(2,508)				6.600	3.649	JD	688	8,250	12/09/2015	12/01/2028
717265-AL-6	FREEMONT MINERALS CORP-SENIOR UNSECURED			1	3FE	24,812,833	112.0000	26,034,400	23,245,000	24,712,271	(38,679)				9.500	8.626	JD	184,023	2,015,465	12/19/2018	06/01/2031
717265-AM-4	FREEMONT MINERALS CORP-SENIOR UNSECURED			1	3FE	5,424,500	96.0000	8,160,000	8,500,000	5,886,145	70,263				6.125	10.127	MS	153,295	520,625	06/03/2009	03/15/2034
718172-AC-3	PHILLIP MORRIS INTL INC-SENIOR UNSECURED			1	1FE	45,334	115.8690	46,348	40,000	44,442	(127)				6.375	5.440	MN	319	2,550	06/22/2010	05/16/2038
718507-BK-1	CONOCOPHILLIPS-SENIOR UNSECURED			1	1FE	606,843	122.1726	587,650	481,000	587,776	(8,143)				7.000	4.298	MS	8,511	33,700	08/02/2016	03/30/2029
718546-AC-8	PHILLIPS 66-SENIOR UNSECURED NOTE			1	1FE	2,723,775	102.6629	2,648,704	2,580,000	2,635,142	(16,022)				4.300	3.589	AO	27,735	110,940	01/30/2013	04/01/2022
718546-AH-7	PHILLIPS 66-SENIOR UNSECURED NOTE			1	1FE	33,706,472	109.1710	36,255,691	33,210,000	33,659,527	(9,186)				5.875	5.768	MN	325,181	1,951,088	12/09/2015	05/01/2042
718546-AK-0	Phillips 66-SENIOR UNSECURED			1	1FE	132,933	97.4012	126,622	130,000	132,883	(51)				4.650	4.449	MN	772	1,663	08/01/2018	11/15/2034
718546-AL-8	PHILLIPS 66-SENIOR UNSECURED NOTE			1	1FE	4,936,000	97.5818	4,879,092	5,000,000	4,935,989	(11)				4.875	4.963	MN	31,146	115,204	12/19/2018	11/15/2044
718546-AL-8	PHILLIPS 66-SENIOR UNSECURED NOTE			1	1FE	18,873,471	97.5818	17,658,408	18,096,000	18,844,354	(14,723)				4.875	4.596	MN	112,723	942,603	02/26/2018	11/15/2044
718546-AR-5	Phillips 66-SENIOR UNSECURED			1	2FE	10,561,482	96.5987	10,362,142	10,727,000	10,568,165	6,682				3.900	4.094	MS	123,182	225,446	07/10/2018	03/15/2028
718549-AB-4	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED			1	2FE	12,769,638	96.0735	12,148,498	12,645,000	12,724,989	(12,058)				3.605	3.485	FA	172,211	455,852	02/19/2015	02/15/2025
718549-AB-4	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED			1	2FE	11,828,794	96.0735	11,399,125	11,865,000	11,840,755	3,418				3.605	3.642	FA	161,588	427,733	03/16/2015	02/15/2025
718549-AC-2	PHILLIPS 66 PARTNERS LP-SR UNSECURED			1	2FE	2,175,201	90.0521	2,077,500	2,307,000	2,182,811	2,251				4.680	5.053	FA	40,788	107,968	05/21/2015	02/15/2045
718549-AC-2	PHILLIPS 66 PARTNERS LP-SR UNSECURED			1	2FE	20,837,203	90.0521	18,646,191	20,706,000	20,828,830	(2,485)				4.680	4.640	FA	366,082	969,041	10/10/2017	02/15/2045
718549-AE-8	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED			1	2FE	20,831,135	91.6737	17,917,627	19,545,000	20,807,469	(23,095)				4.900	4.486	AO	239,426	1,029,000	01/11/2018	10/01/2046
718549-AE-8	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED			1	2FE	10,466,536	91.6737	9,662,409	10,540,000	10,468,073	1,178				4.900	4.945	AO	129,115	516,460	10/11/2016	10/01/2046
718549-AF-5	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED			1	2FE	56,710	92.3555	55,413	60,000	56,825	115				3.750	4.459	MS	750	941	07/27/2018	03/01/2028
720186-F*-1	Piedmont Natural Gas Co. Senior Note Ser			1	1	13,400,000	97.3683	13,047,352	13,400,000	13,400,000					3.570	3.570	JJ	39,865	478,380	10/15/2012	07/16/2027
72147K-AE-8	Pilgrim's Pride Corp-SENIOR UNSECURED			1	3FE	2,522,000	90.7500	2,359,500	2,600,000	2,527,052	5,052				5.875	6.295	MS	38,612	153,174	02/22/2018	09/30/2027
72348X-AC-1	PINNACLE OPERATING CORP-NOTE			2	5FE	3,966,805	65.0000	2,727,591	4,196,294	4,016,498	30,043				9.000	10.217	MN	494,587	470,519	03/30/2017	05/15/2023
723787-AB-3	PIONEER NATURAL RESOURCE-SENIOR UNSECURE			1	2FE	4,244,688	121.2947	5,155,026	4,250,000	4,246,696	237				7.200	7.211	JJ	141,100	306,000	05/07/2010	01/15/2028
723787-AK-3	PIONEER NATURAL RESOURCE-SENIOR UNSECURE			1	2FE	9,256,033	100.2969	9,327,614	9,300,000	9,282,439	4,497				3.950	4.007	JJ	169,389	367,350	06/22/2012	07/15/2022
723787-AM-9	PIONEER NATURAL RESOURCE-SR UNSECURED			1	2FE	8,665,371	100.9649	8,758,706	8,675,000	8,668,096	800				4.450	4.463	JJ	178,006	383,883	11/30/2015	01/15/2026
724479-AM-2	PITNEY BOWES INC-SENIOR UNSECURED			1,5	3FE	159,528	97.7500	156,400	160,000	159,668	121				3.875	3.999	MS	1,826	5,708	07/27/2018	09/15/2020
724479-AN-0	Pitney Bowes Inc-SENIOR UNSECURED			1,5	3FE	18,418,500	88.2500	18,060,363	20,465,000	18,591,482	172,982				4.950	7.502	AO	759,763	1,020,000	07/10/2018	04/01/2023
72650R-AM-4	PLAINS ALL AMER PIPELINE-SENIOR NOTE			1	2FE	7,884,336	105.9842	7,625,564	7,195,000	7,764,420	(18,381)				6.700	5.961	MN	61,597	482,065	12/09/2015	05/15/2036
72650R-AR-3	PLAINS ALL AMER PIPELINE-COMPANY GUARANT			1	2FE	29,466,450	105.3689	28,385,319	26,939,000	29,066,822	(68,603)				6.650	5.911	JJ	826,055	1,791,444	05/16/2017	01/15/2037
72650R-AY-8	PLAINS ALL AMER PIPELINE-SENIOR UNSECURE			1	2FE	3,799,401	101.7089	3,336,051	3,280,000	3,411,662	(69,061)				5.000	2.741	FA	68,333	164,000	01/01/2013	02/01/2021
72650R-BA-9	PLAINS ALL AMER PIPELINE-SENIOR UNSECURE			1	2FE	738,123	89.9082	687,798	765,000	738,953	543				5.150	5.408	JD	3,283	39,398	05/16/2017	06/01/2042
72650R-BC-5	PLAINS ALL AMER PIPELINE-SR UNSECURED			1	2FE	2,140,813	78.9615	2,004,043	2,538,000	2,156,851	7,540				4.300	5.424	JD	45,776	109,		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
73180#-AA-3	Polytex Environmental In Sr. Sub Note (1			2	6*	1,642,806	.60,0000	1,234,693	2,057,822	1,234,693	(217,399)	4,995	394,941		13.900	13.900	JAJO	205,216	253,992	09/30/2018	01/31/2020
736508-G*-7	Portland General Electri First Mortgage					4,000,000	118.1275	4,000,000	4,000,000	4,000,000					6.260	6.259	MN	41,733	250,400	05/24/2006	05/01/2031
736508-G*-8	Portland General Electri First Mortgage					9,000,000	123.5428	11,118,852	9,000,000	9,000,000					6.310	6.309	MN	94,650	567,900	05/24/2006	05/01/2036
737415-AL-3	POST APARTMENT HOMES LP-SENIOR UNSECURED			1	2FE	4,103,258	98.8466	4,003,287	4,050,000	4,072,975		(5,799)			3.375	3.210	JD	11,391	136,688	05/20/2013	12/01/2022
737415-AL-3	POST APARTMENT HOMES LP-SENIOR UNSECURED			1	2FE	8,697,564	98.8466	8,599,654	8,700,000	8,698,862		227			3.375	3.378	JD	24,469	293,202	11/02/2012	12/01/2022
737446-AN-4	Post Holdings Inc-SENIOR UNSECURED			1	4FE	3,642,000	92.0000	3,350,640	3,642,000	3,642,000					5.625	5.623	JJ	94,464	204,863	11/28/2017	01/15/2028
737679-B*-0	Potomac Electric Power C First Mortgage					18,200,000	98.9557	18,009,937	18,200,000	18,200,000					4.310	4.310	MN	130,737		11/01/2018	11/01/2048
737679-DB-3	POTOMAC ELECTRIC POWER-SECURED			1	1FE	12,719,543	126.0665	12,267,534	9,731,000	12,657,299		(56,171)			6.500	4.180	MN	80,821	397,184	08/01/2018	11/15/2037
737679-DC-1	POTOMAC ELECTRIC POWER-SECURED			1	1FE	518,378	135.9337	436,347	321,000	498,178		(5,783)			7.900	3.895	JD	1,127	25,359	04/27/2015	12/15/2038
737679-DE-7	POTOMAC ELECTRIC POWER-SECURED			1	1FE	678,501	98.8636	682,159	690,000	679,227		250			4.150	4.254	MS	8,431	28,635	12/15/2015	03/15/2043
737679-DE-7	POTOMAC ELECTRIC POWER-SECURED			1	1FE	3,033,654	98.8636	2,852,214	2,885,000	3,026,496		(3,644)			4.150	3.832	MS	35,253	119,728	10/30/2017	03/15/2043
737679-DG-2	POTOMAC ELECTRIC POWER-SECURED			1	1FE	207,241	100.7942	201,588	200,000	204,703		(865)			3.600	3.085	MS	2,120	7,200	12/15/2015	03/15/2024
74005P-AI-0	PRAXAIR INC-SR UNSECURED			1	1FE	213,111	102.2798	204,560	200,000	205,750		(2,500)			4.050	2.697	MS	2,385	8,100	12/15/2015	03/15/2021
74005P-AZ-7	PRAXAIR INC-SR UNSECURED			1	1FE	377,238	100.0841	369,310	369,000	373,005		(1,436)			3.000	2.575	MS	3,690	11,070	12/15/2015	09/01/2021
74005P-BD-5	PRAXAIR INC-SENIOR UNSECURED			1	1FE	759,103	89.9267	674,451	750,000	758,554		(235)			3.550	3.478	MN	3,994	26,625	08/02/2016	11/07/2042
74005P-BN-3	PRAXAIR INC-SR UNSECURED			1	1FE	193,432	94.6235	189,247	200,000	195,411		675			2.650	3.468	FA	2,149	5,300	12/15/2015	02/05/2025
740189-AG-0	PRECISION CASTPARTS CORP-SR UNSECURED			1	1FE	143,666	97.2361	145,854	150,000	146,207		867			2.500	3.172	JJ	1,729	3,750	12/15/2015	01/15/2023
740189-AH-8	PRECISION CASTPARTS CORP-SENIOR UNSECURE			1	1FE	278,133	93.8403	235,539	251,000	276,463		(709)			3.900	3.278	JJ	4,514	68,684	08/02/2016	01/15/2043
740189-AH-8	PRECISION CASTPARTS CORP-SENIOR UNSECURE			1	1FE	3,227,152	93.8403	3,073,269	3,275,000	3,227,672		519			3.900	3.994	JJ	58,895	63,863	07/09/2018	01/15/2043
740189-AL-9	PRECISION CASTPARTS CORP-SR UNSECURED			1	1FE	249,454	98.8736	247,184	250,000	249,815		122			2.250	2.301	JD	250	5,625	12/15/2015	06/15/2020
740189-AM-7	PRECISION CASTPARTS CORP-SR UNSECURED			1	1FE	197,961	98.2250	196,450	200,000	198,541		199			3.250	3.376	JD	289	6,500	12/15/2015	06/15/2025
740189-AN-5	PRECISION CASTPARTS CORP-SENIOR UNSECURE			1	1FE	57,123	98.6630	49,332	50,000	56,406		(304)			4.200	3.171	JD	93	2,100	08/02/2016	06/15/2035
740189-AP-0	PRECISION CASTPARTS CORP-SR UNSECURED			1	1FE	830,601	101.0986	783,514	775,000	827,599		(1,236)			4.375	3.944	JD	1,507	33,906	08/02/2016	06/15/2045
740816-AD-5	PRES & FELLOWS OF HARVAR-BOND			1	1FE	14,978,775	124.9516	13,994,582	11,200,000	14,376,674		(108,826)			5.625	3.604	AO	157,500	630,000	01/01/2013	10/01/2038
740816-AG-8	PRES & FELLOWS OF HARVAR-UNSECURED			1	1FE	1,274,075	136.7773	1,107,896	810,000	1,236,055		(15,365)			6.500	2.989	JJ	24,278	52,650	08/02/2016	01/15/2039
740816-AK-9	PRES & FELLOWS OF HARVAR-SENIOR UNSECURE			1	1FE	6,200,000	101.0476	6,264,953	6,200,000	6,200,000					3.529	3.529	AO	54,700	218,798	04/29/2013	10/01/2031
740816-AL-7	PRES & FELLOWS OF HARVAR-UNSECURED			1	1FE	1,354,143	98.5860	1,353,586	1,373,000	1,355,853		615			3.619	3.711	AO	12,422	49,689	12/15/2015	10/01/2037
741530-AJ-1	PRIDE INTERNATIONAL INC-SENIOR UNSECURED			1	4FE	4,565,464	74.0000	3,281,900	4,435,000	4,554,715		(2,777)			7.875	7.603	FA	131,941	349,256	10/06/2014	08/15/2040
74170*-AB-5	PRIME PPTY FD LLC SR NT SER B			1		11,000,000	100.3468	11,038,148	11,000,000	11,000,000					3.840	3.839	FA	151,360	422,400	08/22/2013	08/22/2020
74170*-AC-3	Prime Property Fund LLC Senior Note Ser			1		22,000,000	104.6766	23,028,852	22,000,000	22,000,000					4.610	4.609	FA	363,422	1,014,200	08/22/2013	08/22/2025
74170*-AD-1	Prime Property Fund LLC Senior Note Ser			1		7,465,000	100.5679	7,507,394	7,465,000	7,465,000					3.880	3.879	JJ	121,489	289,642	07/30/2014	07/30/2024
74170*-AE-9	Prime Property Fund LLC Senior Note Ser			1		11,200,000	100.4052	11,245,382	11,200,000	11,200,000					3.980	3.979	JJ	186,972	445,760	07/30/2014	07/30/2026
74170*-AN-9	Prime Property Fund LLC Senior Note Ser			1		15,000,000	94.7565	14,213,475	15,000,000	15,000,000					3.150	3.150	JJ	231,000	472,500	01/05/2017	01/05/2027
74170*-AR-0	Prime Property Fund LLC Senior Note Ser			1		9,300,000	96.6089	8,984,628	9,300,000	9,300,000					3.480	3.480	AO	71,920	323,640	10/11/2017	10/11/2027
742404-AP-1	PRINCETON THEOLOGICAL-UNSECURED BOND			1	1FE	3,414,450	112.2989	3,722,709	3,315,000	3,394,250		(4,410)			5.200	4.944	JJ	86,190	172,380	12/11/2013	07/01/2033
74251V-AA-0	Principal Financial Grou-SENIOR UNSECURE			1	1FE	342,034	117.4173	346,381	295,000	341,643		(391)			6.050	4.725	AO	3,768	149	10/04/2018	10/15/2036
74256L-AN-9	PRINCIPAL LFE GLB FND II-SECURED			1	1FE	1,228,244	99.3551	1,192,262	1,200,000	1,206,426		(9,149)			2.375	1.595	MS	8,708	28,500	08/02/2016	09/11/2019
74264*-AA-4	PRISA LHC, LLC Senior Note Ser			1		22,500,000	99.7925	22,453,313	22,500,000	22,500,000					3.530	3.530	AO	167,675	794,250	04/15/2014	04/15/2021
74264*-AC-0	PRISA LHC Senior Note Ser			1		37,000,000	99.0212	36,637,844	37,000,000	37,000,000					3.750	3.750	AO	346,875	1,387,500	06/01/2016	04/01/2026
74264*-AD-8	PRISA LHC LLC-SENIOR NOTE SER B			1		5,000,000	99.1783	4,958,915	5,000,000	5,000,000					3.850	3.850	AO	48,125	192,500	06/01/2016	04/01/2028
742718-AV-1	PROCTER & GAMBLE CO/THE-SENIOR UNSECURED			1	1FE	523,978	138.1500	483,525	350,000	497,652		(11,174)			8.000	3.325	AO	5,056	28,000	08/02/2016	10/26/2029
742718-OB-3	Procter & Gamble Co/The-BOND			1	3FE	12,816,191	119.9583	15,354,661	12,800,000	12,810,613		(475)			5.500	5.491	FA	293,333	704,000	01/23/2004	02/01/2034
742718-DB-2	Procter & Gamble Co/The-BOND			1	1FE	9,682,439	124.0176	10,119,840	8,160,000	9,340,999		(51,628)			5.800	4.495	FA	178,795	473,280	08/02/2016	08/15/2034
742718-DF-3	Procter & Gamble Co/The-SENIOR NOTE			1	1FE	10,211,464	121.3139	11,239,728	9,265,000	10,046,400		(27,250)			5.550	4.838	MS	165,689	514,208	08/02/2016	03/05/2037
742718-DY-2	PROCTER & GAMBLE CO/THE-SR UNSECURED			1	1FE	149,291	98.4459	147,669	150,000	149,628		114			2.300	2.383	FA	1,390	3,450	12/15/2015	02/06/2022
742718-EB-1	PROCTER & GAMBLE CO/THE-SR UNSECURED			1	1FE	209,110	100.9017	201,803	200,000	205,706		(1,153)			3.100	2.443	FA	2,342	6,200	12/15/2015	08/15/2023
742736-AC-7	PRIT Core Realty Holding Senior Note Ser			1	2	20,250,000	99.4768	20,144,052	20,250,000	20,250,000					4.000	3.999	FA	308,250	810,000	02/14/2013	02/14/2025
742741-AA-9	PROCTER & GAMBLE - ESOP-DEBENTURE			2	1FE	4,235,177	106.0342	4,431,327	4,179,150	4,179,764		(7,773)			9.360	9.177	J				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
743315-AQ-6	PROGRESSIVE CORP-SR UNSECURED			1	1FE	12,138,994	.915424	12,020,438	13,131,000	12,152,905	(866)			12,161	3.700	4.171	JJ	209,184	453,405	06/28/2018	01/26/2045
743315-AS-2	PROGRESSIVE CORP-SENIOR UNSECURED			1	1FE	13,976,565	.973087	13,555,100	13,930,000	13,974,611	(866)			121,307	4.125	4.105	AO	121,307	655,600	04/07/2017	04/15/2047
743315-AS-2	PROGRESSIVE CORP-SENIOR UNSECURED			1	1FE	23,523,097	.973087	22,964,850	23,600,000	23,523,754	894			205,517	4.125	4.144	AO	205,517	781,688	05/31/2018	04/15/2047
743315-AT-0	Progressive Corp/The-SENIOR UNSECURED			1	1FE	11,726,588	.989310	11,658,026	11,784,000	11,784,000				274	4.200	4.229	MS	145,729	168,933	12/26/2018	03/15/2048
74340X-AW-1	PROLOGIS LP-SENIOR UNSECURED NOTE REID			1	1FE	9,475,490	103.2362	9,807,435	9,500,000	9,486,983				2,420	4.250	4.282	FA	152,528	403,750	08/08/2013	08/15/2023
74340X-BE-0	PROLOGIS LP-SR UNSECURED			1	1FE	104,640	100.5013	105,526	105,000	104,726				31	3.750	3.793	MM	656	3,250	07/27/2016	11/01/2025
74340X-BE-0	PROLOGIS LP-SR UNSECURED			1	1FE	535,136	100.5013	502,506	500,000	527,171			(3,703)	3.750	2.839	MM	3,125	18,750	10/20/2016	11/01/2025	
74340X-BH-3	Prologis LP-SENIOR UNSECURED			1	1FE	8,825,932	101.8045	8,958,793	8,800,000	8,824,044			(1,888)	3.875	3.840	MS	100,406	186,623	06/19/2018	09/15/2028	
74340X-BH-3	Prologis LP-SENIOR UNSECURED			1	1FE	9,311,253	101.8045	9,467,815	9,300,000	9,309,970			(1,283)	3.875	3.861	MS	106,110	180,919	06/20/2018	09/15/2028	
743674-AY-9	Protective Life Corp-SENIOR UNSECURED			1	2FE	582,444	135.5784	573,497	423,000	581,483			(961)	8.450	5.422	AO	7,546	298	10/04/2018	10/15/2039	
744320-BA-9	Prudential Financial Inc-SENIOR UNSECURE			1	1FE	636,573	.893979	634,725	710,000	636,825			253	3.935	4.560	JD	1,863	4,268	10/04/2018	12/07/2049	
744320-AH-8	PRUDENTIAL FINANCIAL INC-SENIOR UNSECURE			1	1FE	403,413	106.6463	373,262	350,000	398,699			(2,017)	5.400	4.218	JD	945	18,900	08/02/2016	06/13/2035	
744320-BD-6	PRUDENTIAL FINANCIAL INC-SR UNSECURED MT			1	1FE	13,170,122	120.8133	12,480,014	10,330,000	13,122,361			(43,507)	6.625	4.489	JD	57,030	408,321	07/17/2018	12/01/2037	
744320-BO-7	Prudential Financial Inc-SENIOR UNSECURE			1	1FE	402,816	116.9018	379,931	325,000	398,326			(1,924)	6.200	5.595	MM	20,150	150	08/02/2016	11/15/2040	
744320-BU-8	PRUDENTIAL FINANCIAL INC-SR UNSECURED			1	1FE	802,906	112.4951	764,967	680,000	795,799			(2,833)	5.800	4.588	MM	4,930	39,440	08/02/2016	11/16/2041	
744448-BZ-3	PUBLIC SERVICE COLORADO-BOND			1	1FE	4,612,588	126.7430	4,296,587	3,390,000	4,477,088			(34,057)	6.250	3.827	MS	70,625	174,735	08/01/2018	09/01/2037	
744448-CA-7	PUBLIC SERVICE COLORADO-SECURED			1	1FE	1,011,983	129.3796	916,008	708,000	987,465			(9,629)	6.500	3.658	FA	19,175	46,020	10/30/2017	08/01/2038	
744448-CE-9	PUBLIC SERVICE COLORADO-SECURED			1	1FE	32,939	103.8432	28,038	27,000	32,548			(166)	4.750	3.418	FA	485	1,283	08/02/2016	08/15/2041	
744448-CG-4	PUBLIC SERVICE COLORADO-SECURED			1	1FE	540,256	92.0450	478,634	520,000	538,995			(533)	3.600	3.372	MS	5,512	18,720	08/02/2016	09/15/2042	
744448-CH-2	PUBLIC SERVICE COLORADO-SECURED			1	1FE	97,561	97.0975	97,097	100,000	98,520			326	2.500	2.876	MS	736	2,500	12/15/2015	03/15/2023	
744448-CJ-8	PUBLIC SERVICE COLORADO-SECURED			1	1FE	1,551,754	95.8057	1,417,924	1,480,000	1,546,556			(1,749)	3.950	3.664	MS	17,213	58,460	10/30/2017	03/15/2043	
744448-CK-5	PUBLIC SERVICE COLORADO-SECURED BOND			1	1FE	7,970,480	101.9531	8,156,248	8,000,000	7,972,665			581	4.300	4.322	MS	101,289	344,000	03/03/2014	03/15/2044	
744448-CK-5	PUBLIC SERVICE COLORADO-SECURED BOND			1	1FE	2,084,845	101.9531	2,028,867	1,990,000	2,079,198			(2,164)	4.300	4.008	MS	25,196	85,570	05/16/2017	03/15/2044	
744448-CL-3	PUBLIC SERVICE COLORADO-SECURED			1	1FE	197,462	96.3631	192,726	200,000	198,200			252	2.900	3.056	MM	741	5,800	12/15/2015	05/15/2025	
744448-CM-1	PUBLIC SERVICE COLORADO-SECURED			1	1FE	419,824	88.2145	401,376	455,000	420,891			673	3.500	4.002	JD	718	16,153	05/16/2017	06/15/2046	
744448-CN-9	PUBLIC SERVICE CO OF COL-SECURED			1	1FE	205,207	94.2403	188,481	200,000	205,091			(103)	3.800	3.654	JD	338	22,969	10/30/2017	06/15/2047	
744448-CN-9	PUBLIC SERVICE CO OF COL-SECURED			1	1FE	8,703,422	94.2403	8,575,868	9,100,000	8,707,215			3,793	3.800	4.057	JD	15,369	172,900	06/15/2018	06/15/2047	
744533-BJ-8	PUBLIC SERVICE OKLAHOMA-SENIOR UNSECURED			1	2FE	1,575,498	127.3033	1,527,640	1,200,000	1,548,139			(11,793)	6.625	4.354	MM	10,158	79,500	08/02/2016	11/15/2037	
744567-BB-3	PUB SVC ELEC & GAS-1ST & REF MTG			1	1FE	145,000	101.0347	293,001	290,000	145,000				5.000	5.000	JJ	7,250	14,500	01/01/1998	07/01/2037	
744560-AV-8	PUB SVC ELEC & GAS-SENIOR SECURED NOTE			1	1FE	4,279,403	119.1337	5,122,751	4,300,000	4,282,070			429	5.500	5.533	MS	78,833	236,500	03/02/2010	03/01/2040	
744560-AX-4	PUB SVC ELEC & GAS-SECURED NOTE			1	1FE	2,564,643	100.7975	2,353,623	2,335,000	2,386,948			(31,181)	3.500	2.097	FA	30,874	81,725	01/01/2013	08/15/2020	
744560-BG-0	PUBLIC SERVICE ELECTRIC-SECURED			1	1FE	98,948	99.4205	99,421	100,000	99,868			311	1.800	2.118	JD	150	1,800	12/15/2015	06/01/2019	
744560-BJ-4	PUBLIC SERVICE ELECTRIC-SECURED			1	1FE	298,669	99.5804	298,741	300,000	299,763			370	2.000	2.127	FA	2,267	6,000	12/15/2015	08/15/2019	
744560-BM-7	Public Service Electric -SECURED			1	1FE	3,340,581	96.4730	3,280,082	3,400,000	3,340,872			291	4.050	4.159	MM	22,950	68,850	09/20/2018	05/01/2045	
744560-BP-0	PUBLIC SERVICE ELECTRIC -SECURED			1	1FE	3,994,760	97.6500	3,905,998	4,000,000	3,996,591			1,479	1.900	1.939	MS	22,378	76,000	09/22/2017	03/15/2021	
744560-BO-8	PUBLIC SERVICE ELECTRIC-SECURED			1	1FE	20,408,980	94.5727	19,387,413	20,500,000	20,412,987			1,781	3.800	3.825	MS	259,667	779,000	02/29/2016	03/01/2046	
744560-BT-2	Public Service Electric -SECURED			1	1FE	4,645,050	91.1923	4,559,614	5,000,000	4,645,153			103	3.600	4.017	JD	15,000		12/20/2018	12/01/2047	
744560-BV-7	Public Service Electric -SECURED			1	1FE	26,236,584	97.5755	25,759,927	26,400,000	26,237,163			579	4.050	4.086	MM	178,200	617,760	05/02/2018	05/01/2048	
744600-AC-3	Public Storage-SENIOR UNSECURED			1	1FE	7,255,402	93.6598	7,211,802	7,700,000	7,272,556			17,154	3.094	3.850	MS	70,148	119,119	07/26/2018	09/15/2027	
745310-AB-8	PUGET ENERGY INC-SENIOR NOTE			1	2FE	10,254,108	105.6465	10,801,294	10,224,000	10,232,662			(4,363)	6.500	6.450	JD	29,536	664,560	12/02/2013	12/15/2020	
745310-AH-5	PUGET ENERGY INC-SECURED			1	2FE	7,600,208	97.7561	7,439,236	7,610,000	7,602,913			938	3.650	3.666	MM	35,492	277,765	12/24/2015	05/15/2025	
745332-BW-5	PUGET SOUND ENERGY INC-SENIOR SECURED NO			1	1FE	20,520,900	127.0488	19,057,315	15,000,000	19,741,044			(181,862)	6.724	4.159	JD	44,827	1,008,600	05/15/2014	06/15/2036	
745332-BX-3	PUGET SOUND ENERGY INC-SENIOR NOTE			1	1FE	10,526,366	125.6584	12,823,436	10,205,000	10,482,529			(9,455)	6.274	6.014	MS	188,521	640,262	08/02/2016	03/15/2037	
745332-CB-0	PUGET SOUND ENERGY INC-SENIOR SECURED BO			1	1FE	20,927,192	119.2241	22,614,435	18,968,000	20,676,599			(49,563)	5.795	5.069	MS	323,652	1,099,196	05/16/2017	03/15/2040	
745332-CC-8	PUGET SOUND ENERGY INC-SECURED			1	1FE	21,492,138	118.9838	20,822,157	17,500,000	21,361,591			(83,463)	5.764	4.196	JJ	465,123	977,991	04/24/2018	07/15/2040	
745332-CD-6	PUGET SOUND ENERGY INC-SECURED			1	1FE	1,154,834	117.2000	1,130,980	965,000	1,140,795			(4,781)	5.638	4.336	AO	11,486	54,407	12/15/2015	04/15/2041	
745332-CE-4	PUGET SOUND ENERGY INC-SECURED			1	1FE	4,835,118	100.0277	4,516,251	4,515,000	4,806,863			(7,978)	4.434	3.994	MM	25,580	200,195	05/16/2017	11/15/2041	
745332-CG-9	PUGET SOUND ENERGY INC-SECURED			1	1FE	49,775,000	101.5379	50,768,969	50,000,000	49,786,994			4,222	4.300	4.327	MM	244,861	2,150,000	05/11/2015	05/20/2045	
745332-CG-9	PUGET SOUND ENERGY INC-SECURED			1	1FE	614,454	101.5379	593,997</													

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
747525-AV-5	QUALCOMM INC-SENIOR UNSECURED			1	1FE	21,036,634	.88 8153	18,686,749	21,040,000	21,035,732		61			4.300	4.301	MN	103,038	904,720	05/19/2017	05/20/2047
747525-AV-5	QUALCOMM INC-SENIOR UNSECURED			1	1FE	555,327	.88 8153	479,603	540,000	540,989	(283)				4.300	4.131	MN	2,645	23,220	10/30/2017	05/20/2047
74834L-AP-5	Quest Diagnostics Inc-SENIOR NOTE			1	2FE	5,037,523	101.6095	5,112,991	5,032,000	5,035,197	(3,175)				4.750	4.684	JJ	100,256	239,020	01/01/2013	01/30/2020
74834L-AQ-3	Quest Diagnostics Inc-SENIOR NOTE			1	2FE	2,794,513	102.9952	3,009,520	2,922,000	2,812,790	2,506				5.750	6.066	JJ	70,473	168,015	04/07/2010	01/30/2040
74913G-AX-3	Qwest Corp-SENIOR UNSECURED			1	3FE	393,947	102.2453	383,420	375,000	393,722	(225)				6.750	4.890	JD	2,109		12/17/2018	12/01/2021
749685-AR-4	RPM INTERNATIONAL INC-NOTE			1	2FE	2,818,658	101.8206	2,733,882	2,685,000	2,700,357	(19,045)				6.125	5.361	AO	34,719	164,456	12/02/2013	10/15/2019
749685-AS-2	RPM INTERNATIONAL INC-SENIOR UNSECURED N			1	2FE	6,902,563	99.0549	6,889,270	6,955,000	6,931,314	5,523				3.450	3.544	MN	30,660	239,948	12/02/2013	11/15/2022
749685-AS-2	RPM INTERNATIONAL INC-SENIOR UNSECURED N			1	2FE	7,267,909	99.0549	6,983,372	7,050,000	7,213,114	(42,580)				3.450	2.771	MN	31,079	243,225	09/29/2017	11/15/2022
749685-AU-7	RPM INTERNATIONAL INC-SENIOR UNSECURED			1	2FE	6,658,498	98.2539	6,401,241	6,515,000	6,654,107	(2,642)				5.250	5.099	JD	28,503	342,038	05/16/2017	06/01/2045
749685-AU-7	RPM INTERNATIONAL INC-SENIOR UNSECURED			1	2FE	7,300,696	98.2539	7,199,063	7,327,000	7,301,706	428				5.250	5.274	JD	32,056	367,167	01/27/2017	06/01/2045
749685-AV-5	RPM INTERNATIONAL INC-SENIOR UNSECURED			1	2FE	4,318,859	94.9508	4,106,620	4,325,000	4,319,680	525				3.750	3.767	MS	47,755	162,188	02/27/2017	03/15/2027
74979U-AA-3	RS 2018 Private, LLC Senior Secured				1PL	46,000,000	101.5636	46,719,256	46,000,000	46,000,000					4.040	4.040	MJSD	1,166,662		05/15/2018	06/20/2026
74986E-AM-3	RREEF America REIT II, I Senior Note Ser				1	15,900,000	100.1089	15,917,315	15,900,000	15,900,000					3.710	3.709	JJ	861,895	589,890	01/15/2014	01/15/2021
74986E-AN-1	RREEF America REIT II, I Senior Note Ser				1	7,600,000	102.5986	7,797,494	7,600,000	7,600,000					4.330	4.329	JJ	480,822	329,080	01/15/2014	01/15/2024
74986E-AV-3	RREEF AMERICA REIT II INC SR UNSEC NT S			1	1	43,000,000	99.6850	42,864,550	43,000,000	43,000,000					3.850	3.849	JJ	809,356	1,655,500	01/05/2016	01/05/2026
74986E-AX-9	RREEF America REIT II, I Senior Notes Se				1Z	9,000,000	98.7452	8,887,068	9,000,000	9,000,000					4.140	4.140	FA	125,235		08/31/2018	08/31/2029
74986E-AY-7	RREEF America REIT II, I Senior Notes Se				1Z	11,000,000	99.0585	10,896,435	11,000,000	11,000,000					4.190	4.190	FA	154,914		08/31/2018	08/31/2030
74992*-AA-3	RXR Realty, LLC Sr Secured Note Series A			1	2PL	18,843,750	101.7486	19,077,863	18,750,000	18,789,765	(22,025)				5.400	5.266	AO	253,125	1,012,500	06/14/2016	10/01/2020
74992*-AB-1	RXR Realty LLC Sr Secured Series B			2	2FE	37,400,000	100.0000	37,400,000	37,400,000	37,400,000					6.408	6.408	JAJO	5,561,082	2,728,995	10/05/2015	10/01/2020
74992*-AD-7	RXR Realty LLC Sr Secured Series D				2FE	17,970,000	102.0000	18,329,400	17,970,000	17,970,000					5.598	5.601	MJSD	1,021,137	1,283,220	06/05/2017	06/05/2022
751277-AN-4	NESTLE PURINA PETCARE CO-DEBENTURE				1FE	4,982,250	113.7900	5,689,502	5,000,000	4,958,231	1,321				9.300	9.335	MN	77,500	465,000	05/02/1991	05/01/2021
751277-AQ-7	NESTLE PURINA PETCARE CO-DEBENTURE				1FE	4,835,791	114.8004	5,740,019	5,000,000	4,958,570	10,852				8.625	8.929	FA	162,917	431,250	02/19/1992	02/15/2022
754730-AF-6	RAYMOND JAMES FINANCIAL-SENIOR UNSECURED			1	2FE	23,364,648	96.0752	21,578,498	22,460,000	23,347,070	(13,628)				4.950	4.992	JJ	512,650	1,100,971	03/22/2018	07/15/2046
755111-BT-7	RAYTHEON COMPANY-SR UNSECURED				1FE	362,873	100.3114	351,090	350,000	354,946	(2,682)				3.125	2.313	AO	2,309	10,938	12/15/2015	10/15/2020
755111-BU-4	Raytheon Co-SENIOR UNSECURED NOTE			1	1FE	71,845,434	111.0722	76,752,014	69,101,000	71,875,512	(37,689)				4.875	4.570	AO	711,164	3,098,801	07/16/2018	10/15/2040
755111-BW-0	Raytheon Co-SENIOR UNSECURED BOND				1FE	3,806,983	108.8818	3,685,649	3,385,000	3,777,996	(10,398)				4.700	3.928	JD	7,071	159,095	04/07/2017	12/15/2041
755111-BX-8	RAYTHEON COMPANY-SR UNSECURED				1FE	98,336	97.4508	97,451	100,000	99,017	232				2.500	2.764	JD	111	2,500	12/15/2015	12/15/2022
755111-BY-6	RAYTHEON COMPANY-SR UNSECURED				1FE	201,015	99.4708	198,942	200,000	200,695	(109)				3.150	3.083	JD	280	6,300	12/15/2015	12/15/2024
755111-BZ-3	Raytheon Co-SR UNSECURED				1FE	763,238	101.5660	710,962	700,000	758,858	(1,388)				4.200	3.686	JD	1,307	29,400	08/02/2016	12/15/2044
756109-AN-4	REALTY INCOME CORP-SENIOR UNSECURED NOTE			1	1FE	26,426,904	99.0256	26,286,354	26,545,000	26,494,881	12,011				3.250	3.303	AO	182,128	862,713	10/11/2012	10/15/2022
756109-AS-3	REALTY INCOME CORP-SENIOR UNSECURED			1	1FE	220,991	92.9746	213,842	230,000	221,973	851				3.000	3.502	JJ	3,182	6,900	10/30/2017	01/15/2027
756109-AT-1	REALTY INCOME CORP-SENIOR UNSECURED			1	1FE	14,995,200	100.8636	15,129,547	15,000,000	14,994,368	79				4.650	4.652	MS	205,375	697,500	03/08/2017	03/15/2047
758202-AK-1	RELX CAPITAL INC-SENIOR UNSECURED NOTE			1,5	2FE	15,088,144	98.1875	15,270,113	15,552,000	15,342,094	50,509				3.125	3.506	AO	102,600	486,000	07/08/2013	10/15/2022
75846#-AA-4	Reelcraft Ind. SR SUB NT			2	5G1	2,892,154	99.3686	2,873,894	2,892,154	2,892,154					10.500	10.633	FIAN	78,428	263,763	11/13/2017	02/28/2023
75846#-AA-4	Reelcraft Ind. SR SUB NT			2	5G1	12,751	99.3686	12,831	12,913	12,762	11				10.500	11.001	FIAN	372	375	09/30/2018	02/28/2023
758750-C*2	Regal Beloit Corporation Senior Note Se			1	2	4,300,000	101.0969	4,347,167	4,300,000	4,300,000					4.770	4.768	JJ	197,703	205,110	07/14/2011	07/14/2021
758750-C8-0	Regal Beloit Corporation Senior Note Se			1	2	21,000,000	101.2074	21,253,554	21,000,000	21,000,000					4.870	4.869	JJ	985,769	1,022,700	07/14/2011	07/14/2023
75884R-AS-2	REGENCY CENTERS LP-SENIOR UNSECURED NOTE			1	2FE	16,141,930	102.2418	16,191,007	15,836,000	15,923,921	(36,384)				4.800	4.538	AO	160,471	760,128	04/09/2012	04/15/2021
75886A-AJ-7	REGENCY ENERGY PARTNERS-SENIOR UNSECURED			1	2FE	201,641	100.0325	200,065	200,000	201,156	(223)				4.500	4.500	MN	1,509	9,000	10/20/2016	11/01/2023
75886A-AK-4	REGENCY ENERGY PARTNERS-SENIOR UNSECURED			1	2FE	325,991	102.6292	307,888	300,000	310,583	(7,189)				5.750	3.184	MS	5,750	17,250	10/20/2016	09/01/2020
7591EP-AK-6	REGIONS FINANCIAL CORP-SENIOR UNSECURED			1	2FE	3,484,626	99.3604	3,378,253	3,400,000	3,452,915	(25,276)				3.200	2.406	FA	43,218	108,800	09/29/2017	02/08/2021
759351-AG-4	Reinsurance Group of Ame-SENIOR UNSECURE				2FE	29,567,826	102.6653	29,429,174	24,769,000	25,467,318	(779,385)				6.450	3.142	MN	204,138	1,597,601	12/02/2013	11/15/2019
759351-AJ-8	Reinsurance Group of Ame-SENIOR UNSECURE			1,5	2FE	10,232,982	103.8215	9,582,726	9,230,000	9,602,027	(145,880)				5.000	3.250	JD	38,458	461,229	01/12/2015	06/01/2021
759351-AM-1	REINSURANCE GRP OF AMER-SENIOR UNSECURED			1	2FE	3,099,876	98.0746	3,040,312	3,100,000	3,099,642	23				3.950	3.951	MS	36,055	120,938	06/01/2016	09/15/2026
759351-AM-1	REINSURANCE GRP OF AMER-SENIOR UNSECURED			1	2FE	1,483,757	98.0746	1,441,696	1,470,000	1,480,621	(1,209)				3.950	3.837	MS	17,097	58,065	06/02/2016	09/15/2026
759468-AC-5	RELIANCE HOLDINGS USA-SENIOR UNSECURED N			1	2FE	2,060,706	103.5576	2,019,373	1,950,000	1,983,320	(12,867)				5.400	4.013	FA	40,073	105,300	10/02/2013	02/14/2022
759509-AB-8	Reliance Steel & Aluminu-SENIOR UNSECURE			1	2FE	16,333,590	109.9564	20,583,840	18,720,000	16,674,853	50,256				6.850	8.009	MN	163,852	1,282,320	04/16/2010	11/15/2036
759509-AE-2	Rel																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
760759-AP-5	Republic Services Inc-SENIOR UNSECURED N			1	2FE	6,481,995		100,4166	6,527,078	6,500,000		6,493,014	1,851		3.550	3.583	JD	19,229	230,750	05/14/2012	06/01/2022
760759-AP-5	Republic Services Inc-SENIOR UNSECURED N			1	2FE	46,963,637		100,4166	45,180,437	44,993,000		46,020,367	(306,271)		3.550	2.791	JD	133,104	1,587,252	12/13/2016	06/01/2022
760759-AO-3	Republic Services Inc-SR UNSECURED			1	2FE	159,334		97,0264	155,242	160,000		159,558	63		3.200	3.249	MS	1,508	(91,976)	03/04/2015	03/15/2025
760759-AR-1	REPUBLIC SERVICES INC-SENIOR UNSECURED			1	2FE	1,945,257		94,3232	1,918,534	2,034,000		1,961,929	8,291		2.900	3.440	JJ	29,493	58,966	12/12/2016	07/01/2026
760759-AS-9	Republic Services Inc-SENIOR UNSECURED			1	2FE	9,915,780		95,7936	9,871,527	10,305,000		9,940,489	24,708		3.375	3.849	MM	44,440	346,828	04/05/2018	11/15/2027
760759-AT-7	Republic Services Inc-SENIOR UNSECURED			1	2FE	266,225		100,0646	270,175	270,000		266,411	185		3.950	4.122	MM	1,363	5,362	05/03/2018	05/15/2028
760761-AB-2	REPUBLIC SERVICES INC-NOTE			1	2FE	19,526,392		101,5492	17,729,482	17,459,000		17,862,894	(562,936)		5.500	2.173	MS	282,739	960,245	12/12/2016	09/15/2019
760761-AD-8	REPUBLIC SERVICES INC NT			1	2FE	318,795		105,8591	306,991	290,000		302,028	(3,908)		5.250	3.711	MM	1,945	15,225	03/08/2016	11/15/2021
76127-AA-2	K Road Modesto Solar LLC Senior Secured			2	2FE	50,105,017		117,5948	58,920,895	50,105,017		50,105,017			5.850	5.850	MJSD	740,928	2,931,144	04/09/2014	12/31/2036
76169-AA-5	Rexford Industrial Realt Gtd Senior Note			1	2	38,100,000		98,2744	37,442,546	38,100,000		38,100,000			4.290	4.289	FA	658,336	1,634,490	08/06/2015	08/06/2025
761713-BB-1	Reynolds American Inc-SENIOR UNSECURED			1	2FE	34,817		92,9030	32,516	35,000		34,820	3		5.850	5.888	FA	774	2,048	06/09/2015	08/15/2045
761713-BB-1	Reynolds American Inc-SENIOR UNSECURED			1	2FE	141,356		92,9030	106,838	115,000		140,085	(502)		5.850	4.432	FA	2,542	6,728	05/06/2016	08/15/2045
76251-AA-0	Rialto Water Services LL Senior Secured			1	1FE	39,541,118		111,8445	44,224,566	39,541,118		39,541,118			5.500	5.500	MS	549,731	2,163,917	11/29/2012	09/30/2042
76716X-AC-6	Rio Oil Finance Trust Se-SECURED			1	3FE	2,300,000		104,7500	2,409,250	2,300,000		2,300,000			8.200	8.200	JAJO	44,531	94,300	04/12/2018	04/06/2028
77046-AA-8	Specified Air Solutions Senior Sub Note			1	4Z	16,763,959		98,4426	16,502,883	16,763,959		16,763,959			10.500	10.648	MJSD	63,563		12/19/2018	06/19/2024
771196-AU-6	ROCHE HOLDING INC-NOTE			1	1FE	16,115,467		137,5528	16,218,850	11,791,000		16,077,790	(37,677)		7.000	4.288	MS	275,123		09/19/2018	03/01/2039
771196-BH-4	ROCHE HOLDING INC-SENIOR UNSECURED NOTE			1	1FE	26,381,928		101,2094	27,124,115	26,800,000		26,411,803	8,286		4.000	4.091	MM	98,267	1,072,000	06/02/2015	11/28/2044
771196-BH-4	ROCHE HOLDING INC-SENIOR UNSECURED NOTE			1	1FE	1,930,354		101,2094	1,824,805	1,803,000		1,920,580	(2,801)		4.000	3.605	MM	6,611	72,120	12/09/2015	11/28/2044
771196-BK-7	ROCHE HOLDING INC-SR UNSECURED			1	1FE	11,880,480		94,6059	11,352,714	12,000,000		11,910,665	10,772		2.625	2.737	MM	40,250	315,000	02/22/2016	05/15/2026
771367-CB-3	ROCHESTER GAS & ELECTRIC-BOND			1,5	1FE	5,142,842		101,4751	5,225,969	5,150,000		5,149,355	861		5.900	5.918	JJ	140,109	303,850	06/24/2009	07/15/2019
77183-AA-9	Rock Chalk Park Trust Gfs Seri			1	1	4,969,649		94,8548	4,713,950	4,969,649		4,969,649			3.800	3.800	MM	63,130	182,971	11/17/2016	07/01/2044
772739-AL-2	ROCK-TENN CO-SENIOR UNSECURED NOTE			1	2FE	2,595,442		102,9177	2,675,861	2,600,000		2,597,954	534		4.900	4.925	MS	42,467	127,400	03/21/2013	03/01/2022
773903-AB-5	Rockwell Automation Inc-NOTE			1	1FE	5,036,774		120,5338	5,845,888	4,850,000		4,965,203	(9,206)		6.700	6.350	JJ	149,838	324,950	09/18/2008	01/15/2028
773903-AE-9	Rockwell Automation Inc-SENIOR UNSECURED			1	1FE	21,305,353		122,9324	24,709,417	20,100,000		21,088,805	(30,670)		6.250	5.806	JJ	104,688	1,256,250	06/04/2010	12/01/2037
773903-AF-6	ROCKWELL AUTOMATION-SR UNSECURED			1	1FE	99,407		98,8983	98,898	100,000		99,829	142		2.050	2.199	MS	683	2,050	12/15/2015	03/01/2020
774341-AE-1	ROCKWELL COLLINS INC-SR UNSECURED			1	2FE	103,271		99,5795	99,579	100,000		102,087	(404)		3.700	3.219	JD	164	3,700	12/15/2015	12/15/2023
774341-AF-8	ROCKWELL COLLINS INC-SENIOR UNSECURED BO			1	2FE	7,792,918		98,5075	7,708,212	7,825,000		7,795,467	598		4.800	4.826	JD	16,693	375,600	12/11/2013	12/15/2043
774341-AF-8	ROCKWELL COLLINS INC-SENIOR UNSECURED BO			1	2FE	386,827		98,5075	315,224	320,000		383,092	(1,591)		4.800	3.583	JD	683	15,360	08/02/2016	12/15/2043
774341-AL-5	ROCKWELL COLLINS INC-SENIOR UNSECURED			1	2FE	35,207,802		91,9941	32,329,334	35,045,000		35,201,200	(2,911)		4.350	4.322	AO	321,830	1,524,458	05/16/2017	04/15/2047
774341-AL-5	ROCKWELL COLLINS INC-SENIOR UNSECURED			1	2FE	17,631,055		91,9941	16,282,957	17,700,000		17,632,158	1,178		4.350	4.373	AO	162,545	769,950	04/05/2017	04/15/2047
775371-AU-1	Rohm & Haas Co-DEBENTURE			1	2FE	7,239,218		125,0775	6,566,568	5,250,000		6,962,592	(115,509)		7.850	4.038	JJ	190,035	365,946	08/01/2018	07/15/2029
776696-AE-6	Roper Technologies Inc-SENIOR UNSECURED			1	2FE	16,027,356		97,9823	15,726,163	16,050,000		16,039,429	2,413		3.125	3.142	MM	64,089	501,363	12/02/2013	11/15/2022
776743-AF-3	Roper Technologies Inc-SENIOR UNSECURED			1	2FE	23,674,404		99,0037	23,463,885	23,700,000		23,673,964	(440)		4.200	4.213	MS	340,095		08/14/2018	09/15/2028
779382-AQ-3	ROIAN COMPANIES INC-SENIOR UNSECURED BON			1	4FE	7,857,059		59,0000	5,251,000	8,900,000		7,936,751	17,039		5.400	6.280	JD	40,050	480,600	09/11/2013	12/01/2042
781428-AA-1	Rumford Falls Finance 2017 LP - Senior S			1	2FE	29,250,000		97,7300	28,586,025	29,250,000		29,250,000			4.860	4.861	MM	714,724	1,421,550	05/10/2017	05/10/2027
78349A-AA-2	RWJ Barnabas Health, Inc Senior Secured			1	1Z	6,700,000		101,8716	6,825,397	6,700,000		6,700,000			4.170	4.170	JJ	10,089		12/18/2018	07/01/2034
78355H-JX-8	RYDER SYSTEM INC-UNSECURED NOTE			1	2FE	6,385,536		99,4835	6,366,943	6,400,000		6,397,949	2,839		2.450	2.496	MS	52,267	156,800	05/01/2014	09/03/2019
78355H-KB-4	RYDER SYSTEM INC-SR UNSECURED			1	2FE	6,779,436		99,8844	6,777,155	6,785,000		6,782,220	843		3.450	3.464	MM	29,911	234,083	02/17/2016	11/15/2021
78355H-KC-2	Ryder System Inc-SENIOR UNSECURED			1,5	2FE	3,170,477		96,7420	3,086,071	3,190,000		3,176,500	4,827		2.250	2.414	MS	23,925	71,775	09/27/2017	09/01/2021
78390X-AA-9	LEIDOS HOLDINGS INC-SENIOR UNSECURED NOT			1	3FE	98,350		99,2500	99,250	100,000		99,401	290		4.450	4.778	JD	371	4,450	02/24/2015	12/01/2020
78390X-AA-9	LEIDOS HOLDINGS INC-SENIOR UNSECURED NOT			1	3FE	160,302		99,2500	158,800	160,000		160,099	(54)		4.450	4.413	JD	593	7,120	04/17/2015	12/01/2020
78403D-AJ-9	SBA TOWER TRUST-SR UNSECURED			1	1FE	9,400,000		99,0030	9,306,282	9,400,000		9,400,000			3.156	3.156	MM	179,598	296,664	10/06/2015	10/08/2020
78403D-AK-6	SBA TOWER TRUST-FIRST LIEN			1	1FE	11,750,000		98,1659	11,534,497	11,750,000		11,750,000			2.877	2.877	MM	99,536	338,047	06/21/2016	07/09/2021
78403D-AL-4	SBA TOWER TRUST-FIRST LIEN			1	1FE	160,000		98,3198	157,312	160,000		160,000			3.168	3.168	MM	642	299,306	04/04/2017	04/11/2022
78403D-AL-4	SBA TOWER TRUST-FIRST LIEN			1	1FE	16,660,000		98,3198	16,380,070	16,660,000		16,660,000			3.168	3.168	MM	317,717	233,552	04/04/2017	04/11/2022
78409V-AB-0	S&P GLOBAL INC-SENIOR UNSECURED NOTE			1	1FE	54,623,102		124,6115	64,274,586	51,580,000		54,726,210	(44,030)		6.550	5.945	MM	431,696	3,027,288	07/26/2018	11/15/2037
78409V-AD-6	S&P GLOBAL INC-SR UNSECURED			1	1FE	11,408,366		101,8244	11,699,626	11,490,000		11,431,032	7,808		4.000	4.091	JD	20,427	459,423	12/14/2015	06/15/2025
78409V-AM-6	S&P Global Inc-SENIOR UNSECURED			1	1FE	11,217,581															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
797440-BJ-2	SAN DIEGO G & E-SECURED			1	1FE	521,695	118.6431	486,437	410,000	511,496	(3,515)				6.125	4.201	MS	7,394	25,113	12/15/2015	09/15/2037
797440-BL-7	SAN DIEGO G & E-SECURED NOTE			1	1FE	5,093,888	111.3764	4,455,054	4,000,000	4,938,960	(28,274)				5.350	3.744	MN	27,344	214,000	01/01/2013	05/15/2040
797440-BP-8	SAN DIEGO G & E-SECURED			1	1FE	1,028,174	92.5396	988,323	1,068,000	1,026,744	(179)				3.950	4.205	MN	5,390	19,124	10/04/2018	11/15/2041
797440-BR-4	SAN DIEGO GAS & ELEC 1ST MTG BD SER NNN			1	1FE	104,334	100.7966	100,797	100,000	102,685	(561)				3.600	2.947	MS	1,200	3,600	12/15/2015	09/01/2023
80282K-AD-8	SANTANDER HOLDINGS USA-SR UNSECURED			2	2FE	13,301,714	98.7062	13,182,207	13,355,000	13,340,212	10,856				2.650	2.736	AO	72,748	353,335	04/14/2015	04/17/2020
80282K-AE-6	SANTANDER HOLDINGS USA-SENIOR UNSECURED			2	2FE	562,521	99.0105	534,657	540,000	557,032	(2,339)				4.500	3.930	JJ	11,070	24,900	08/02/2016	07/17/2025
80386W-AA-3	SASOL Financing USA LLC-SENIOR UNSECURED			1	2FE	5,760,992	99.7890	5,715,916	5,728,000	5,760,164	(828)				5.875	5.746	MS	87,869	195,345	11/16/2018	03/27/2024
80386W-AA-3	SASOL Financing USA LLC-SENIOR UNSECURED			1	2FE	12,666,226	99.7890	12,658,239	12,685,000	12,665,635	(591)				5.875	5.907	MS	194,591	88,623	09/20/2018	03/27/2024
80386W-AB-1	SASOL Financing USA LLC-SENIOR UNSECURED			1	2FE	1,797,642	100.0153	1,800,276	1,800,000	1,797,452	(190)				6.500	6.518	MS	30,550		09/20/2018	09/27/2028
806605-AH-4	MERCK & CO INC-SENIOR UNSECURED NOTE			1	1FE	24,875,771	134.5739	26,941,690	20,020,000	24,026,276	(132,228)				6.550	4.888	MS	386,108	1,311,310	04/18/2013	09/15/2037
806851-AG-6	SCHLUMBERGER HLDGS CORP-SR UNSECURED			1	2FE	24,116,424	98.7040	23,915,987	24,230,000	24,145,224	10,221				4.000	4.058	JD	26,922	969,200	01/20/2016	12/21/2025
806851-AG-6	SCHLUMBERGER HLDGS CORP-SR UNSECURED			1	2FE	1,752,198	98.7040	1,608,876	1,630,000	1,723,182	(12,304)				4.000	3.053	JD	1,811	65,200	08/02/2016	12/21/2025
80808#-AK-8	Schreiber Foods Inc. Senior Note			1	2	23,400,000	89.6100	20,968,740	23,400,000	23,400,000					3.810	3.810	MS	225,362	891,540	03/30/2015	03/30/2030
808513-AD-7	CHARLES SCHWAB CORP-SENIOR NOTE			1	1FE	25,978,765	102.2019	24,389,461	23,864,000	24,334,866	(292,820)				4.450	3.138	JJ	469,027	1,061,948	12/15/2015	07/22/2020
808513-AG-0	CHARLES SCHWAB CORP-SENIOR UNSECURED NOT			1	1FE	13,699,873	100.0479	13,506,467	13,500,000	13,582,577	(21,070)				3.225	3.047	MS	145,125	435,375	01/15/2013	09/01/2022
808513-AU-9	Charles Schwab Corp/The-SENIOR UNSECURED			1	1FE	9,614,800	95.8337	9,583,371	10,000,000	9,629,652	(14,852)				3.200	3.684	JJ	138,667	202,666	07/19/2018	01/25/2028
808513-AX-3	Charles Schwab Corp/The-SENIOR UNSECURED			1	1FE	18,872,819	102.0021	18,959,135	18,587,000	18,850,899	(21,920)				3.850	3.593	MN	79,511	355,122	05/31/2018	05/21/2025
808626-AE-5	LEIDOS INC-SENIOR UNSECURED NOTE			1	3FE	24,657,164	102.6180	22,288,106	21,700,000	23,933,167	(104,953)				7.125	6.002	JJ	773,063	1,546,815	06/22/2010	07/01/2032
81170Y-AB-5	SEACOR Holdings Inc-SENIOR UNSECURED NOT			2,8	4	4,820,746	92.3027	4,782,203	5,181,000	5,025,302					3.000	4.679	MN	19,861	122,202	12/17/2014	11/15/2028
81211K-AK-6	Sealed Air Corp-BOND			1,5	3FE	18,469,221	99.7500	16,832,813	16,875,000	18,010,758	(47,415)				6.875	6.166	JJ	534,961	1,160,156	03/09/2005	07/15/2033
81373P-AA-1	Securian Financial Group-SENIOR UNSECURE			1	1FE	48,647,971	99.1157	48,647,583	48,900,000	48,648,657	686				4.800	4.833	AO	495,520	1,238,800	06/26/2018	04/15/2048
81413P-AG-0	SECURITY CAPITAL GROUP-SENIOR UNSECURED			1	2FE	612,678	106.8669	470,214	440,000	583,270	(12,512)				7.700	3.605	JD	1,506	33,880	08/02/2016	06/15/2028
81623N-AB-2	Self Help FCU COIN			1	1	250,000	100.0000	250,000	250,000	250,000					0.000	0.000	MAT			08/31/2016	08/31/2021
816851-AP-4	SEMPRA ENERGY-SR UNSECURED			1	2FE	115,130	111.1758	111,176	100,000	114,025	(381)				6.000	4.915	AO	1,267	6,000	12/09/2015	10/15/2039
817925-A*-1	Servco Pacific Inc. Senior Note Ser			1	3	16,000,000	99.5573	15,929,168	16,000,000	16,000,000					4.990	4.990	FA	301,618	798,400	02/01/2017	02/15/2029
82011#-AC-7	Sharyland Distribution & Senior Secured			1	1PL	29,500,000	100.3564	29,605,138	29,500,000	29,500,000					3.860	3.859	JD	88,566	1,138,700	12/03/2015	12/03/2025
82011#-AD-5	Sharyland Distr SR SEC0 NT SER B			1	1PL	17,700,000	99.7413	17,654,210	17,700,000	17,700,000					3.860	3.859	JJ	316,938	683,220	01/14/2016	01/14/2026
82340*-AA-5	Shepherds Flat Funding T Trust A-1-A Cer			1	2FE	8,200,000	115.4607	9,467,777	8,200,000	8,200,000					6.950	6.950	JAJO	96,566	569,900	05/02/2011	04/30/2032
82340*-AB-3	Shepherds Flat Funding T Trust A-1-G Cer			2	1FE	43,689,120	108.0580	46,248,824	42,800,000	43,407,505	(51,158)				4.480	4.297	JAJO	324,900	1,917,440	01/01/2013	04/30/2032
824348-AQ-9	SHERWIN-WILLIAMS CO/THE-SENIOR UNSECURED			1,5	2FE	13,900,379	84.0770	11,779,194	14,010,000	13,910,421	2,384				4.000	4.046	JD	24,907	560,400	05/16/2017	12/15/2042
824348-AS-5	SHERWIN-WILLIAMS CO-SENIOR UNSECURED			1	2FE	40,113,970	90.6348	35,089,256	38,715,000	40,049,483	(27,918)				4.550	4.326	FA	733,972	1,761,533	05/16/2017	08/01/2045
824348-AU-0	SHERWIN-WILLIAMS CO/THE-SENIOR UNSECURED			1	2FE	4,541,188	96.8010	4,356,044	4,500,000	4,530,422	(8,639)				2.750	2.537	JD	10,313	123,750	09/29/2017	06/01/2022
824348-AX-4	SHERWIN-WILLIAMS CO-SENIOR UNSECURED			1	2FE	8,982,861	90.1764	8,156,459	9,045,000	8,984,389	1,025				4.500	4.542	JD	33,919	407,025	05/02/2017	06/01/2047
824348-AZ-9	SHERWIN-WILLIAMS CO/THE-SENIOR UNSECURED			1	2FE	15,953,488	101.7517	16,168,341	15,890,000	15,905,954	(35,373)				7.250	7.011	JD	51,201	1,152,025	08/09/2017	06/15/2019
824348-BF-2	SHERWIN-WILLIAMS CO/THE-SENIOR UNSECURED			1	2FE	7,042,574	97.7774	6,648,864	6,800,000	7,005,955	(26,473)				3.950	3.446	JJ	123,854	268,600	08/09/2017	01/15/2026
824348-BH-8	SHERWIN-WILLIAMS CO/THE-SENIOR UNSECURED			1	2FE	2,320,871	84.5434	2,113,585	2,500,000	2,325,320	3,267				4.400	4.876	FA	45,833	110,000	08/09/2017	02/01/2045
826418-BE-4	SIERRA PACIFIC POWER CO-SECURED			1	1FE	573,843	126.9586	507,835	400,000	559,972	(5,911)				6.750	3.736	JJ	13,500	27,000	08/02/2016	07/01/2037
82873L-AA-3	SIMMONS FOODS INC-SIMFOO 5 3/4 11/01/24			1	4FE	4,250,000	71.0000	3,017,500	4,250,000	4,250,000					5.750	5.750	MN	40,729	244,375	10/11/2017	11/01/2024
828807-CE-5	Simon Property Group LP-SENIOR UNSECURED			1	1FE	14,789,883	127.3455	14,230,855	11,175,000	14,511,015	(95,562)				6.750	4.517	FA	314,297	754,313	01/19/2017	02/01/2040
828807-CF-2	Simon Property Group LP-SENIOR UNSECURED			1	1FE	8,715,438	102.1149	8,935,055	8,750,000	8,741,120	3,623				4.375	4.422	MS	127,604	382,813	08/09/2010	03/01/2021
828807-CK-1	Simon Property Group LP-SENIOR UNSECURED			1	1FE	9,544,250	100.1407	9,663,576	9,650,000	9,611,546	11,021				3.375	3.506	MS	95,897	325,688	03/14/2012	03/15/2022
828807-CL-9	Simon Property Group LP-SENIOR UNSECURED			1	1FE	16,748,679	103.1922	15,260,059	14,788,000	16,567,527	(48,522)				4.750	3.938	MS	206,827	702,430	10/30/2017	03/15/2042
828807-CN-5	SIMON PROPERTY GROUP LP-SR UNSECURED			1	1FE	98,276	96.9364	96,936	100,000	98,964	235				2.750	3.021	FA	1,146	2,750	12/15/2015	02/01/2023
828807-CO-8	SIMON PROPERTY GROUP LP-SR UNSECURED			1	1FE	602,151	99.9062	599,437	600,000	600,000	(643)				2.200	2.070	FA	5,500	13,200	12/15/2015	02/01/2019
828807-CR-6	SIMON PROPERTY GROUP LP-SR UNSECURED			1	1FE	344,436	100.2343	330,773	330,000	340,939	(2,076)				3.750	3.007	FA	5,156	12,375	10/30/2017	02/01/2024
828807-CS-4	SIMON PROPERTY GROUP LP-SR UNSECURED			1	1FE	403,134	97.8263	391,305	400,000	402,120	(346)				3.375	3.269	AO	3,375	13,500	12/15/2015	10/01/2024
828807-CT-2	Simon Property Group LP-SR UNSECURED			1	1FE	4,051,990	95.9824	3,752,911	3,910,000	4,045,351	(3,057)				4.250</						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
834046-AC-0	Software Paradigms Inter Senior Sub Note	2			5	7,823,311	98.5849	7,712,867	7,823,576	7,823,332			21		12.500	12.503	FMAN	1,129,594	972,245	09/30/2018	11/23/2021
83416W-AB-9	SOLAR STAR FUNDING LLC-SECURED	1			2FE	28,138,473	96.1678	27,060,163	28,138,473	28,138,473					3.950	3.949	JD	574,731	1,107,058	03/04/2015	06/30/2035
83421F-AA-1	SolGen, LLC Senior Secured	1			2FE	19,331,092	96.2484	18,605,867	19,331,092	19,331,092					3.930	3.931	MS	394,368	755,975	09/30/2016	09/30/2036
83545*-AB-4	Sonic Healthcare Investm Gtd Senior Note	1			2	11,400,000	101.4517	11,565,494	11,400,000	11,400,000					5.730	5.727	JJ	306,651	653,220	01/12/2010	01/12/2020
83545*-AC-2	Sonic Healthcare Investm Gtd Senior Note	1			2	20,000,000	101.4099	20,281,980	20,000,000	20,000,000					5.100	5.098	JJ	476,000	1,020,000	01/13/2011	01/13/2021
835456-BC-5	Sonic Automotive SR SUB NT SER B	1			4FE	3,239,000	87.5000	2,834,125	3,239,000	3,239,000					6.125	6.123	MS	58,414	198,389	07/13/2017	03/15/2027
835495-AJ-1	Sonoco Products Co-SENIOR UNSECURED NOTE	1			2FE	4,233,873	112.1138	4,148,210	3,700,000	4,165,257		(12,316)			5.750	4.801	MN	35,458	212,750	09/12/2012	11/01/2040
835495-AK-8	Sonoco Products Co-SENIOR UNSECURED NOTE	1,5			2FE	4,429,664	101.7065	4,525,940	4,450,000	4,443,084		2,166			4.375	4.432	MN	32,448	194,688	10/20/2011	11/01/2021
835495-AK-8	Sonoco Products Co-SENIOR UNSECURED NOTE	1,5			2FE	133,523	101.7065	132,218	130,000	131,305		(470)			4.375	3.962	MN	948	5,688	12/02/2013	11/01/2021
837004-CG-3	SOUTH CAROLINA ELEC&GAS-SECURED	1			2FE	531,086	102.4420	478,404	467,000	527,705		(1,538)			4.600	3.771	JD	955	21,482	09/22/2016	06/15/2043
838515-F8-8	South Jersey Gas Co. Medium Term Not	1			1	8,550,000	105.1835	8,993,189	8,550,000	8,550,000					4.930	4.929	JD	194,365	421,515	06/30/2010	06/30/2026
838515-G*-9	South Jersey Gas Co. First Mortgage	2			1	45,000,000	100.7605	45,342,225	45,000,000	45,000,000					4.030	4.029	JD	911,788	1,813,500	12/30/2010	12/30/2027
838876-AB-8	South Mississippi Electr First Mortgage	2			1	27,621,579	110.2558	30,454,393	27,621,579	27,621,579					5.400	5.399	JD	91,151	1,489,443	12/09/2010	12/09/2040
841215-AA-4	Southaven Combined Cycle-SECURED	2			1FE	479,133	100.9277	472,096	467,757	478,301		(1,235)			3.846	3.452	FA	6,796	8,995	02/23/2018	08/15/2033
842400-ES-8	Southern California Edis-SECURED	1			1FE	1,183,376	111.5655	1,026,402	920,000	1,160,247		(11,763)			6.000	3.716	JJ	25,453	55,200	05/16/2017	01/15/2034
842400-EV-1	SOUTHERN CAL EDISON-SECURED	1			1FE	267,994	108.1877	261,984	205,000	261,953		(2,566)			5.750	3.494	AO	2,947	11,788	08/02/2016	04/01/2035
842400-FG-2	Southern California Edis-SECURED	1			1FE	705,994	107.6657	590,008	548,000	687,672		(5,826)			5.625	3.612	FA	12,844	30,825	08/02/2016	02/01/2036
842400-FF-5	Southern California Edis-SENIOR SECURED	1			1FE	355,028	108.5174	314,701	290,000	343,307		(1,965)			5.550	4.098	JJ	7,422	16,095	04/25/2012	01/15/2037
842400-FH-1	Southern California Edis-SENIOR SECURED	1			1FE	2,790,521	112.4140	2,349,453	2,090,000	2,714,334		(22,084)			5.950	3.745	FA	51,815	124,355	08/02/2016	02/01/2038
842400-FL-2	Southern California Edis-SENIOR SECURED	1			1FE	620,807	113.9184	546,808	480,000	608,555		(4,203)			6.050	4.062	MS	8,551	29,040	08/02/2016	03/15/2039
842400-FM-3	Southern California Edis-SECURED BOND	1			1FE	5,577,998	106.6105	4,674,869	4,385,000	5,411,380		(30,777)			5.500	3.777	MS	71,013	241,175	04/27/2015	03/15/2040
842400-FO-1	SOUTHERN CAL EDISON-SECURED	1			1FE	1,640,110	98.4800	1,383,644	1,405,000	1,623,795		(6,920)			4.500	3.456	MS	21,075	63,225	08/02/2016	09/01/2040
842400-FR-9	Southern California Edis-SECURED NOTE	1			1FE	6,530,865	100.8669	5,850,278	5,800,000	6,008,452		(92,947)			3.875	2.168	JD	18,729	224,750	12/15/2015	06/01/2021
842400-FT-5	Southern California Edis-SECURED	1			1FE	497	89.0718	445	500	497					3.900	3.942	JD	2	20	05/11/2015	12/01/2041
842400-FT-5	Southern California Edis-SECURED	1			1FE	994,270	89.0718	848,409	952,500	990,708		(1,092)			3.900	3.636	JD	3,096	37,148	08/02/2016	12/01/2041
842400-FV-0	SOUTHERN CAL EDISON-SR UNSECURED	1			1FE	1,049,053	93.7494	997,494	1,064,000	1,050,078		351			4.050	4.138	MS	12,688	43,092	12/09/2015	03/15/2042
842400-FV-0	SOUTHERN CAL EDISON-SR UNSECURED	1			1FE	2,726,327	93.7494	2,301,549	2,455,000	2,709,031		(7,333)			4.050	3.393	MS	29,276	99,428	08/02/2016	03/15/2042
842400-FW-8	Southern California Edis-SECURED	1			1FE	467,878	90.8713	427,095	470,000	467,956		49			3.900	3.928	MS	5,397	18,330	05/16/2017	03/15/2043
842400-FY-4	SOUTHERN CAL EDISON 1ST & REF MITG BD SER	1			1FE	549,032	99.6959	548,328	550,000	549,477		96			3.500	3.521	AO	4,813	19,250	09/25/2013	10/01/2023
842400-FZ-1	SOUTHERN CAL EDISON-SECURED	1			1FE	3,613,460	100.3093	3,254,033	3,244,000	3,591,245		(8,641)			4.650	3.953	AO	37,712	150,846	08/02/2016	10/01/2043
842400-GD-9	SOUTHERN CAL EDISON-SECURED	1			1FE	196,394	96.4561	192,912	200,000	198,105		581			2.400	2.722	FA	2,000	4,800	12/15/2015	02/01/2022
842400-GE-7	SOUTHERN CAL EDISON-SECURED	1			1FE	252,576	85.9700	236,417	275,000	253,885		447			3.600	4.081	FA	4,125	9,900	12/09/2015	02/01/2045
842434-CK-6	SOUTHERN CALIF GAS CO-SECURED	1			1FE	874,368	92.9383	859,679	925,000	877,748		1,163			3.750	4.088	MS	10,214	34,688	12/15/2015	09/15/2042
842434-CL-4	SOUTHERN CALIF GAS CO-SECURED	1			1FE	1,446,446	100.3800	1,325,016	1,320,000	1,437,311		(2,831)			4.450	3.884	MS	17,296	58,740	12/09/2015	03/15/2044
842434-CP-5	SOUTHERN CALIF GAS CO-SECURED	1			1FE	150,622	99.2372	148,856	150,000	150,436		(62)			3.200	3.148	JD	213	4,800	12/15/2015	06/15/2025
842587-CQ-8	SOUTHERN CO-SENIOR UNSECURED	1			2FE	514,450	99.5100	512,477	515,000	514,833		328			1.850	1.915	JJ	4,764	9,528	10/30/2017	07/01/2019
842587-CS-4	SOUTHERN CO/THE-SENIOR UNSECURED	1			2FE	3,490,055	97.1127	3,398,945	3,500,000	3,493,328		2,558			2.350	2.429	JJ	41,125	82,250	09/29/2017	07/01/2021
842587-CI-5	SOUTHERN CO-SENIOR UNSECURED	1			2FE	495,249	94.3853	471,927	500,000	495,533		168			4.250	4.323	JJ	10,625	21,250	05/16/2017	07/01/2036
842587-CI-5	SOUTHERN CO-SENIOR UNSECURED	1			2FE	105,324	94.3853	94,385	100,000	104,903		(201)			4.250	3.854	JJ	2,125	4,250	10/20/2016	07/01/2036
842587-CX-3	SOUTHERN CO-SENIOR UNSECURED	1			2FE	30,745,304	91.9461	28,425,124	30,915,000	30,754,207		2,948			4.400	4.433	JJ	680,130	1,360,260	05/16/2017	07/01/2046
842587-CX-3	SOUTHERN CO-SENIOR UNSECURED	1			2FE	6,920,742	91.9461	6,069,359	6,601,000	6,906,763		(6,099)			4.400	4.114	JJ	145,222	290,444	10/20/2016	07/01/2046
84265V-AF-2	SOUTHERN COPPER CORP-SR UNSECURED	1,5			2FE	3,716,000	97.5581	3,902,324	4,000,000	3,825,073		40,420			3.500	4.754	MN	20,611	137,021	03/03/2016	11/08/2022
84265V-AJ-4	SOUTHERN COPPER CORP-SR UNSECURED	1			2FE	601,350	102.1655	526,152	515,000	599,501		(1,584)			5.875	4.773	AO	20,843	30,256	10/30/2017	04/23/2045
8426EP-AB-4	SOUTHERN CO GAS CAPITAL-SENIOR UNSECURED	1			2FE	205,186	87.5371	192,582	220,000	205,600		263			3.950	4.359	AO	263	8,690	05/16/2017	10/01/2046
84314F-AB-7	Southern Illinois Power Senior Secured	1			2	21,768,749	105.2922	22,920,795	21,768,749	21,768,749					5.750	5.749	JD	55,631	1,249,116	07/01/2010	06/15/2040
843452-AY-9	SOUTHERN NATURAL GAS-BOND	1			2FE	2,497,575	117.0363	2,925,907	2,500,000	2,498,107		79			7.350	7.358	FA	69,417	183,750	02/08/2001	02/15/2031
843452-AZ-6	SOUTHERN NATURAL GAS-SENIOR UNSECURED	1			2FE	746,419	127.1929	775,877	610,000	732,347		(6,059)			8.000	5.799	MS	16,267	48,800	08/02/2016	03/01/2032
843646-AH-3	SOUTHERN POWER CO-SR UNSECURED	1			2FE	752,455	99.3973	668,944	673,000	747,992		(1,902)			5.150	4.371	MS	10,205	34,660	08/02/2016	09/15/2041

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
84611F-AE-1	Life Storage, Inc. Gtd Senior Note				2	27,000,000	99.8479	26,958,933	27,000,000	27,000,000					4.533	4.533	AO	282,179	1,223,910	04/08/2014	04/08/2024
84615F-AA-5	Space Florida Non-Recourse No				2	7,391,632	100.3591	7,418,176	7,391,632	7,391,632					3.520	3.520	FMAN	105,080	268,491	11/30/2010	02/28/2021
84756N-AG-4	SPECTRA ENERGY PARTNERS-SENIOR UNSECURED	1			2FE	562,069	90.4226	519,930	575,000	562,286		134			4.500	4.646	MS	7,619	21,938	08/01/2018	03/15/2045
84756N-AG-4	SPECTRA ENERGY PARTNERS-SENIOR UNSECURED	1			2FE	503,000	90.4226	452,113	500,000	502,865		(59)			4.500	4.462	MS	6,625	22,500	10/20/2016	03/15/2045
84860*-AB-9	Spirits of St Louis Bask Senior Secured	2			2FE	12,217,416	93.1904	11,385,459	12,217,416	12,217,416					3.850	3.850	MJSD	604,077	480,268	02/10/2015	06/30/2036
848609-AA-1	Spirits NewCo LLC Senior Secured	1			2FE	34,593,209	102.0049	35,286,768	34,593,209	34,593,209					5.300	5.300	MJSD	2,316,473	1,846,636	02/20/2014	06/30/2036
852060-AD-4	SPRINT CAPITAL CORP-SENIOR UNSECURED	1			4FE	4,300,000	94.5000	3,780,000	4,000,000	4,273,383		(19,888)			6.875	5.948	MN	35,139	275,000	08/17/2017	11/15/2028
852060-AT-9	Sprint Capital Corp-SENIOR UNSECURED	1			4FE	4,440,000	105.5000	4,220,000	4,000,000	4,433,087		(6,913)			8.750	7.446	MS	103,056	175,000	08/30/2018	03/15/2032
85207U-AK-1	Sprint Corp-SENIOR UNSECURED	1			4FE	2,653,125	98.7500	2,468,750	2,500,000	2,646,879		(6,246)			7.625	6.544	MS	63,542	100,078	08/22/2018	03/01/2026
85208N-AD-2	Sprint Spectrum Co LLC -FIRST LIEN	2			2FE	503,125	98.1250	490,625	500,000	502,990		(135)			4.738	4.584	MJSD	724	4,475	10/04/2018	03/20/2025
85234F-AB-1	Stadium Funding Trust Senior Secured	1			2PL	18,438,899	99.5281	18,351,886	18,438,899	18,438,899					5.000	5.000	AO	704,236	928,334	06/19/2013	04/01/2039
85253F-AA-9	STAG Industrial Inc Senior Unsecure	1			2FE	3,097,380	101.9658	3,058,974	3,000,000	3,088,916		(8,464)			4.980	4.390	AO	37,350	74,700	05/16/2018	10/01/2024
85253F-AD-3	STAG Industrial Operatin Gtd Senior Note	1			2	72,725,000	98.5985	71,705,759	72,725,000	72,725,000					4.320	4.319	FA	1,143,237	2,890,056	05/16/2018	02/20/2025
85253F-AG-6	STAG Industrial Operatin Gtd Senior Note	1			2	6,959,000	97.2947	6,770,738	6,959,000	6,959,000					4.100	4.100	JD	14,266	142,659	06/13/2018	06/13/2025
85253F-AH-4	STAG Industrial Operatin Gtd Senior Note	1			2	11,200,000	95.6269	10,710,213	11,200,000	11,200,000					4.270	4.270	JD	23,912	239,120	06/13/2018	06/13/2028
853496-AD-9	Standard Industries Inc-SENIOR UNSECURE	1			3FE	5,364,000	84.0000	4,505,760	5,364,000	5,364,000					4.750	4.750	JJ	117,487	256,701	01/12/2018	01/15/2028
854502-AA-9	STANLEY BLACK & DECKER-SENIOR UNSECURED	1			1FE	33,227,250	108.9730	35,961,092	33,000,000	33,191,116		(4,814)			5.200	5.155	MS	572,000	1,716,000	08/31/2010	09/01/2040
854502-AD-3	STANLEY BLACK & DECKER-SENIOR UNSECURED	1			1FE	24,304,252	98.2092	24,012,159	24,450,000	24,367,919		19,666			2.900	2.992	MN	118,175	709,050	12/15/2015	11/01/2022
855244-AG-4	STARBUCKS CORP-SENIOR UNSECURED	1			2FE	316,220	98.0072	294,022	300,000	309,552		(2,800)			2.700	1.701	JD	360	8,100	08/02/2016	06/15/2022
855244-AH-2	STARBUCKS CORP-SENIOR UNSECURED	1			2FE	144,320	91.6708	110,922	121,000	143,063		(524)			4.300	3.254	JD	231	5,203	08/02/2016	06/15/2045
855244-AS-8	Starbucks Corp-SENIOR UNSECURED	1			2FE	9,888,199	93.0878	9,308,778	10,000,000	9,887,773		(425)			4.500	4.569	MN	57,500	113,713	10/04/2018	11/15/2048
85571B-AL-9	Starwood Property Trust -SENIOR UNSECURE	1			3FE	3,958,086	90.0000	3,587,399	3,985,999	3,959,334		1,248			4.750	4.875	MS	55,749	15,778	08/15/2018	03/15/2025
857473-AE-2	STATE STREET CORP-SENIOR UNSECURED	1			1FE	367,961	121.4520	367,147	268,000	366,147		(9,239)			7.350	2.962	JD	875	19,698	08/02/2016	06/15/2026
857477-AG-8	State Street Corp-SENIOR UNSECURED NOTE	1			1FE	16,271,780	102.6273	14,367,825	14,000,000	14,646,105		(285,961)			4.375	2.197	MS	193,958	612,500	01/01/2013	03/07/2021
857477-AL-7	State Street Corp-SUBORDINATED NOTE	1			1FE	8,985,420	98.2626	8,843,638	9,000,000	8,992,863		1,458			3.100	3.119	MN	35,650	279,000	05/08/2013	05/15/2023
857477-AN-3	State Street Corp-SR UNSECURED	1			1FE	12,532,913	99.0487	12,573,238	12,694,000	12,543,616		10,703			3.300	3.522	JD	17,454	226,754	07/09/2018	12/16/2024
857477-AT-0	STATE STREET CORP-SR UNSECURED	1			1FE	749,854	99.7502	723,189	725,000	742,825		(2,386)			3.550	3.136	FA	9,509	25,738	12/09/2015	08/18/2025
857477-AZ-6	STATE STREET CORP-SENIOR UNSECURED	2,5			1FE	4,034,120	97.4027	3,896,109	4,000,000	4,026,236		(6,025)			2.653	2.449	MN	13,560	106,120	09/21/2017	05/15/2023
858119-BF-6	Steel Dynamics Inc-SENIOR UNSECURED	1			3FE	355,410	94.7500	340,153	359,000	355,504		94			5.000	5.150	JD	798	3,141	10/04/2018	12/15/2026
858155-AD-6	STEELCASE INC-SENIOR NOTE	1			2FE	14,043,397	104.7670	14,719,757	14,050,000	14,047,065		697			6.375	6.381	FA	338,371	895,688	01/27/2011	02/15/2021
858155-AD-6	STEELCASE INC-SENIOR NOTE	1			2FE	220,900	104.7670	209,534	200,000	206,294		(3,146)			6.375	4.602	FA	4,817	12,750	12/02/2013	02/15/2021
858586-HF-0	Stapan Company Senior Note	1			2FE	33,850,000	97.7847	33,100,121	33,850,000	33,850,000					3.860	3.859	JD	14,518	1,306,610	06/27/2013	06/27/2025
858586-J*-2	Stapan Company Senior Note	1			2FE	22,700,000	97.0778	22,036,661	22,700,000	22,700,000					3.950	3.949	JJ	425,909	896,650	07/10/2015	07/10/2027
85915F-AE-1	Stericycle Inc. Senior Note Ser	1			2	14,550,000	100.2254	14,582,796	14,550,000	14,550,000					4.470	4.470	AO	462,496	650,385	10/15/2010	10/15/2020
86176F-AA-1	Stonebridge Funding LLC J & J Backed No	1			1	1,238,308	121.4075	1,503,399	1,238,308	1,238,308					5.781	5.780	MN	9,147	71,587	12/06/2004	05/15/2033
86176F-AB-9	Stonebridge Funding LLC J & J Backed No	1			1	606,194	121.4075	735,965	606,194	606,194					5.781	5.780	MN	4,478	35,044	12/06/2004	05/15/2033
86176F-AC-7	Stonebridge Funding LLC J & J Backed No	1			1	459,035	121.4075	557,303	459,035	459,035					5.781	5.780	MN	3,391	26,537	12/06/2004	05/15/2033
86176F-AD-5	Stonebridge Funding LLC J & J Backed No	1			1	535,123	121.4075	649,679	535,123	535,123					5.781	5.780	MN	3,953	30,935	12/06/2004	05/15/2033
86176F-AE-3	Stonebridge Funding LLC J & J Backed No	1			1	267,561	121.4075	324,840	267,561	267,561					5.781	5.780	MN	1,976	15,468	12/06/2004	05/15/2033
86176F-AF-0	Stonebridge Funding LLC J & J Backed No	1			1	535,123	121.4075	649,679	535,123	535,123					5.781	5.780	MN	34,888	30,935	12/06/2004	05/15/2033
86176F-AG-8	Stonebridge Funding LLC J & J Backed No	1			1	267,561	121.4075	324,840	267,561	267,561					5.781	5.780	MN	17,444	15,468	12/06/2004	05/15/2033
86176F-AH-6	Stonebridge Funding LLC J & J Backed No	1			1	606,194	121.4075	735,965	606,194	606,194					5.781	5.780	MN	39,522	35,044	12/06/2004	05/15/2033
86176F-AJ-2	Stonebridge Funding LLC P & G Backed No	1			1	3,721,046	121.4711	4,519,996	3,721,046	3,721,046					5.914	5.913	FA	83,135	220,063	12/06/2004	08/15/2034
86176F-AK-9	Stonebridge Funding LLC P & G Backed No	1			1	1,822,894	121.4711	2,214,290	1,822,894	1,822,894					5.914	5.913	FA	40,727	107,806	12/06/2004	08/15/2034
86176F-AL-7	Stonebridge Funding LLC P & G Backed No	1			1	1,379,714	121.4711	1,675,953	1,379,714	1,379,714					5.914	5.913	FA	30,825	81,596	12/06/2004	08/15/2034
86176F-AM-5	Stonebridge Funding LLC P & G Backed No	1			1	1,609,201	121.4711	1,954,715	1,609,201	1,609,201					5.914	5.913	FA	35,952	95,168	12/06/2004	08/15/2034
86176F-AN-3	Stonebridge Funding LLC P & G Backed No	1			1	804,601	121.4711	977,357	804,601	804,601					5.914	5.913	FA	17,976	47,584	12/06/2004	08/15/2034
86176F-AP-8	Stonebridge Funding LLC P & G Backed No	1			1	1,609,201	121.4711	1,954,715	1,609,201	1,609,201					5.914	5.913	FA	83,537	95,168		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
86176#-AZ-6	Stonebridge Funding LLC IBM Backed Note				1	1,503,237	118.8735	1,786,951	1,503,237	1,503,237					5.754	5.753	MM	50,937	86,496	12/13/2004	11/29/2032
86176#-BA-0	Stonebridge Funding LLC Anheuser-Busch				1	3,640,432	113.7873	4,142,349	3,640,432	3,640,432					5.658	5.657	JJ	94,978	205,976	12/17/2004	01/15/2033
86176#-BB-8	Stonebridge Funding LLC Anheuser-Busch				1	620,903	113.7872	706,508	620,903	620,903					5.658	5.657	JJ	16,199	35,131	12/17/2004	01/15/2033
86176#-BC-6	Stonebridge Funding LLC Anheuser-Busch				1	470,927	113.7873	535,855	470,927	470,927					5.658	5.657	JJ	12,286	26,645	12/17/2004	01/15/2033
86176#-BD-4	Stonebridge Funding LLC Anheuser-Busch				1	548,914	113.7873	624,595	548,914	548,914					5.658	5.657	JJ	14,321	31,058	12/17/2004	01/15/2033
86176#-BE-2	Stonebridge Funding LLC Anheuser-Busch				1	273,957	113.7873	311,729	273,957	273,957					5.658	5.657	JJ	7,147	15,500	12/17/2004	01/15/2033
86176#-BF-9	Stonebridge Funding LLC Anheuser-Busch				1	548,914	113.7873	624,595	548,914	548,914					5.658	5.657	JJ	14,321	31,058	12/17/2004	01/15/2033
86176#-BG-7	Stonebridge Funding LLC Anheuser-Busch				1	273,957	113.7873	311,729	273,957	273,957					5.658	5.657	JJ	7,147	15,500	12/17/2004	01/15/2033
86176#-BH-5	Stonebridge Funding LLC Anheuser-Busch				1	620,903	113.7872	706,508	620,903	620,903					5.658	5.657	JJ	16,199	35,131	12/17/2004	01/15/2033
86176#-BJ-1	Stonebridge Funding LLC Dupont Backed N				1	1,441,045	113.3701	1,633,714	1,441,045	1,441,045					5.769	5.768	JJ	38,334	83,134	12/30/2004	01/15/2028
86176#-BK-8	Stonebridge Funding LLC Dupont Backed N				1	1,090,325	113.3701	1,236,103	1,090,325	1,090,325					5.769	5.768	JJ	29,004	62,901	12/30/2004	01/15/2028
86176#-BL-6	Stonebridge Funding LLC Dupont Backed N				1	1,271,874	113.3701	1,441,925	1,271,874	1,271,874					5.769	5.768	JJ	33,834	73,374	12/30/2004	01/15/2028
86176#-BM-4	Stonebridge Funding LLC Dupont Backed N				1	635,421	113.3701	720,378	635,421	635,421					5.769	5.768	JJ	16,903	36,657	12/30/2004	01/15/2028
86176#-BN-2	Stonebridge Funding LLC Dupont Backed N				1	1,271,874	113.3701	1,441,925	1,271,874	1,271,874					5.769	5.768	JJ	33,834	73,374	12/30/2004	01/15/2028
86176#-BP-7	Stonebridge Funding LLC Dupont Backed N				1	635,421	113.3701	720,378	635,421	635,421					5.769	5.768	JJ	16,903	36,657	12/30/2004	01/15/2028
86176#-BQ-5	Stonebridge Funding LLC Dupont Backed N				1	1,441,045	113.3701	1,633,714	1,441,045	1,441,045					5.769	5.768	JJ	38,334	83,134	12/30/2004	01/15/2028
86176#-BR-3	Stonebridge Funding LLC P & G Backed No				1	4,257,992	119.9546	5,107,658	4,257,992	4,257,992					5.778	5.777	FA	92,943	246,027	08/12/2005	08/15/2034
86176#-BS-1	Stonebridge Funding LLC P & G Backed No				1	1,741,906	119.9546	2,089,496	1,741,906	1,741,906					5.778	5.777	FA	38,022	100,647	08/12/2005	08/15/2034
86176#-BT-9	Stonebridge Funding LLC P & G Backed No				1	1,741,906	119.9546	2,089,496	1,741,906	1,741,906					5.778	5.777	FA	88,346	100,647	08/12/2005	08/15/2034
86176#-BU-6	Stonebridge Funding LLC IBM Backed Note				1	4,231,252	119.2028	5,043,771	4,231,252	4,231,252					5.786	5.785	MM	21,762	244,820	08/12/2005	11/29/2032
86176#-BV-4	Stonebridge Funding LLC IBM Backed Note				1	1,730,439	119.2028	2,062,732	1,730,439	1,730,439					5.786	5.785	MM	8,900	100,123	08/12/2005	11/29/2032
86176#-BW-2	Stonebridge Funding LLC IBM Backed Note				1	1,730,439	119.2028	2,062,732	1,730,439	1,730,439					5.786	5.785	MM	58,961	100,123	08/12/2005	11/29/2032
86176#-BX-0	Stonebridge Funding LLC Hershey Backed				1	1,283,498	110.4134	1,417,154	1,283,498	1,283,498					5.411	5.410	FA	26,237	69,450	09/07/2005	08/15/2027
86176#-BY-8	Stonebridge Funding LLC Hershey Backed				1	525,067	110.4134	579,745	525,067	525,067					5.411	5.410	FA	10,733	28,411	09/07/2005	08/15/2027
86176#-BZ-5	Stonebridge Funding LLC Hershey Backed				1	525,067	110.4134	579,745	525,067	525,067					5.411	5.410	FA	24,939	28,411	09/07/2005	08/15/2027
86176#-CA-9	Stonebridge Funding LLC GE Capital Back				1	2,234,510	112.2407	2,508,029	2,234,510	2,234,510					5.557	5.557	MS	36,562	124,172	09/07/2005	03/15/2032
86176#-CB-7	Stonebridge Funding LLC GE Capital Back				1	913,465	112.2407	1,025,279	913,465	913,465					5.557	5.557	MS	14,946	50,761	09/07/2005	03/15/2032
86176#-CC-5	Stonebridge Funding LLC GE Capital Back				1	913,465	112.2407	1,025,279	913,465	913,465					5.557	5.557	MS	65,708	50,761	09/07/2005	03/15/2032
863667#-AE-1	STRYKER CORP-SENIOR UNSECURED	1		1FE	3,490,708	92.3843	3,376,647	3,655,000	3,492,291	3,492,291		1,583			4.100	4.400	AO	37,464	74,927	07/25/2018	04/01/2043
863667#-AF-8	STRYKER CORP-SR UNSECURED	1		1FE	200,933	99.5759	199,152	200,000	200,000	200,616		(108)			3.375	3.309	MM	863	6,750	12/15/2015	05/15/2024
863667#-AG-6	STRYKER CORP-SR UNSECURED	1		1FE	449,741	95.4068	424,560	445,000	449,450	449,450		(99)			4.375	4.309	MM	2,488	19,469	12/09/2015	05/15/2044
863667#-AH-4	STRYKER CORP-SR UNSECURED	1		1FE	524,976	96.6776	507,557	525,000	524,978	524,978		1			3.375	3.375	MM	2,953	17,719	12/15/2015	11/01/2025
863667#-AJ-0	STRYKER CORP-SENIOR UNSECURED	1		1FE	13,838,764	100.4509	13,460,422	13,400,000	13,833,273	13,833,273		(4,585)			4.625	4.417	MS	182,482	496,160	07/17/2018	03/15/2046
863871#-AM-1	STUDENT LOAN MKTG ASSOC-ZERO CPN BND				1FE	1,355,875	89.4877	10,496,903	11,730,000	8,400,569		583,537			0.000	10.407	N/A			10/04/2018	10/03/2022
864486#-AH-8	SUBURBAN PROPANE PARTNER-SENIOR UNSECURE	1		4FE	6,015,000	93.0000	5,580,000	6,000,000	6,011,438	6,011,438		(3,050)			5.500	5.436	JD	27,500	330,000	10/11/2017	06/01/2024
864486#-AK-1	SUBURBAN PROPANE PARTNER-SENIOR UNSECURE	1		4FE	3,885,750	88.5000	3,473,625	3,925,000	3,889,473	3,889,473		3,249			5.875	6.015	MS	76,865	230,594	11/07/2017	03/01/2027
86734#-AA-8	Sunfish Farm LLC Senior Secured	2			2	3,400,791	103.0204	3,503,509	3,400,791	3,400,791					4.130	4.189	JAJU	261,993	146,857	11/30/2015	10/05/2030
86765B#-AK-5	SUNOCO LOGISTICS PARTNER-SENIOR UNSECURE	1		2FE	666,586	96.6081	603,801	625,000	665,281	665,281		(838)			6.100	5.599	FA	14,403	38,125	05/16/2017	02/15/2042
86765B#-AM-1	SUNOCO LOGISTICS PARTNER-SENIOR UNSECURE	1		2FE	330,100	83.6738	292,858	350,000	330,726	330,726		387			4.950	5.360	JJ	7,989	17,325	05/16/2017	01/15/2043
86765B#-AP-4	SUNOCO LOGISTICS PARTNER-SENIOR UNSECURE	1		2FE	542,014	88.3019	476,830	540,000	541,945	541,945		(38)			5.300	5.273	AO	7,155	28,620	05/16/2017	04/01/2044
86765B#-AQ-2	SUNOCO LOGISTICS PARTN-SR UNSECURED	1		2FE	3,959,901	88.5135	3,407,770	3,850,000	3,953,882	3,953,882		(1,919)			5.350	5.159	MM	26,319	205,975	10/30/2017	05/15/2045
86765B#-AV-1	Sunoco Logistics Partnr-SENIOR UNSECURE	1		2FE	671,727	90.6206	625,282	690,000	671,734	671,734		7			5.400	5.585	AO	9,315		10/04/2018	10/01/2047
86787E#-AN-7	SUNTRUST BANK-SR UNSECURED	2		1FE	192,564	96.5639	193,128	200,000	195,402	195,402					2.750	3.323	MM	917	5,500	12/15/2015	05/01/2023
86800#-AA-7	SUNVAIR INC SR SUB NT	2		6*	1,437,515	80.0000	1,162,164	1,452,705	1,161,793	1,161,793		(278,791)			12.000	12.367	JAJU	341,161	431,045	09/30/2018	07/31/2021
87089H#-AB-9	SWISS RE TREASURY (US)-SR UNSECURED	1		1FE	741,105	97.4422	693,788	712,000	738,722	738,722		(670)			4.250	4.003	JD	2,101	30,260	12/09/2015	12/06/2042
87165B#-AC-7	Synchrony Financial-SENIOR UNSECURED	1		2FE	386,668	97.3196	389,279	400,000	386,761	386,761		93			3.750	5.113	FA	5,667		12/20/2018	08/15/2021
87165B#-AD-5	SYNCHRONY FINANCIAL-SENIOR UNSECURED	1		2FE	1,187,500	92.0073	1,039,683	1,130,000	1,171,302	1,171,302		(6,872)			4.250	3.498	FA	18,143	48,025	08/02/2016	08/15/2024
87165B#-AG-8	SYNCHRONY FINANCIAL-SENIOR UNSECURED	1		2FE	158,669	91.1886	136,783	150,000	156,545	156,545					4.500	3.719	JJ	2,963	18,363	08/02/2016	07/23/2025
87165B#-AG-8	SYNCHRONY FINANCIAL-SENIOR UNSECURED	1		2FE	54																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
87246Y-AC-0	TIAA ASSET MGMT FIN LLC-SENIOR UNSECURED			1	1FE	1,065,886		1,028,780	1,010,000	1,053,679			(6,694)		4.125	3.303	MM	6,944	41,663	10/30/2017	11/01/2024
872539-AA-9	TJX COS INC-SR UNSECURED			1	1FE	305,352		297,650	300,000	302,390			(1,002)		2.750	2.391	JD	367	8,250	12/15/2015	06/15/2021
87278*-AD-4	TPF Equity REIT Operatin Gtd Senior Note			1	1	87,700,000		86,868,166	87,700,000	87,700,000					3.640	3.640	MON	62,072	3,192,280	11/19/2015	11/24/2025
873050-CB-5	TTX CO-UNSECURED NOTE			1	1FE	44,332,878		43,946,826	43,250,000	44,212,217			(25,344)		5.875	5.688	MDJ	211,745	2,540,938	05/22/2013	12/01/2040
873050-CG-4	TTX CO-SENIOR UNSECURED BOND			1	1FE	13,645,276		13,444,967	13,585,000	13,640,528			(1,202)		4.650	4.622	JD	28,076	631,703	04/27/2015	06/15/2044
873050-CL-3	TTX CO MED TERM NTS TRANCHE 00059			1	1FE	6,017,228		6,018,382	6,025,000	6,024,726			2,611		2.250	2.294	FA	56,484	135,563	01/12/2016	02/01/2019
873050-CM-1	TTX CO-SENIOR UNSECURED			1	1FE	32,965,680		31,624,222	33,000,000	32,967,965			610		4.200	4.206	JJ	693,000	1,386,000	06/06/2016	07/01/2046
873050-CM-1	TTX CO-SENIOR UNSECURED			1	1FE	259,268		239,577	250,000	259,050			(184)		4.200	3.980	JJ	5,250	10,500	09/26/2017	07/01/2046
875127-AV-4	Tampa Electric Co-NOTE			1	2FE	15,007,916		120,7607	13,405,000	14,760,317			(50,157)		6.550	5.597	MM	112,192	878,028	03/31/2017	05/15/2036
875127-BA-9	Tampa Electric Co-SENIOR UNSECURED NOTE			1	2FE	8,775,712		8,361,448	8,800,000	8,778,765			526		4.100	4.116	JD	16,036	360,800	05/31/2012	06/15/2042
875127-BB-7	TAMPA ELECTRIC CO-SR UNSECURED			1	2FE	96,583		96,945	100,000	98,029			493		2.600	3.167	MS	766	2,600	12/15/2015	09/15/2022
875127-BD-3	Tampa Electric Co-SR UNSECURED			1	2FE	11,680,776		10,979,160	11,700,000	11,681,344			296		4.200	4.210	MM	62,790	516,623	04/10/2018	05/15/2045
875127-BE-1	Tampa Electric Co-SENIOR UNSECURED			1	2FE	6,878,025		6,569,552	6,875,000	6,878,220			195		4.300	4.297	JD	13,139	200,344	07/16/2018	06/15/2048
875127-BE-1	Tampa Electric Co-SENIOR UNSECURED			1	2FE	23,967,262		22,981,487	24,050,000	23,968,203			941		4.300	4.346	JD	45,962	167,521	12/26/2018	06/15/2048
875484-AG-2	TANGER PROPERTIES L.P.-SENIOR UNSECURED			1	2FE	14,040,890		14,062,058	14,275,000	14,147,954			22,827		3.875	4.076	JD	46,096	553,156	11/18/2013	12/01/2023
875484-AH-0	Tanger Properties LP-SENIOR UNSECURED			1	2FE	4,724,139		4,752,076	4,900,000	4,735,016			10,877		3.750	4.402	JD	15,313	91,875	07/18/2018	12/01/2024
875484-AJ-6	TANGER PROPERTIES LP-SENIOR UNSECURED			1	2FE	9,594,139		9,491,479	10,645,000	9,650,308			56,169		3.125	4.584	MS	110,885	275,599	06/25/2018	09/01/2026
875484-AK-3	Tanger Properties LP-SENIOR UNSECURED			1	2FE	8,468,504		8,432,282	8,935,000	8,482,511			14,007		3.875	4.599	JJ	159,651	159,651	09/04/2018	07/15/2027
87612E-AV-8	TARGET CORP-SENIOR UNSECURED NOTE			1	1FE	1,681,724		1,522,519	1,500,000	1,539,477			(24,979)		3.875	2.127	JJ	26,802	58,125	01/01/2013	07/15/2020
87612E-AZ-9	TARGET CORP-SR UNSECURED			1	1FE	406,144		399,694	400,000	403,200			(1,000)		2.900	2.624	JJ	5,349	11,600	12/15/2015	01/15/2022
87612E-BA-3	TARGET CORP-SR UNSECURED			1	1FE	12,507,481		11,863,558	12,580,000	12,504,544			1,407		4.000	4.038	JJ	251,600	489,344	08/01/2018	07/01/2042
87612E-BB-1	TARGET CORP-SR UNSECURED			1	1FE	508,249		498,387	500,000	501,173			(2,382)		2.300	1.813	JD	160	11,500	12/15/2015	06/26/2019
87612E-BD-7	TARGET CORP-SR UNSECURED			1	1FE	346,018		330,187	328,000	339,585			(1,925)		3.500	2.802	JJ	5,740	11,480	12/15/2015	07/01/2024
87612E-BF-2	TARGET CORP-SENIOR UNSECURED			1	1FE	24,295,009		21,920,061	25,034,000	24,321,232			14,329		3.625	3.792	AO	191,580	907,483	04/28/2017	04/15/2046
87612E-BG-0	Target Corp-SENIOR UNSECURED			1	1FE	10,253,496		9,253,066	10,093,000	10,251,075			(2,421)		3.900	3.809	MM	50,297	420,962	01/26/2018	11/15/2047
878237-AG-1	Tech Data Corp-SENIOR UNSECURED			1,5	2FE	164,572		161,884	165,000	164,649			61		3.700	3.772	FA	2,306	5,834	07/27/2018	02/15/2022
879240-AQ-2	COMCAST CABLE HOLDINGS-SENIOR UNSECURED			1	1FE	7,303,030		6,010,329	5,000,000	5,916,083			(255,279)		10.125	4.108	AO	106,875	506,250	01/01/2013	04/15/2022
879360-AF-2	Teledyne Technologies In Senior Note Ser			1	2	10,500,000		10,726,632	10,500,000	10,500,000					5.300	5.299	MS	163,858	556,500	09/15/2010	09/15/2020
879360-B*5	Teledyne Technologies In Senior Note Ser			1	2	9,750,000		9,641,210	9,750,000	9,750,000					2.610	2.609	JD	11,310	254,475	12/04/2014	12/04/2019
879360-BB-3	Teledyne Technologies In Senior Note Ser			1	2	26,750,000		26,170,408	26,750,000	26,750,000					3.090	3.089	JD	36,737	826,575	12/04/2014	12/06/2021
88031V-AA-7	TENASKA GATEWAY PARTNERS-SENIOR SECURED			1	2FE	3,546,123		3,712,876	3,546,123	3,546,123					6.052	6.052	MJSD	596	204,434	05/31/2007	12/30/2023
880451-AA-8	TENNESSEE GAS PIPELINE-SENIOR UNSECURED			1	2FE	593,784		582,141	515,000	529,382			(6,181)		7.000	5.114	MS	10,615	36,050	08/02/2016	03/15/2027
880451-AV-1	TENNESSEE GAS PIPELINE-SENIOR UNSECURED			1	2FE	3,407,420		3,272,143	2,890,000	3,347,472			(35,767)		7.000	4.935	AO	42,708	202,300	10/30/2017	10/15/2028
88221B-AA-4	Texas Brine Company LLC Senior Secured			2	3	384,311		391,039	384,311	384,311					8.380	8.380	MON	5,352	29,401	10/01/1999	09/30/2019
882384-AE-0	Texas Eastern Transmissi-SENIOR UNSECURE			1	2FE	309,924		311,511	350,000	310,177			253		4.150	4.867	JJ	6,698		08/01/2018	01/15/2048
882389-CC-1	TEXAS EASTERN TRANSMISSION LP-SR UNSECUR			1	2FE	121,653		120,7135	100,000	119,370			(980)		7.000	5.012	JJ	3,228	7,000	08/02/2016	07/15/2032
882508-AU-8	TEXAS INSTRUMENTS INC-SR UNSECURED			1	1FE	346,172		347,174	350,000	349,356			1,073		1.650	1.965	FA	2,374	5,775	12/15/2015	08/03/2019
882508-AZ-7	TEXAS INSTRUMENTS INC-SR UNSECURED			1	1FE	97,653		98,430	100,000	99,256			542		1.750	2.319	MM	292	1,750	12/15/2015	05/01/2020
882508-BD-5	Texas Instruments Inc-SENIOR UNSECURED			1	1FE	54,205,352		52,485,843	52,600,000	54,188,820			(16,532)		4.150	3.973	MM	1,124,143	294,742	06/01/2018	05/15/2048
883203-BD-3	Textron Inc-NOTE			1	2FE	27,754,972		28,352,590	27,515,000	27,536,456			(32,536)		7.250	7.119	AO	498,709	1,994,838	12/02/2013	10/01/2019
883203-BT-7	Textron Inc-SENIOR UNSECURED NOTE			1	2FE	9,591,738		9,549,563	9,500,000	9,537,430			(16,548)		3.650	3.458	MS	115,583	346,750	07/02/2015	03/01/2021
883203-BX-8	TEXTRON INC-SENIOR UNSECURED			1	2FE	10,496,757		10,005,097	10,510,000	10,498,471			1,141		3.650	3.665	MS	112,953	383,615	02/27/2017	03/15/2027
88342F-AA-6	Therma-Stor LLC Senior Sub Note			2	5G1	2,836,554		2,739,504	2,836,554	2,836,554					10.500	10.642	FMAN	723,676	655,599	11/30/2017	11/30/2023
883556-AT-9	Thermo Fisher Scientific-SENIOR NOTE			1	2FE	5,947,620		6,085,759	5,950,000	5,949,261			269		4.700	4.705	MM	46,608	279,650	04/20/2010	05/01/2020
883556-AZ-5	Thermo Fisher Scientific-SENIOR UNSECURE			1	2FE	15,952,950		15,044,129	15,000,000	15,292,044			(117,510)		3.600	2.747	FA	204,000	540,000	01/01/2013	08/15/2021
883556-BF-8	THERMO FISHER SCIENTIFIC-SENIOR UNSECURE			1	2FE	646,243		101,2976	590,000	628,716			(7,402)		4.150	2.693	FA	10,202	24,485	08/02/2016	02/01/2024
883556-BG-6	THERMO FISHER SCIENTIFIC-SR UNSECURED			1	2FE	349,921		330,690	300,000	347,624			(1,082)		5.300	4.252	FA	6,625	15,900	10/20/2016	02/01/2044
883556-BR-2	Thermo Fisher Scientific-SENIOR UNSECURE			1	2FE	10,450,805		10,428,162	11,300,000	10,495,577			44,772		2.950	4.032	MS	94,449	166,675	06/26/2018	09/19/2026
883556-BX-9	Thermo Fisher Scientific-SENIOR UNSECURE			1	2FE	30,820,459		30,548,152	32,870,000	30,922,045			101,587		3.200	4.020	FA	397,362	525,920	07/09	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
886546-AD-2	TIFFANY & CO-SR UNSECURED			1	2FE	210,780	89.5789	183,637	205,000	210,517		(112)			4.900	4.716	AO	2,511	10,045	08/02/2016	10/01/2044
887315-BH-1	TIME WARNER COS INC-UNSECURED NOTE			1	2FE	5,213,200	115.9088	5,079,439	5,000,000	5,079,672	(12,652)				7.570	7.188	FA	157,708	378,500	02/01/2001	02/01/2024
887317-AL-9	Time Warner Inc-SENIOR UNSECURED NOTE			1	2FE	50,638,904	107.9567	48,520,040	44,944,000	50,229,660	(133,993)				6.250	5.316	MS	717,856	2,809,000	10/30/2017	03/29/2041
887317-AM-7	TIME WARNER INC-SENIOR UNSECURED			1	2FE	2,861,144	96.3125	2,306,684	2,395,000	2,834,312	(11,449)				5.375	4.125	AO	27,177	128,731	08/02/2016	10/15/2041
887317-AP-0	Time Warner Inc-SENIOR UNSECURED NOTE			1	2FE	10,521,794	91.1128	9,689,827	10,635,000	10,533,873	2,235				4.900	4.969	JD	23,161	521,115	05/16/2017	06/15/2042
887317-AU-9	TIME WARNER INC-SENIOR UNSECURED			1	2FE	10,312,300	87.5186	8,751,860	10,000,000	10,295,984	(6,397)				4.650	4.452	JD	38,750	465,000	05/09/2016	06/01/2044
887317-AX-3	TIME WARNER INC-SENIOR UNSECURED			1	2FE	73,256	89.7270	67,295	75,000	73,312					4.850	5.004	JJ	1,677	3,638	03/28/2017	07/15/2045
887317-AY-3	TIME WARNER INC-SENIOR UNSECURED			1	2FE	567,283	89.7270	448,635	500,000	564,076	(1,369)				4.850	4.049	JJ	11,182	24,250	08/02/2016	07/15/2045
88731E-AJ-9	TIME WARNER ENTERTAINMEN-SENIOR UNSECURE			1	2FE	799,981	121.9120	719,281	590,000	780,026	(8,579)				8.375	5.192	JJ	22,785	49,413	08/02/2016	07/15/2033
88732J-AJ-7	TIME WARNER CABLE INC-SR UNSECURED			1	2FE	343,039	102.6240	297,610	290,000	339,327	(1,586)				6.550	5.109	MN	3,166	18,995	08/02/2016	05/01/2037
88732J-AN-8	TIME WARNER CABLE INC-DEBENTURE			1	2FE	5,209,849	108.4055	4,638,670	4,279,000	5,134,514	(24,159)				7.300	5.594	JJ	156,184	312,367	08/02/2016	07/01/2038
88732J-AU-2	TIME WARNER CABLE INC-SENIOR UNSECURED B			1	2FE	15,716,322	101.6128	13,082,617	12,875,000	15,377,449	(69,222)				6.750	5.184	JD	38,625	869,063	10/20/2016	06/15/2039
88732J-AY-4	TIME WARNER CABLE INC-SR UNSECURED			1	2FE	835,628	95.5056	725,842	760,000	831,442	(1,806)				5.875	5.144	MN	5,705	44,650	08/02/2016	11/15/2040
88732J-BB-3	TIME WARNER CABLE INC-SENIOR UNSECURED N			1	2FE	2,355,376	91.1283	2,177,967	2,390,000	2,358,036	683				5.500	5.604	MS	43,817	131,450	04/27/2015	09/01/2041
88732J-BB-3	TIME WARNER CABLE INC-SENIOR UNSECURED N			1	2FE	4,651,710	91.1283	3,937,654	4,321,000	4,632,441	(7,622)				5.500	4.959	MS	79,218	237,655	10/20/2016	09/01/2041
88732J-BD-9	TIME WARNER CABLE INC-SENIOR UNSECURED N			1	2FE	804,665	80.3903	643,123	800,000	804,231	(104)				4.500	4.463	MS	10,600	36,000	10/06/2014	09/15/2042
88732J-BD-9	TIME WARNER CABLE INC-SENIOR UNSECURED N			1	2FE	9,056,092	80.3903	7,641,101	9,505,000	9,093,269	8,845				4.500	4.804	MS	125,941	427,725	08/02/2016	09/15/2042
887389-AK-0	Timken Co/The-SENIOR UNSECURED			1	2FE	15,779,144	98.4473	15,554,680	15,800,000	15,778,391	(753)				4.500	4.517	JD	31,600	195,525	08/22/2018	12/15/2028
88947E-AQ-3	TOLL BROS FINANCE CORP-SENIOR UNSECURED			1	3FE	64,500	98.0000	58,800	60,000	63,148					5.625	4.399	JJ	1,556	3,375	08/02/2016	01/15/2024
88948A-BF-3	TOLL ROAD INV PART II LP SER 1998B SR ZE			1	2FE	3,680,100	51.1584	5,115,840	10,000,000	4,650,676		213,244			0.000	10.192	N/A			09/18/2014	02/15/2030
88948A-BH-9	TOLL ROAD INV PART II LP SER 1998B SR ZE			1	2FE	5,448,160	47.5196	8,078,335	17,000,000	6,855,208		297,988			0.000	11.115	N/A			09/18/2014	02/15/2032
88948A-BJ-5	TOLL ROAD INV PART II LP-SER 1998B SR ZE			1	2FE	2,677,770	44.9002	4,041,022	9,000,000	3,364,739		142,733			0.000	11.687	N/A			09/18/2014	02/15/2033
891027-AQ-7	TORCHMARK CORP-SR NT			1	2FE	264,013	100.7081	251,770	250,000	257,391					3.800	2.951	MS	2,797	9,500	04/16/2015	09/15/2022
891092-AD-0	TORO CO-DEBENTURE			1	2FE	6,911,456	119.5434	7,913,771	6,620,000	6,780,382		(13,911)			7.800	7.400	JD	22,949	516,360	11/17/2008	06/15/2027
89148B-B*1	Tortoise MLP Fund, Inc. Senior Note Ser			1	1FE	47,000,000	100.9134	47,429,298	47,000,000	47,000,000					4.290	4.290	MJSD	89,613	2,016,300	10/28/2010	12/15/2020
89148B-B*8	Tortoise Pipeline & Ener Senior Note Ser			1	1FE	10,950,000	100.9183	11,050,554	10,950,000	10,950,000					4.080	4.080	MJSD	19,856	446,760	12/08/2011	12/15/2021
891490-AT-1	TOSCO CORP-SR UNSECURED			1	1FE	188,471	134.6695	188,537	140,000	181,877		(2,820)			8.125	4.649	FA	4,297	11,375	08/02/2016	02/15/2030
89233P-ST-9	TOYOTA MOTOR CREDIT CORP-SENIOR UNSECURE			1	1FE	2,697,185	100.2859	2,507,147	2,500,000	2,570,805	(22,300)				3.300	2.327	JJ	38,723	82,500	01/01/2013	01/12/2022
89236T-BJ-3	TOYOTA MOTOR CREDIT CORP-SR UNSECURED			1	1FE	202,502	99.4363	198,873	200,000	201,141		(461)			2.750	2.501	MN	672	5,500	12/15/2015	05/17/2021
89236T-BP-9	TOYOTA MOTOR CREDIT CORP-SR UNSECURED			1	1FE	150,108	99.4620	149,193	150,000	150,016		(31)			2.125	2.104	JJ	1,443	3,188	12/15/2015	07/18/2019
89236T-CF-0	TOYOTA MOTOR CREDIT CORP-SR UNSECURED			1	1FE	549,738	98.8418	543,630	550,000	549,918		61			2.150	2.162	MS	3,580	11,825	12/15/2015	03/12/2020
89236T-CQ-6	TOYOTA MOTOR CREDIT CORP-SR UNSECURED			1	1FE	99,864	98.6815	98,682	100,000	99,923		20			2.800	2.823	JJ	1,307	2,800	12/15/2015	07/13/2022
89236T-EM-3	Toyota Motor Credit Corp-SENIOR UNSECURE			1	1FE	14,032,912	96.4918	14,285,606	14,805,000	14,071,142		38,230			3.050	3.701	JJ	213,233	225,776	06/07/2018	01/11/2028
89334@-AA-6	Trans-Union Interstate P Senior Secured			1	2	23,956,543	100.8317	24,155,789	23,956,543	23,956,543					3.970	3.970	MJSD	495,411	954,368	05/10/2016	12/31/2032
893521-AB-0	TRANSATLANTIC HOLDINGS-SENIOR UNSECURED			1	2FE	626,180	133.3442	600,049	450,000	616,038		(4,365)			8.000	5.108	MN	3,100	36,000	08/02/2016	11/30/2039
893574-AB-9	TRANSCONT GAS PIPE CORP-SENIOR UNSECURED			1	2FE	7,698,610	102.5886	7,950,618	7,750,000	7,704,394		994			5.400	5.445	FA	158,100	418,500	03/28/2012	08/15/2041
893574-AB-9	TRANSCONT GAS PIPE CORP-SENIOR UNSECURED			1	2FE	1,329,975	102.5886	1,323,393	1,290,000	1,326,973		(880)			5.400	5.180	FA	26,316	69,660	04/27/2015	08/15/2041
893574-AF-0	TRANSCONTINENTAL GAS PIP-SENIOR UNSECURE			1	2FE	724,927	92.0607	646,266	702,000	724,299		(562)			4.450	4.233	FA	13,016	31,239	10/30/2017	08/01/2042
893647-BB-2	TRANSDIGM INC-SR SUBORDINATED			1	4FE	3,128,000	93.0000	2,976,000	3,200,000	3,138,818		6,135			6.375	6.704	JD	9,067	198,758	03/22/2017	06/15/2026
893939-AE-8	TRAVELERS PPTY CASUALTY-SENIOR UNSECURED			1	1FE	260,492	123.6756	234,984	190,000	244,972		(6,584)			7.750	3.257	AO	3,109	14,725	08/02/2016	04/15/2026
89407#-AD-0	Transwestern Pipeline Co Senior Note Ser			1	2	5,000,000	103.9654	5,198,270	5,000,000	5,000,000					5.890	5.888	MN	30,268	294,500	05/24/2007	05/24/2022
89407#-AF-5	Transwestern Pipeline Co Senior Note Ser			1	2	16,598,121	101.8165	15,883,374	15,600,000	15,871,279		(132,610)			5.360	4.408	JD	292,299	836,160	01/01/2013	12/09/2020
89407#-AG-3	Transwestern Pipeline Co Senior Note Ser			1	2	20,700,000	105.4084	21,819,539	20,700,000	20,700,000					5.660	5.659	JD	71,599	1,171,620	12/09/2009	12/09/2024
89417E-AD-1	Travelers Cos Inc/The-SENIOR UNSECURED N			1	1FE	8,249,582	124.5945	7,925,457	6,361,000	8,164,131		(43,589)			6.250	4.052	JD	17,669	278,178	07/12/2018	06/15/2037
89417E-AF-6	Travelers Cos Inc/The-SENIOR NOTE			1	1FE	3,713,982	101.2522	3,037,566	3,000,000	3,049,346		(116,184)			5.900	1.939	JD	14,258	177,000	01/01/2013	06/02/2019
89417E-AG-4	Travelers Cos Inc/The-SENIOR UNSECURED N			1	1FE	3,767,804	101.5424	3,403,702	3,352,000	3,458,322		(56,324)			3.900	2.125	MN	130,728	130,728	12/15/2015	11/01/2020
89417E-AH-2	Travelers Cos Inc/The-SENIOR UNSECURED N			1	1FE	24,042,804	114.4632	26,859,935	23,466,000	24,018,806		(9,701)			5.350	5.160	MN	209,238	1,179,139	10/04/2018	11/01/2040
89417E-AJ-8	Travelers Cos Inc/The-SR UNSECURED			1	1FE	274,829</															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
898361-AQ-3	AMHERST COLLEGE-UNSECURED			1	1FE	10,022,963		101,2328	9,951,181	10,014,852				(3,807)	4.100	3.985	MM	67,172	403,030	11/16/2016	11/01/2045
89837L-AB-1	PRINCETON UNIVERSITY-SR UNSECURED			1	1FE	135,358		127,3951	127,3951	100,000				(1,064)	5.700	3.501	MS	1,900	5,700	04/27/2015	03/01/2039
89837R-AD-4	Trustees of Dartmouth Co-UNSECURED			1	1FE	179,621		94,6914	189,383	200,000				90	3.474	4.093	JD	579	946	10/04/2018	06/01/2046
89838F-AA-5	Dartmouth College Senior Secured			1	1	3,698,366		103,4449	3,825,771	3,698,366					4.940	4.940	MON	37,855	177,382	04/07/2003	05/01/2023
89854D-AA-2	TSG Entertainment Financ Senior Secured			1	2FE	33,200,000		96,6968	32,103,338	33,200,000					6.250	6.250	MON	90,313	2,075,000	08/15/2017	09/30/2031
899043-AA-1	TUFTS UNIVERSITY-UNSECURED BOND			1	1FE	48,358,579		106,5562	47,037,082	44,143,000			(3,054)		5.017	4.574	AO	467,538	2,190,291	07/24/2018	04/15/2112
899043-AB-9	TUFTS UNIVERSITY-UNSECURED			1	1FE	21,200,000		99,3458	21,061,314	21,200,000					4.005	4.005	FA	320,756	849,060	06/07/2017	08/15/2057
899896-AC-8	TUPPERWARE BRANDS CORP-SENIOR UNSECURED			1	2FE	1,102,538		102,4494	1,125,919	1,100,000			(417)		4.750	4.706	JD	4,350	52,203	01/06/2012	06/01/2021
899896-AC-8	TUPPERWARE BRANDS CORP-SENIOR UNSECURED			1	2FE	15,730,116		102,4494	16,272,042	15,883,000					4.750	4.878	JD	62,870	744,930	01/06/2012	06/01/2021
90131H-AB-1	21ST CENTURY FOX AMERICA-SR UNSECURED			1	2FE	4,833,992		115,4062	4,671,641	4,048,000			(16,719)		5.400	4.208	AO	54,648	218,592	05/16/2017	10/01/2043
90131H-AH-8	21ST CENTURY FOX AMERICA-SR UNSECURED			1,5	2FE	2,529,198		106,4910	2,550,459	2,527,475			(897)		4.750	4.383	MS	33,497	54,626	10/04/2018	09/15/2044
90131H-AO-8	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	3,742,500		102,6692	3,850,096	3,750,000					4.500	4.526	FA	63,750	168,750	08/19/2011	02/15/2021
90131H-AS-4	21ST CENTURY FOX AMERICA-SENIOR NOTE			1	2FE	20,656,994		120,7127	19,374,394	16,050,000			(325,526)		8.875	6.127	AO	257,190	1,424,438	04/26/2013	04/26/2023
90131H-AW-5	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	274,547		124,6293	249,259	200,000					8.500	3.434	FA	6,044	17,000	08/02/2016	02/23/2025
90131H-AX-3	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	268,552		123,0526	239,953	195,000			(7,321)		7.700	2.996	AO	2,544	15,015	08/02/2016	10/30/2025
90131H-BB-0	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	300,498		126,0646	277,342	220,000			(5,835)		7.280	3.497	JD	8,052	16,016	08/02/2016	06/30/2028
90131H-BC-8	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	126,613		129,8016	116,821	90,000			(2,541)		7.625	3.526	MM	591	6,863	08/02/2016	11/30/2028
90131H-BF-1	21ST CENTURY FOX AMERICA-BOND			1	2FE	22,031,156		121,5817	23,997,786	19,738,000			(86,482)		6.200	5.205	JD	54,389	1,223,756	08/02/2016	12/15/2034
90131H-BG-9	21ST CENTURY FOX AMERICA-SR UNSECURED			1	2FE	2,305,865		124,7553	2,382,826	1,910,000			(13,925)		6.400	4.734	JD	5,433	122,240	05/16/2017	12/15/2035
90131H-BJ-3	21ST CENTURY FOX AMERICA-SUBORDINATED			1	2FE	323,158		143,3148	343,956	240,000			(2,502)		8.150	5.967	AO	4,021	19,560	12/09/2015	10/17/2036
90131H-BK-0	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	1,288,633		122,6588	1,290,371	1,052,000			(7,849)		6.150	4.440	MS	21,566	64,698	05/16/2017	03/01/2037
90131H-BL-8	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	6,695,426		131,6723	6,702,120	5,090,000			(50,735)		6.650	4.338	MM	43,251	338,485	10/30/2017	11/15/2037
90131H-BM-6	21ST CENTURY FOX AMERICA-DEBENTURE			1	2FE	26,493,005		132,8897	34,140,684	25,691,000					6.750	6.493	JJ	828,535	1,734,143	05/21/2010	01/09/2038
90131H-BP-9	21ST CENTURY FOX AMERICA-SENIOR NOTE			1	2FE	6,943,132		131,4205	7,023,110	5,344,000			(42,605)		6.900	4.737	FA	139,300	368,736	11/09/2016	08/15/2039
90131H-BQ-7	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	19,716,622		124,1831	19,844,461	15,980,000			(90,601)		6.150	4.561	FA	371,269	982,770	10/30/2017	02/15/2041
90131H-BR-5	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	1,679,347		146,8201	1,747,159	1,190,000			(8,232)		7.750	5.022	JD	7,685	92,225	05/16/2017	12/01/2045
90131H-BZ-7	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	605,910		109,6425	592,069	540,000			(1,319)		4.950	4.200	AO	5,643	26,730	10/30/2017	10/15/2045
90131H-CD-5	21ST CENTURY FOX AMERICA-SENIOR UNSECURE			1	2FE	4,914,325		108,4373	5,335,116	4,920,000			90		4.750	4.757	MM	29,862	233,700	04/06/2017	11/15/2046
90226F-AA-3	2014 REPLACEMENT PIIR STATUTORY TR SR SEC			1	1Z	54,516,573		101,4707	55,318,349	54,516,573					3.850	3.850	MON	181,874	2,086,175	01/13/2015	05/31/2029
902494-AT-0	TYSON FOODS INC-SENIOR UNSECURED NOTE			1	2FE	24,865		102,1390	25,535	25,000			14		4.500	4.568	JD	50	1,125	06/06/2012	06/15/2022
902494-AT-0	TYSON FOODS INC-SENIOR UNSECURED NOTE			1	2FE	22,670,130		102,1390	21,423,659	20,975,000			(273,483)		4.500	3.031	JD	41,950	943,875	02/24/2016	06/15/2022
902494-AY-9	TYSON FOODS INC-SENIOR UNSECURED BOND			1	2FE	5,853,885		97,5741	5,734,529	5,877,100			397		5.150	5.176	FA	114,342	300,118	08/05/2014	08/15/2044
902494-AY-9	TYSON FOODS INC-SENIOR UNSECURED BOND			1	2FE	298,657		97,5741	290,673	297,900					5.150	5.131	FA	5,796		10/04/2018	08/15/2044
902494-AZ-6	TYSON FOODS INC-SENIOR UNSECURED			1,5	2FE	160,607		96,8269	154,923	160,000			(5)		4.875	4.839	FA	2,947	(1,930)	10/04/2018	08/15/2034
90265E-AG-5	UDR INC-SENIOR UNSECURED NOTE REID			1	2FE	9,067,650		102,7034	9,397,365	9,150,000			8,745		4.625	4.739	JJ	201,014	423,188	01/05/2012	01/10/2022
90265E-AG-5	UDR INC-SENIOR UNSECURED NOTE REID			1	2FE	4,363,320		102,7034	4,108,138	4,000,000			(45,523)		4.625	3.346	JJ	87,875	185,000	05/28/2013	01/10/2022
90265E-AH-3	UDR INC-UNSECURED NOTE REID			1	2FE	7,498,575		100,4239	7,531,793	7,500,000			207		3.700	3.703	AO	69,375	277,500	09/19/2013	10/01/2020
90265E-AJ-9	UDR INC-SENIOR UNSECURED NOTE REID			1	2FE	575,148		99,3443	566,262	570,000			(582)		3.750	3.623	JJ	10,688	21,375	12/09/2015	07/01/2024
90265E-AJ-9	UDR INC-SENIOR UNSECURED NOTE REID			1	2FE	9,516,766		99,3443	9,487,377	9,550,000			3,174		3.750	3.792	JJ	179,063	358,125	06/17/2014	07/01/2024
90265E-AK-6	UDR INC-SR UNSECURED			1	2FE	5,946,292		99,6896	5,941,502	5,960,000			1,237		4.000	4.028	AO	59,600	238,400	09/15/2015	10/01/2025
90312F-AC-8	US Gas, Inc. Gtd Senior Note			1	1	6,650,000		109,4024	7,275,260	6,650,000					5.390	5.389	FA	135,409	358,435	08/08/2011	08/10/2026
90331H-HL-4	US BANK NA CINCINNATI-SR UNSECURED			2	1FE	300,250		99,2935	297,880	300,000			(68)		2.125	2.102	AO	1,116	6,375	12/15/2015	10/28/2019
90331H-MS-9	US BANK NA CINCINNATI-SR UNSECURED			2	1FE	97,099		96,0865	96,087	100,000			298		2.800	3.169	JJ	1,198	2,800	12/15/2015	01/27/2025
903638-AA-8	USTA National Tennis Cen Senior Secured			2	1FE	4,620,376		98,1170	4,533,374	4,620,376					3.110	3.309	MS	69,053	134,247	09/08/2014	09/08/2024
903638-AB-6	USTA National Tennis Cen Senior Secured			2	1FE	13,375,124		98,1124	13,122,655	13,375,124					4.080	4.079	MS	262,242	538,199	09/08/2014	09/08/2039
903638-AC-4	USTA National Tennis Cen Senior Secured			1	1PL	30,800,000		87,6671	27,001,467	30,800,000					3.290	3.290	JJ	486,957	1,013,320	05/26/2016	07/08/2036
904764-AH-0	UNILEVER CAPITAL CORP-SENIOR NOTE			1	1FE	42,719,280		122,2118	46,573,702	38,109,000			(169,466)		5.900	4.971	MM	287,299	2,224,294	08/01/2018	11/15/2032
904764-AM-9	UNILEVER CAPITAL CORP-SR UNSECURED			1	1FE	164,405		102,7142	154,071	150,000			(2,803)		4.250	2.258	FA	2,497	6,375	12/15/2015	02/10/2021
904764-AQ-0	UNILEVER CAPITAL CORP-SR UNSECURED			1	1FE	304,595		99,8748	299,625	300,263			(1,457)		2.200	1.707	MS	2,108	5,600	12/15/2015	03/06/2019
904																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
906548-ON-0	Union Electric Co-SECURED	1		1	1FE	32,389,954	.97	31,935,666	32,791,000	32,392,808		2,854			4.000	4.071	AO	327,910	250,572	06/26/2018	04/01/2048
907818-CF-3	UNION PACIFIC CORP-DEBENTURE	1		1	1FE	2,192,723		2,088,821	2,088,821	2,045,782		1,730,000			6.625	4.367	FA	47,755	114,613	03/14/2012	02/01/2029
907818-CS-5	UNION PACIFIC CORP-DEBENTURE	1		1	1FE	12,447,691		12,487,321	11,024,000	12,113,940		(53,050)			5.375	4.439	JD	49,378	592,540	12/02/2013	06/01/2033
907818-CU-0	UNION PACIFIC CORP-SENIOR UNSECURED	1		1	1FE	206,957		118,1900	156,000	201,827		(2,184)			6.250	3.719	MN	1,625	9,750	08/02/2016	05/01/2034
907818-DG-0	UNION PACIFIC CORP-SENIOR UNSECURED NOTE	1		1	1FE	6,518,888		6,656,549	6,550,000	6,542,556		3,275			4.000	4.056	FA	109,167	262,000	07/28/2010	02/01/2021
907818-DG-0	UNION PACIFIC CORP-SENIOR UNSECURED NOTE	1		1	1FE	115,720		111,789	110,000	111,640		(854)			4.000	3.158	FA	1,833	4,400	12/02/2013	02/01/2021
907818-DJ-4	UNION PACIFIC CORP-SENIOR UNSECURED BOND	1		1	1FE	31,715,555		303,2448	27,915,000	31,435,582		(98,788)			4.750	3.894	MS	390,422	1,325,963	06/22/2016	09/15/2041
907818-DK-1	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	216,994		204,3945	200,000	209,212		(2,643)			4.163	2.691	JJ	3,839	8,326	12/15/2015	07/15/2022
907818-DL-9	UNION PACIFIC CORP-SENIOR UNSECURED NOTE	1		1	1FE	6,192,684		6,000,265	6,200,000	6,193,507		155			4.300	4.307	JD	11,849	266,600	06/06/2012	06/15/2042
907818-DL-9	UNION PACIFIC CORP-SENIOR UNSECURED NOTE	1		1	1FE	22,726		96,7785	20,000	22,557		(72)			4.300	3.486	JD	38	860	08/02/2016	06/15/2042
907818-DP-0	UNION PACIFIC CORP-SENIOR UNSECURED	1		1	1FE	8,547,667		95,2704	8,225,000	8,534,345		(7,680)			4.250	4.003	AO	73,797	349,563	04/11/2017	04/15/2043
907818-DT-2	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	311,756		103,6171	263,000	307,959		(1,099)			4.821	3.750	FA	5,283	12,679	05/11/2015	02/01/2044
907818-DU-9	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	12,236,447		102,5695	11,128,788	12,178,346		(31,834)			4.750	3.963	JD	22,906	515,375	06/05/2017	12/15/2043
907818-DV-7	UNION PACIFIC CORP-SENIOR UNSECURED NOTE	1		1	1FE	9,180,348		100,8649	9,250,000	9,211,076		6,587			3.750	3.839	MS	102,135	346,875	01/07/2014	03/15/2024
907818-DW-5	UNION PACIFIC CORP-SR UNSECURED	1,5		1	1FE	202,451		99,8238	200,000	200,096		(793)			2.250	1.847	FA	1,700	4,500	12/15/2015	02/15/2019
907818-DX-3	UNION PAC CORP NT	1		1	1FE	149,165		104,5343	150,000	149,225		15			4.850	4.886	JD	323	7,275	01/08/2014	06/15/2044
907818-DX-3	UNION PAC CORP NT	1		1	1FE	403,118		104,5343	353,000	399,287		(1,096)			4.850	4.005	JD	761	17,121	05/11/2015	06/15/2044
907818-DZ-8	UNION PACIFIC CORP-SENIOR UNSECURED	1		1	1FE	532,682		93,5823	490,000	530,469		(971)			4.150	3.646	JJ	9,377	20,335	05/16/2017	01/15/2045
907818-EA-2	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	98,695		98,6994	100,000	99,644		321			1.800	2.133	FA	750	1,800	12/15/2015	02/01/2020
907818-EA-8	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	6,045,294		85,3842	5,528,625	6,475,000		6,054,412			3.875	4.226	FA	104,544	250,906	04/06/2017	02/01/2055
907818-ED-6	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	304,228		96,8784	300,000	303,003		(420)			3.250	3.683	FA	3,683	9,750	12/15/2015	08/15/2025
907818-EE-4	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	100,275		98,6772	100,000	100,090		(63)			2.250	2.184	JD	75	2,250	12/15/2015	06/19/2020
907818-EF-1	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	831,204		91,0427	840,000	831,705		166			4.050	4.111	MN	4,347	34,020	12/09/2015	11/15/2045
907818-EF-1	UNION PACIFIC CORP-SR UNSECURED	1		1	1FE	1,002,905		91,0427	900,000	997,613		(2,251)			4.050	3.422	MN	4,658	36,450	08/02/2016	11/15/2045
907818-EG-9	Union Pacific Corp-SR UNSECURED	1,5		1	1FE	1,289,256		91,0180	1,133,174	1,245,000		(316)			4.375	4.202	MN	6,960	48,381	05/16/2017	11/15/2065
907818-EG-9	Union Pacific Corp-SR UNSECURED	1,5		1	1FE	943,574		91,0180	1,016,000	944,138		221			4.375	4.752	MN	5,680	33,600	10/04/2018	11/15/2065
907818-EH-6	UNION PACIFIC CORP-SENIOR UNSECURED	1		1	1FE	1,366,626		84,8163	1,220,506	1,367,069		444			3.799	4.073	AO	13,667	39,126	08/01/2018	10/01/2051
907818-EN-4	UNION PACIFIC CORP-SENIOR UNSECURED	1		1	1FE	1,371,955		93,2013	1,272,197	1,365,000		(133)			4.000	3.970	AO	11,527	54,600	05/16/2017	04/15/2047
907818-EV-6	Union Pacific Corp-SR UNSECURED	1		1	2FE	17,673,273		98,0687	17,358,152	17,674,217		944			4.375	4.385	MS	436,661		06/05/2018	09/10/2038
907818-EW-4	Union Pacific Corp-SR UNSECURED	1		1	2FE	5,042,250		98,6046	4,930,231	5,000,000		62			4.500	4.447	MS	126,875		12/19/2018	09/10/2048
908594-AB-0	Union Tank Car Co. Senior Note	2		1	1FE	2,265,817		100,8858	2,000,000	2,000,000		(27,951)			5.640	2.187	JD	9,400	103,400	01/01/2013	06/01/2019
908906-AC-4	MUFG AMERICAS HLDGS CORP-SENIOR UNSECURED	1		1	1FE	4,941,448		100,2388	4,696,186	4,786,853		(27,613)			3.500	2.836	JD	5,921	163,975	01/01/2013	06/18/2022
90964*-AG-0	United Bottling Managem Senior Note Ser	2		1	2PL	28,400,000		98,2420	27,900,728	28,400,000					3.990	3.990	JD	31,477	1,133,160	12/21/2016	12/21/2026
910637-QH-7	United Illuminating Comp Senior Note Ser	1		1	1	7,650,000		104,6890	8,008,709	7,650,000		7,650,000			6.610	6.607	JD	42,139	505,665	12/01/2008	12/01/2020
910637-RH-8	United Illuminating Comp Senior Note	1		1	1	8,400,000		116,6904	9,801,994	8,400,000		8,400,000			6.090	6.089	JJ	213,150	511,560	07/27/2010	07/27/2040
910637-SH-5	United Illuminating Comp Senior Note Ser	1		1	1	6,800,000		101,0682	6,872,638	6,800,000		6,800,000			4.890	4.890	JJ	139,474	332,520	01/30/2012	01/30/2042
910637-SH-9	United Illuminating Comp Senior Note Ser	1		1	1	1,700,000		98,6148	1,700,000	1,700,000		1,700,000			3.610	3.609	JJ	25,741	61,370	01/30/2012	01/31/2022
910637-SH-7	United Illuminating Comp Senior Note Ser	1		1	1	1,700,000		98,6148	1,700,000	1,700,000		1,700,000			3.610	3.609	JJ	25,741	61,370	04/02/2012	01/31/2022
910637-TA-8	United Illuminating Comp Senior Note Ser	1		1	1	4,250,000		101,0682	4,295,399	4,250,000		4,250,000			4.890	4.890	JJ	87,171	207,825	04/02/2012	01/30/2042
911308-AA-2	UPS OF AMERICA INC-SR UNSECURED	1		1	1FE	311,480		106,2397	250,000	268,592		(14,507)			8.375	2.301	AO	5,234	20,938	12/15/2015	04/01/2020
911308-AB-0	UPS OF AMERICA INC-DEBENTURE	1,5		1	1FE	28,354,737		135,3860	26,535,663	19,600,000		16,423			8.375	4.904	AO	410,375	1,641,500	06/19/2003	04/01/2030
911312-AJ-5	UNITED PARCEL SERVICE IN-SENIOR UNSECURED	1		1	1FE	30,041,312		121,8100	29,359,859	24,103,000		29,613,466			6.200	4.407	JJ	689,078	1,460,148	06/04/2018	01/15/2038
911312-AK-2	UNITED PARCEL SERVICE IN-SENIOR UNSECURED	1		1	1FE	6,406,493		100,5352	6,434,252	6,400,000		6,400,206			5.125	5.079	AO	82,000	328,000	12/15/2015	04/01/2019
911312-AM-8	UNITED PARCEL SERVICE IN-SENIOR UNSECURED	1		1	1FE	936,496		100,8194	957,784	950,287		(231)			3.125	3.104	JJ	13,689	29,688	12/15/2015	01/15/2021
911312-AN-6	UNITED PARCEL SERVICE IN-SENIOR UNSECURED	1		1	1FE	9,611,309		106,0771	10,582,248	9,976,000		9,662,931			4.875	5.115	MN	62,142	470,328	12/13/2010	11/15/2040
911312-AN-6	UNITED PARCEL SERVICE IN-SENIOR UNSECURED	1		1	1FE	12,346,817		106,0771	11,573,008	10,910,000		(38,707)			4.875	3.992	MN	67,960	503,344	10/04/2018	11/15/2040
911312-AR-7	UNITED PARCEL SERVICE IN-SENIOR UNSECURED	1		1	1FE	464,890		89,4335	424,809	475,000		466,140			3.625	3.744	AO	4,305	17,219	01/01/2013	10/01/2042
911312-BN-5	United Parcel Service IN-SENIOR UNSECURED	1		1	1FE	5,098,115		90,2983	4,966,406	5,501,908		3,793			3.750	4.184	AO	26,354	103,125	06/13/2018	11/15/2047
91159H-HA-1	US BANCORP-SENIOR UNSECURED NOTE	2		1	1FE	3,239,729		102,3056	2,922,870	2,970,959		(47,443)			4.12						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
913017-BK-4	United Technologies Corp-SENIOR UNSECURE			1	2FE	7,863,813	113.8366	8,040,276	7,063,000	7,727,430		(23,810)			6.050	5.210	JD	35,609	427,312	08/02/2016	06/01/2036
913017-BP-3	United Technologies Corp-UNSECURED NOTE			1	2FE	12,079,168	114.5720	11,853,615	10,346,000	11,822,673		(45,167)			6.125	4.964	JJ	292,203	633,693	08/02/2016	07/15/2038
913017-BR-9	United Technologies Corp-SENIOR UNSECURE			1	2FE	10,119,270	101.3508	9,121,574	9,000,000	9,288,529		(219,084)			4.500	1.967	AO	85,500	405,000	09/21/2017	04/15/2020
913017-BS-7	UNITED TECHNOLOGIES CORP NT			1	2FE	835,315	109.7333	795,567	725,000	829,134		(1,866)			5.700	4.631	AO	8,724	(27,014)	08/01/2018	04/15/2040
913017-BT-5	United Technologies Corp-SENIOR UNSECURE			1	2FE	1,354,261	94.4741	1,270,676	1,345,000	1,354,202		(59)			4.500	4.452	JD	5,044	(61,305)	08/01/2018	06/01/2042
913017-CA-5	UNITED TECHNOLOGIES CORP-SR UNSECURED			1	2FE	1,452,668	89.4326	1,341,489	1,500,000	1,455,253		893			4.150	4.341	MN	7,954	62,250	12/09/2015	05/15/2045
913017-CP-2	UNITED TECHNOLOGIES CORP-SENIOR UNSECURE			1	2FE	18,109,878	88.1309	16,004,568	18,160,000	18,110,554		901			4.050	4.066	MN	116,451	735,480	05/01/2017	05/04/2047
913017-CY-3	United Technologies Corp-SENIOR UNSECURE			1	2FE	192,387	99.0701	193,187	195,000	192,392		5			4.125	4.292	MN	1,005		12/17/2018	11/16/2028
91324P-AR-3	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	1,715,640	118.0391	1,646,645	1,395,000	1,676,390		(11,084)			5.800	4.145	MS	23,824	80,910	12/15/2015	03/15/2036
91324P-AX-0	UnitedHealth Group Inc-UNSECURED NOTE			1	1FE	6,419,489	127.6875	7,207,958	5,645,000	6,309,387		(21,860)			6.500	5.456	JD	16,308	366,925	04/27/2015	06/15/2037
91324P-BE-1	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	2,257,660	129.3401	2,619,138	2,025,000	2,236,986		(7,318)			6.625	5.659	MN	17,142	134,156	05/16/2017	11/15/2037
91324P-BK-7	UnitedHealth Group Inc-BOND			1	1FE	29,470,523	130.6420	35,923,937	27,498,000	29,185,826		(46,942)			6.875	6.309	FA	714,184	1,889,189	04/27/2015	02/15/2038
91324P-BN-1	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	315,860	118.1804	313,178	265,000	308,706		(1,207)			5.700	4.488	AO	3,189	15,105	04/25/2012	10/15/2040
91324P-BP-6	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	6,290,984	102.9268	5,558,045	5,400,000	5,627,199		(117,251)			4.700	2.389	FA	95,880	253,800	01/01/2013	02/15/2021
91324P-BQ-4	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	8,433,077	121.7010	8,164,922	6,709,000	8,217,347		(41,457)			5.950	4.337	FA	150,803	399,186	05/16/2017	02/15/2041
91324P-BU-5	UnitedHealth Group Inc-SR UNSECURED	1,5		1	1FE	203,263	104.4517	191,147	183,000	201,485		(508)			4.625	3.941	MN	1,081	8,464	05/11/2015	11/15/2041
91324P-BV-3	UNITEDHEALTH GROUP INC-SR UNSECURED			1	1FE	250,540	99.2047	248,012	250,000	250,278		(89)			2.875	2.835	MS	2,116	7,188	12/15/2015	03/15/2022
91324P-BW-1	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	271,694	100.1537	275,423	275,000	272,106		70			4.375	4.448	MS	3,543	12,031	04/25/2012	03/15/2042
91324P-BW-1	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	566,262	100.1537	525,807	525,000	562,694		(1,019)			4.375	3.895	MS	6,763	22,969	04/27/2015	03/15/2042
91324P-CA-8	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	947,334	95.3282	881,786	925,000	945,896		(551)			3.950	3.803	AO	7,713	115,090	10/30/2017	10/15/2042
91324P-CA-8	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	9,175,833	95.3282	9,065,715	9,510,000	9,180,508		4,477			3.950	4.181	AO	189,600	189,600	08/08/2018	10/15/2042
91324P-CB-6	UNITEDHEALTH GROUP INC-SR UNSECURED			1	1FE	994,106	99.7299	997,299	1,000,000	999,608		1,842			1.625	1.812	MS	4,785	16,250	12/09/2015	03/15/2019
91324P-CC-4	UNITEDHEALTH GROUP INC-SR UNSECURED			1	1FE	395,409	98.5093	394,037	400,000	397,204		612			2.875	3.053	MS	3,386	11,500	12/15/2015	03/15/2023
91324P-CD-2	UnitedHealth Group Inc-SR UNSECURED			1	1FE	1,466,519	99.1852	1,467,940	1,480,000	1,467,367		290			4.250	4.307	MS	18,521	180,530	12/09/2015	03/15/2043
91324P-CD-2	UnitedHealth Group Inc-SR UNSECURED			1	1FE	9,968,283	99.1852	9,733,039	9,813,000	9,964,116		(2,431)			4.250	4.147	MS	122,799	217,303	06/04/2018	03/15/2043
91324P-CG-5	UNITEDHEALTH GROUP INC-SR UNSECURED			1	1FE	252,582	99.3423	248,356	250,000	250,638		(656)			2.300	2.029	JD	256	5,750	12/15/2015	12/15/2019
91324P-CM-2	UnitedHealth Group Inc-SR UNSECURED			1	1FE	116,420	99.6426	114,589	115,000	115,496		(313)			2.700	2.412	JJ	1,432	3,105	12/15/2015	07/15/2020
91324P-CP-5	UNITEDHEALTH GROUP INC-SR UNSECURED			1	1FE	180,382	101.2266	177,147	175,000	178,862		(520)			3.750	3.371	JJ	3,026	8,563	12/15/2015	07/15/2025
91324P-CQ-3	UNITEDHEALTH GROUP INC-SENIOR UNSECURED			1	1FE	10,263,233	105.9993	9,423,338	8,890,000	10,136,607		(54,628)			4.625	3.500	JJ	189,592	521,816	08/01/2018	07/15/2035
91324P-CR-1	UNITEDHEALTH GROUP INC-SR UNSECURED			1	1FE	58,987,753	105.8000	53,672,362	50,730,000	58,560,916		(168,684)			4.750	3.818	JJ	1,111,128	2,407,547	08/01/2018	07/15/2045
91324P-CZ-3	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	295,733	99.1294	297,388	300,000	295,734		1			4.250	4.337	AO	2,692	106	10/04/2018	04/15/2047
91324P-DF-6	UnitedHealth Group Inc-SENIOR UNSECURED			1	1FE	1,007,321	91.5169	992,959	1,085,000	1,007,876		555			3.750	4.176	AO	8,590	7,798	08/01/2018	10/15/2047
91412N-AF-7	UNIVERSITY OF CHICAGO-BOND			1	1FE	11,707,021	112.1135	12,786,541	11,405,000	11,603,160		(14,242)			5.420	5.200	AO	154,538	618,151	05/21/2010	10/01/2030
91412N-AK-6	UNIVERSITY OF CHICAGO-UNSECURED BOND			1	1FE	30,997,520	103.3334	32,033,362	31,000,000	31,000,000					4.411	4.411	AO	341,853	1,367,410	08/06/2014	10/01/2044
91412N-AK-6	UNIVERSITY OF CHICAGO-UNSECURED BOND			1	1FE	10,499,160	103.3334	10,850,010	10,500,000	10,500,000					4.411	4.410	AO	115,789	463,155	08/06/2014	10/01/2044
91481C-AA-8	UNIVERSITY OF PENNSYLVAN-SENIOR UNSECURE			1	1FE	15,963,711	107.0803	15,714,037	14,675,000	15,928,127		(1,095)			4.674	4.291	MS	228,637	685,910	07/15/2016	09/01/2112
914886-AA-4	University of Southern C-SR UNSECURED			1	1FE	3,244,774	116.7045	3,040,152	2,605,000	3,243,711		(409)			5.250	4.198	AO	34,191	106,141	08/20/2018	10/01/2111
914886-AC-0	University of Southern C-UNSECURED			1	1FE	300,619	101.7583	305,275	300,000	300,611		(7)			3.841	3.829	AO	2,881	1,760	08/01/2018	10/01/2047
91529Y-AL-0	UNUM GROUP SR NT			1	2FE	270,294	97.5455	262,397	269,946	269,946		(121)			3.875	3.815	MN	1,621	10,424	03/16/2017	11/05/2025
91529Y-AM-8	UNUM GROUP-SENIOR UNSECURED			1	2FE	54,880	98.8579	54,372	55,000	54,940		24			3.000	3.047	MN	211	1,650	05/04/2016	05/15/2021
91529Y-AM-8	UNUM GROUP-SENIOR UNSECURED			1	2FE	899,673	98.8579	874,893	885,000	894,643		(4,045)			3.000	2.507	MN	3,393	26,550	09/28/2017	05/15/2021
91739V-AA-6	USIS MERGER SUB INC-SENIOR UNSECURED			1	5FE	8,500,000	91.8100	7,803,850	8,500,000	8,500,000					6.875	6.874	MN	97,396	584,375	04/05/2017	05/01/2025
918204-AR-9	VF CORP-NOTE			1	1FE	3,543,008	117.3400	4,224,239	3,600,000	3,558,990					6.000	6.116	AO	45,600	216,000	02/28/2005	10/15/2033
918204-AV-0	VF CORP-SR UNSECURED			1	1FE	105,364	100.8212	100,821	100,000	102,474		1,616			3.500	2.440	MS	1,167	3,500	12/15/2015	09/01/2021
91823K-AA-7	ORCHESTRA BORROWER/CO-1S-2ND LIEN			1	4FE	4,668,000	97.1970	4,537,156	4,668,000	4,668,000					6.750	6.750	JD	14,004	312,744	06/02/2017	06/15/2022
91846H-AA-7	VX 2016 LLC Senior Secured			1	2FE	23,800,610	98.6397	23,476,850	23,800,610	23,800,610					3.924	3.924	FIAN	95,988	927,417	05/25/2016	05/24/2028
91846H-AD-1	VX 2016 LLC Senior Secured			1	2Z	23,800,610	98.6660	23,483,110	23,800,610	23,800,610					3.934	3.934	MJSD	258,920	923,040	06/23/2016	06/23/2028
91913Y-AE-0	VALERO ENERGY CORP-BOND			1	2FE	15,635,806	123.3345	20,427,897	16,563,000	15,843,297		28,787									

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
92276M-AX-3	VENTAS REALTY LP/CAP CRP-SENIOR UNSECURE	1		2FE		13,801,914	101.7698	13,406,141	13,173,000	13,459,992		(92,524)		4,250	3.456	MS		186,617	559,853	03/02/2015	03/01/2022
92277G-AB-3	VENTAS REALTY LP-SR UNSECURED	1		2FE		598,843	108.8114	544,057	500,000	500,000		(2,127)		5,700	4.429	MS		7,204	28,500	08/02/2016	09/30/2043
92277G-AF-4	VENTAS REALTY LP-SR UNSECURED	1		2FE		506,652	90.8047	461,288	508,000	506,763		25		4,375	4.391	FA		9,260	22,225	05/11/2015	02/01/2045
92277G-AF-4	VENTAS REALTY LP-SR UNSECURED	1		2FE		541,520	90.8047	490,345	540,000	541,432		(30)		4,375	4.357	FA		9,844	23,625	08/02/2016	02/01/2045
92277G-AH-0	VENTAS REALTY LP-SENIOR UNSECURED	1		2FE		306,097	97.4798	292,439	300,000	304,138		(914)		3,125	2.776	JD		417	9,375	10/20/2016	06/15/2023
92340L-AD-1	VEREIT Operating Partner-SENIOR UNSECURE	1		2FE		193,690	100.1864	195,363	195,000	193,710		20		4,625	4.798	MN		1,879		10/04/2018	11/01/2025
92343V-AF-1	VERIZON COMMUNICATIONS-SR UNSECURED	1		2FE		1,110,276	113.5749	1,107,356	975,000	1,098,753		(4,008)		6,250	5.167	AO		15,234	60,938	12/15/2015	04/01/2037
92343V-BE-3	Verizon Communications I-SENIOR UNSECURE	1		2FE		16,061,130	96.9549	15,876,364	16,375,000	16,080,464		5,690		4,750	4.874	MN		129,635	777,813	08/02/2016	11/01/2041
92343V-BG-8	VERIZON COMMUNICATIONS-SENIOR UNSECURED	1		2FE		337,065	86.2077	301,727	350,000	307,767		299		3,850	4.080	MN		2,246	13,475	08/02/2016	11/01/2042
92343V-BR-4	Verizon Communications I-SENIOR UNSECURE	1		2FE		25,083,395	106.4355	24,501,450	23,020,000	24,229,193		(230,519)		5,150	3.914	MS		349,073	1,185,530	10/20/2016	09/15/2023
92343V-BS-2	Verizon Communications I-SENIOR UNSECURE	1		2FE		13,925,414	118.0987	16,291,717	13,795,000	13,906,849		(5,509)		6,400	6.307	MS		259,959	882,880	10/20/2016	09/15/2033
92343V-BT-0	Verizon Communications I-SENIOR UNSECURE	1		2FE		24,294,613	117.9576	28,076,277	23,802,000	24,255,757		(9,383)		6,550	6.387	MS		459,048	1,559,031	04/27/2015	09/15/2043
92343V-BY-9	VERIZON COMMUNICATIONS-SENIOR UNSECURED	1		2FE		2,791,879	102.1456	2,568,963	2,515,000	2,706,768		(35,911)		4,150	2.504	MS		30,732	104,373	08/02/2016	03/15/2024
92343V-CZ-5	Verizon Communications I-SR UNSECURED	1		2FE		8,031,132	99.6255	8,158,336	8,189,000	8,150,332		32,731		2,625	3.048	FA		77,625	214,961	03/11/2015	02/21/2020
92343V-CK-8	Verizon Communications I-SR UNSECURED	1		2FE		43,607,659	98.2770	44,153,900	44,928,000	43,652,580		5,943		4,862	5.019	FA		788,811	2,184,399	10/20/2016	08/21/2046
92343V-CM-4	Verizon Communications I-SR UNSECURED	1		2FE		46,643,321	96.6279	50,477,445	52,239,000	46,782,118		39,207		5,012	5.684	FA		945,468	2,618,219	05/16/2017	08/21/2054
92343V-CQ-5	Verizon Communications I-SR UNSECURED	1		2FE		3,986,999	96.3792	3,720,235	3,860,000	3,973,025		(5,219)		4,400	4.139	MN		28,307	169,840	08/02/2016	11/01/2034
92343V-CR-3	Verizon Communications I-SENIOR UNSECURE	1		2FE		84,439	98.6277	83,834	85,000	84,646		53		3,500	3.799	MN		496	2,975	10/22/2014	11/01/2024
92343V-CV-4	VERIZON COMMUNICATIONS-SENIOR UNSECURED	1,5		2FE		2,508,440	93.3873	2,287,989	2,450,000	2,503,223		(2,146)		4,272	4.093	JJ		48,262	104,664	10/30/2017	01/15/2036
92343V-CX-0	Verizon Communications I-SR UNSECURED	1		2FE		22,757,762	93.7254	21,203,508	22,623,000	22,749,540		(2,354)		4,522	4.486	MS		301,220	1,023,012	10/30/2017	09/15/2048
92343V-CZ-5	Verizon Communications I-SR UNSECURED	1		2FE		29,282,268	91.8299	27,391,949	29,829,000	29,290,494		4,748		4,672	4.774	MS		410,341	1,393,611	10/30/2017	03/15/2055
92343V-DS-0	VERIZON COMMUNICATIONS-SENIOR UNSECURED	1		2FE		1,385,495	99.6402	1,379,020	1,384,000	1,385,616		(29)		5,012	5.004	AO		14,644	69,366	10/30/2017	04/15/2049
92343V-DU-5	VERIZON COMMUNICATIONS-SENIOR UNSECURED	1		2FE		1,349,824	104.1667	1,276,041	1,225,000	1,344,978		(4,204)		5,250	4.458	MS		18,758	64,313	10/30/2017	03/16/2037
92343V-EM-2	Verizon Communications I-SENIOR UNSECURE	1		2FE		1,283,434	125.8653	1,252,360	995,000	1,274,297		(9,137)		7,875	4.992	JJ		39,178	11,318	05/09/2018	07/01/2032
92343V-ER-1	Verizon Communications I-SENIOR UNSECURE	1		2FE		196,078	100.4110	195,801	195,000	196,078				4,329	4.257	MS		4,455		12/17/2018	09/21/2028
92344G-AX-4	Verizon Communications I-SENIOR UNSECURE	1		2FE		21,928,092	112.1317	22,684,244	20,230,000	21,678,916		(56,288)		5,850	5.190	MS		348,462	1,183,455	08/02/2016	09/15/2035
92345Y-AD-8	Verisk Analytics Inc-UNSECURED	1		2FE		2,364,441	100.3933	2,404,419	2,395,000	2,372,597		2,962		4,000	4.166	JD		4,258	95,800	02/29/2016	06/15/2025
92346L-AA-1	Veritas US Inc / Veritas-SENIOR UNSECURE	1		5FE		7,061,805	65.5000	4,469,065	6,823,000	7,012,380		(49,425)		10,500	9.435	FA		298,506	716,415	01/12/2018	02/01/2024
92428F-AE-7	Vermont Transco LLC 1st Mtg Bond Se	2		1PL		20,320,407	99.1985	20,831,685	21,000,000	20,488,228		30,899		3,850	4.101	JAJO		202,125	808,500	01/01/2013	04/01/2042
925524-AH-3	CBS CORPORATION-SENIOR NOTE	1		2FE		46,611,506	124.6060	41,752,609	41,533,000	45,216,255		(205,585)		7,875	6.755	JJ		1,371,887	3,270,724	12/02/2013	07/30/2030
925524-AX-8	Viacom Inc-SENIOR NOTE	1		2FE		15,567,206	107.3163	15,160,572	14,127,000	15,317,112		(38,241)		6,875	6.079	AO		164,570	971,231	12/23/2013	04/30/2036
92553P-AC-6	Viacom Inc-SENIOR UNSECURED BOND	1		2FE		11,592,260	107.1421	11,774,915	10,990,000	11,493,868		(13,805)		6,750	6.327	AO		177,214	741,825	03/31/2010	10/05/2037
92553P-AP-7	VIACOM INC-SR UNSECURED	1		2FE		682,882	78.9564	721,661	914,000	693,131		3,716		4,375	6.331	MS		11,774	39,988	08/02/2016	03/15/2043
92553P-AU-6	Viacom Inc-SENIOR UNSECURED BOND	1		2FE		8,621,296	98.0820	7,859,311	8,013,000	8,580,100		(11,506)		5,850	5.324	MS		156,254	468,761	10/30/2017	09/01/2043
92553P-AW-2	VIACOM INC-SENIOR UNSECURED	1		2FE		620,013	90.4910	570,093	630,000	620,413		175		5,250	5.360	AO		8,269	33,075	08/02/2016	04/01/2044
92553P-AW-2	VIACOM INC-SENIOR UNSECURED	1		2FE		945,706	90.4910	814,419	900,000	943,769		(894)		5,250	4.908	AO		11,813	47,250	10/20/2016	04/01/2044
92704R-AA-4	VILLAGE AT GERMANTOWN RES CARE FAC MTG R	2		5		1,280,000	99.1680	1,269,350	1,280,000	1,280,000				6,375	6.370	JD		6,800	80,195	11/07/2012	12/01/2020
927375-AA-3	VINE OIL & GAS LP / VINE-SENIOR UNSECURE	1		5FE		4,207,500	79.0000	3,357,500	4,250,000	4,214,900		6,339		8,750	8.985	AO		78,507	371,875	10/13/2017	04/15/2023
927804-FB-5	VIRGINIA ELEC & POWER CO-SR UNSECURED	1		2FE		919,395	119.5706	825,037	690,000	893,091		(7,562)		6,000	3.765	MN		5,290	41,400	12/09/2015	05/15/2037
927804-FE-9	VIRGINIA ELEC & POWER CO-SENIOR UNSECURE	1		2FE		980,229	123.0308	861,215	700,000	948,906		(8,941)		6,350	3.716	MN		3,828	44,450	04/27/2015	11/30/2037
927804-FG-4	VIRGINIA ELEC & POWER CO-SENIOR UNSECURE	1		2FE		5,463,614	150.8785	5,066,499	3,358,000	5,300,014		(59,879)		8,875	4.455	MN		38,081	298,023	05/16/2017	11/15/2038
927804-FP-4	VIRGINIA ELEC & POWER CO-SR UNSECURED	1		2FE		681,115	103.8347	612,625	590,000	673,822		(2,109)		4,650	3.750	FA		10,364	27,435	04/27/2015	08/15/2043
927804-FR-0	VIRGINIA ELEC & POWER CO-SR UNSECURED	1		1FE		3,983,607	100.5572	3,896,590	3,875,000	3,978,708		(1,602)		4,450	4.272	FA		65,143	105,984	12/26/2018	02/15/2044
927804-FS-8	VIRGINIA ELEC & POWER CO-SR UNSECURED	1		1FE		199,232	97.2183	194,437	200,000	199,453		76		3,100	3.147	MN		6,200		12/15/2015	05/15/2025
927804-FY-5	VIRGINIA ELECTRIC & POWE-SENIOR UNSECURE	1		1FE		19,114,752	91.9406	17,652,589	19,200,000	19,115,985		1,604		3,800	3.825	MS		214,827	729,600	09/11/2017	09/15/2047
927804-FZ-2	Virginia Electric & Powe-SENIOR UNSECURE	1		1FE		9,219,834	100.4210	9,339,154	9,300,000	9,223,601		3,767		3,800	3.906	AO		88,350	185,535	06/13/2018	04/01/2028
92783F-AC-0	Virginia International G Gtd Senior Secu	1		1FE		36,111,111	101.6583	36,709,942	36,111,111	36,111,111				4,470	4.470	FIAN		1,157,164	1,155,095	12/31	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
92936U-AA-7	WP CAREY INC-SENIOR UNSECURED NOTE REID			1	2FE	695,166	101.4888	674,900	665,000	686,845			(3,889)		4.600	3.871	AO	7,648	30,590	10/20/2016	04/01/2024
92964E-AA-7	WY Georgia Holdings 2004 Senior Secured			1		12,250,000	101.4348	12,425,763	12,250,000	12,250,000					5.590	5.589	MS	203,530	684,775	09/15/2004	09/14/2019
92976G-AG-6	WELLS FARGO BANK NA-UNSECURED NOTE			1	1FE	1,405,304	112.9265	1,242,191	1,100,000	1,380,511			(10,545)		5.850	3.875	FA	26,813	64,350	08/02/2016	02/01/2037
92976G-AJ-0	WELLS FARGO BANK NA-SUBORDINATED NOTE			1	1FE	5,092,714	123.6718	4,600,591	3,720,000	4,969,683			(42,953)		6.600	4.050	JJ	113,212	244,759	05/16/2017	01/15/2038
929771-AE-3	Wachovia Corp-SUB NOTE			1	1FE	3,000,000	110.4480	3,313,439	3,000,000	3,000,000					6.605	6.605	AO	49,538	198,150	10/03/1995	10/01/2025
929903-AM-4	Wachovia Corp-SUBORDINATED			1	1FE	1,560,607	107.6485	1,426,343	1,325,000	1,536,696			(8,724)		5.500	4.157	FA	30,365	72,875	08/02/2016	08/01/2035
931142-CB-7	WAL-MART STORES INC NT			1	1FE	41,621,573	115.1960	46,449,338	40,322,000	41,546,858			(70,827)		5.250	4.923	MS	705,635	2,116,905	08/02/2016	09/01/2035
931142-CM-3	WAL-MART STORES INC-UNSECURED SENIOR NOT			1	1FE	24,136,637	126.4900	27,473,635	21,720,000	23,817,724			(67,782)		6.200	5.359	AO	284,291	1,346,640	08/02/2016	04/15/2038
931142-CS-0	WAL-MART STORES INC-SENIOR NOTE			1	1FE	105,922,578	119.9792	122,539,507	102,134,000	105,372,779			(83,506)		5.625	5.369	AO	1,436,259	5,674,725	08/02/2016	04/01/2040
931142-CY-7	WAL-MART STORES INC-SENIOR UNSECURED NOT			1	1FE	15,944,057	113.5916	15,102,001	13,295,000	15,651,773			(68,878)		5.000	3.794	AO	121,871	664,750	08/02/2016	10/25/2040
931142-DB-6	WAL-MART STORES INC-SR UNSECURED			1	1FE	7,105,693	120.8990	6,316,971	5,225,000	6,978,509			(51,610)		5.625	3.453	AO	62,047	290,284	08/02/2016	04/15/2041
931142-DG-5	WAL-MART STORES INC-SR UNSECURED			2	1FE	1,562,098	99.4808	1,586,718	1,595,000	1,564,209			725		4.000	4.126	AO	14,178	63,800	12/09/2015	04/11/2043
931142-DH-3	WAL-MART STORES INC-SR UNSECURED			2	1FE	812,782	99.4808	746,106	750,000	808,185			(1,554)		4.000	3.515	AO	6,667	30,000	08/02/2016	04/11/2043
931142-DI-3	WAL-MART STORES INC-SR UNSECURED			2	1FE	592,707	97.4934	584,960	600,000	598,548			965		2.550	2.734	AO	3,400	15,300	12/15/2015	04/11/2023
931142-DK-6	WAL-MART STORES INC-SR UNSECURED			2	1FE	2,908,462	109.0443	2,685,762	2,463,000	2,873,053			(10,308)		4.750	3.703	AO	28,923	116,993	08/02/2016	10/02/2043
931142-DP-5	WAL-MART STORES INC-SR UNSECURED			1	1FE	382,551	100.2939	364,067	363,000	374,964			(2,189)		3.300	2.600	AO	2,296	11,979	12/15/2015	04/22/2024
931142-DQ-3	WAL-MART STORES INC-SR UNSECURED			1	1FE	4,438,872	100.9200	3,945,973	3,910,000	4,402,678			(12,313)		4.300	3.532	AO	32,225	168,130	08/02/2016	04/22/2044
931422-AH-2	Walgreen Co-SENIOR UNSECURED NOTE			1	2FE	8,965,933	97.5502	9,267,266	9,500,000	9,254,751			60,369		3.100	3.853	MS	86,714	294,500	11/13/2013	09/15/2022
931422-AK-5	WALGREEN CO-SENIOR UNSECURED			1	2FE	977,694	87.6660	810,910	925,000	974,785			(1,235)		4.400	4.045	MS	11,984	40,700	08/02/2016	09/15/2042
931427-AB-4	WALGREENS BOOTS ALLIANCE-SENIOR UNSECURE			1	2FE	708,305	95.9063	652,163	680,000	706,351			(1,209)		4.500	4.156	MN	3,655	30,600	10/30/2017	11/18/2034
931427-AC-2	Walgreens Boots Alliance-SENIOR UNSECURE			1	2FE	3,547,147	91.0473	2,963,591	3,255,000	3,529,445			(5,941)		4.800	4.253	MN	18,662	156,240	08/02/2016	11/18/2044
931427-AH-1	Walgreens Boots Alliance-SENIOR UNSECURE			1	2FE	10,251,265	98.4793	10,118,746	10,275,000	10,259,632			2,239		3.800	3.828	MN	46,637	390,450	11/06/2014	11/18/2024
931427-AH-1	Walgreens Boots Alliance-SENIOR UNSECURE			1	2FE	10,423	98.4793	9,848	10,000	10,271			(43)		3.800	3.269	MN	45	380	04/24/2015	11/18/2024
93933V-AZ-1	WASHINGTON MUTUAL BANK F-SENIOR UNSECURE			6*		284,756	1.2000	15,120	1,260,000	15,120			5,040		0.925	0.925	FMAN			08/29/2011	05/01/2009
94106L-AN-9	Waste Management Inc-SR UNSECURED			1	2FE	2,668,252	132.7976	2,390,356	1,800,000	2,534,992			(41,457)		7.750	3.820	MN	17,825	139,500	08/02/2016	05/15/2032
94106L-AV-1	Waste Management Inc-SENIOR UNSECURED NO			1	2FE	4,724,386	118.6823	4,539,598	3,825,000	4,707,307			(14,045)		6.125	4.421	MN	20,174	142,385	06/27/2018	11/30/2039
94106L-AW-9	Waste Management Inc-SENIOR UNSECURED NO			1	2FE	3,428,886	102.3319	3,530,451	3,450,000	3,446,200			2,387		4.750	4.827	JD	82,393	163,875	06/03/2010	06/30/2020
94106L-AY-5	Waste Management Inc-SENIOR UNSECURED NO			1	2FE	4,485,645	98.3892	4,427,515	4,500,000	4,494,079			1,462		2.900	2.937	MS	38,425	130,500	09/05/2012	09/15/2022
94106L-BA-6	Waste Management Inc-SR UNSECURED			1	2FE	9,679,664	97.1159	9,332,835	9,610,000	9,654,497			(6,762)		3.125	3.039	MS	100,104	300,313	02/25/2015	03/01/2025
94106L-BA-6	Waste Management Inc-SR UNSECURED			1	2FE	28,169,437	97.1159	27,561,484	28,380,000	28,240,277			20,026		3.125	3.213	MS	295,625	886,875	05/13/2015	03/01/2025
94106L-BB-4	Waste Management Inc-SR UNSECURED			1	2FE	9,042,147	97.0595	9,065,359	9,340,000	9,049,374			7,227		3.900	4.166	MS	121,420	303,550	05/31/2018	03/01/2035
94106L-BB-4	Waste Management Inc-SR UNSECURED			1	2FE	1,175,744	97.0595	1,086,096	1,119,000	1,169,569			(2,404)		3.900	3.520	MS	14,547	43,641	08/02/2016	03/01/2035
94106L-BC-2	WASTE MANAGEMENT INC-SENIOR UNSECURED			1	2FE	23,973,626	96.5308	21,730,052	22,511,000	23,895,526			(32,067)		4.100	3.724	MS	307,650	1,449,172	10/20/2016	03/01/2045
94106L-BC-2	WASTE MANAGEMENT INC-SENIOR UNSECURED			1	2FE	38,102,127	96.5308	37,168,226	38,504,000	38,106,584			4,458		4.100	4.165	MS	526,221	789,332	07/25/2018	03/01/2045
941848-BB-1	Waters Corporation Gtd Senior Note			2		6,800,000	101.1584	6,878,771	6,800,000	6,800,000					5.000	4.998	FA	141,667	340,000	03/01/2010	02/01/2020
941848-CB-0	Waters Corporation Gtd Senior Note			2		12,000,000	100.0080	12,000,960	12,000,000	12,000,000					3.970	3.970	MS	140,273	476,400	03/15/2011	03/15/2021
941848-D*-1	Waters Corporation Gtd Senior Note			2		26,700,000	99.2184	26,491,313	26,700,000	26,700,000					3.920	3.919	JD	526,227	1,046,640	06/30/2014	06/30/2024
941848-D*-9	Waters Corporation Gtd Senior Note Serie			2		9,100,000	98.1429	8,931,004	9,100,000	9,100,000					4.047	3.710	MJSD	376,430	316,994	06/30/2014	06/30/2024
94403*-BB-1	Wawa, Inc. Senior Note Ser			1	2FE	18,450,000	95.3528	17,592,592	18,450,000	18,450,000					3.790	3.790	AO	143,736	699,255	10/17/2013	10/17/2025
94403*-BC-9	Wawa, Inc. Senior Note Ser			1	2FE	22,050,000	93.3093	20,574,701	22,050,000	22,050,000					3.990	3.990	AO	180,847	879,795	10/17/2013	10/17/2028
948741-AH-6	WEINGARTEN REALTY INVEST-SENIOR UNSECURE			1	2FE	14,008,442	98.5971	13,978,112	14,177,000	14,063,752			18,213		3.375	3.602	AO	140,884	436,638	06/25/2018	10/15/2022
948741-AJ-2	WEINGARTEN REALTY INVEST-SENIOR UNSECURE			1	2FE	8,260,824	98.2935	8,158,364	8,300,000	8,281,368			3,888		3.500	3.556	AO	61,328	290,500	03/19/2013	04/15/2023
948741-AL-7	WEINGARTEN REALTY INVEST-SENIOR UNSECURE			1	2FE	7,492,092	97.4321	7,356,120	7,550,000	7,510,352			5,306		3.850	3.943	JD	24,223	290,675	05/07/2015	06/01/2025
948741-AM-5	WEINGARTEN REALTY INVEST-SENIOR UNSECURE			1	2FE	4,475,433	92.5476	4,251,635	4,594,000	4,486,378			7,499		3.250	3.598	FA	56,404	144,900	06/19/2018	08/15/2026
94874R-AU-0	WEINGARTEN REALTY INVEST-NOTE PUT DATE 6			1	2FE	1,844,172	112.7692	2,029,845	1,800,000	1,823,192			(1,976)		6.880	6.678	JD	36,464	123,840	11/20/2001	06/25/2027
94973V-AL-1	ANTHEM INC-SR UNSECURED			1	2FE	117,604	110.5895	105,000	105,000	116,390			(420)		5.850	4.903	JJ	2,832	6,143	12/09/2015	01/15/2036
94973V-AN-7	Anthem Inc-SENIOR UNSUBORDINATED NOTE			1	2FE	21,020,682	116.6830	20,833,744	17,855,000	20,520,907			(87,589)		6.375	5.104	JD	50,589	1,138,256	12/09/2015	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
949746-RS-2	WELLS FARGO & CO-SENIOR UNSECURED				1FE	4,020,880	.983573	3,934,291	4,000,000	4,013,342		(5,941)			2.500	2.341	MS	32,500	100,000	09/21/2017	03/04/2021
949746-RII-3	WELLS FARGO & COMPANY-SENIOR UNSECURED				1FE	4,726,193	.931839	4,379,643	4,700,000	4,700,678		(2,517)			3.000	2.932	AO	27,025	141,000	10/20/2016	04/22/2026
949746-FP-0	WELLS FARGO & CO-SUBORDINATED BOND				1FE	11,690,390	104.3574	10,637,149	10,193,000	11,603,276		(30,904)			5.375	4.446	MN	89,790	546,552	10/30/2017	11/02/2043
949746-FR-6	WELLS FARGO & COMPANY-SENIOR UNSECURED				1FE	1,965,389	.995535	1,911,427	1,920,000	1,939,013		(8,900)			3.000	2.503	JJ	25,440	57,600	12/15/2015	01/22/2021
949746-FU-9	WELLS FARGO & COMPANY-SR UNSECURED				1FE	324,983	.997048	324,040	325,000	324,994		4			2.125	2.126	AO	1,324	6,906	12/15/2015	04/22/2019
949746-FV-7	WELLS FARGO & COMPANY-SENIOR UNSECURED				1FE	598,595	100.0137	600,082	600,000	599,795		486			2.929	3.051	JAJO	3,466	15,984	08/02/2016	04/22/2019
949746-FY-1	WELLS FARGO & CO-SUBORDINATED				1FE	2,845,579	.976531	2,609,290	2,672,000	2,803,163		(15,359)			4.100	3.347	JD	8,521	109,201	08/02/2016	06/03/2026
949746-GE-4	WELLS FARGO & CO-SUBORDINATED				1FE	5,325,756	.941403	4,744,669	5,040,000	5,309,608		(5,617)			4.650	4.304	MN	37,107	234,360	10/30/2017	11/04/2044
949746-GF-1	WELLS FARGO & CO-SR UNSECURED				1FE	246,942	.989125	247,281	250,000	249,164		753			2.150	2.465	JJ	2,255	5,375	12/15/2015	01/30/2020
949746-GH-7	WELLS FARGO & CO-SR UNSECURED				1FE	16,446,139	.942427	15,851,626	16,820,000	16,568,204		36,086			3.000	3.269	FA	185,020	504,600	08/02/2016	02/19/2025
949746-GK-0	WELLS FARGO & COMPANY-SR UNSECURED				1FE	1,705,522	.917575	1,546,114	1,685,000	1,704,648		(529)			3.900	3.824	MN	10,953	65,482	08/01/2018	05/01/2045
949746-GL-8	WELLS FARGO & CO-SR UNSECURED				1FE	1,150,802	.983665	1,035,799	1,053,000	1,132,186		(7,895)			4.300	3.285	JJ	19,998	45,279	08/02/2016	07/22/2027
949746-GM-6	WELLS FARGO & CO-SR UNSECURED				1FE	150,359	.990307	148,546	150,000	150,123		(79)			2.600	2.544	JJ	1,723	3,900	12/15/2015	07/22/2020
949746-GP-9	WELLS FARGO & COMPANY-SR UNSECURED				1FE	969,016	.968876	920,432	950,000	964,793		(1,960)			3.550	3.288	MS	8,619	33,725	10/20/2016	09/29/2025
949746-GQ-7	WELLS FARGO & COMPANY-SUBORDINATED				1FE	3,167,229	.975076	2,870,625	2,944,000	3,157,577		(4,254)			4.900	4.429	MN	17,631	144,256	10/30/2017	11/17/2045
949746-GT-1	WELLS FARGO & CO-SUBORDINATED				1FE	1,707,803	.917312	1,617,221	1,763,000	1,707,648		(1,011)			4.400	4.597	JD	3,663	39,518	10/04/2018	06/14/2046
949746-GU-8	WELLS FARGO & CO-SUBORDINATED				1FE	2,369,993	.962850	2,084,570	2,165,000	2,365,713		(3,737)			4.750	4.184	JD	6,856	102,838	10/30/2017	12/07/2046
94978#-JJ-7	Wells Fargo Bank Northw Note N319-115/N	1			2FE	10,269,073	.985403	10,119,176	10,269,073	10,269,073					3.750	3.750	MCN	111,454	379,377	01/29/2015	09/26/2024
94978#-JK-4	Wells Fargo Bank Northw Note A319-115/	1			2FE	10,269,073	.985529	10,120,470	10,269,073	10,269,073					3.750	3.750	MCN	163,389	383,163	01/29/2015	09/09/2024
94988Y-AA-2	Wells Fargo Bank Northw Class A Senior	1			1FE	3,527,828	.981001	3,473,690	3,540,965	3,532,557		2,383			3.682	3.755	FIAN	117,775	136,100	09/22/2015	08/25/2027
94988Y-AB-0	Wells Fargo Bank Northw Class B Senior	1			2FE	1,511,888	.981349	1,489,251	1,517,555	1,513,906		1,029			4.182	4.257	FIAN	22,969	63,621	09/22/2015	08/25/2027
94988Y-AC-8	Wells Fargo Bank Northw Class A Senior	1			1FE	4,135,192	.980320	4,067,612	4,149,269	4,140,296		2,544			3.665	3.731	FIAN	137,377	158,751	09/25/2015	08/25/2027
94988Y-AD-6	Wells Fargo Bank Northw Class B Senior	1			2FE	1,772,229	.980680	1,743,902	1,778,258	1,774,396		1,089			4.165	4.233	FIAN	66,908	77,317	09/25/2015	08/25/2027
94988Y-AE-4	WELLS FARGO BK NW AVIANCA NT TRANCHE A-1	2			1FE	4,121,665	.974033	4,032,627	4,140,134	4,128,202		3,409			3.508	3.597	FIAN	131,263	151,665	10/29/2015	08/25/2027
94988Y-AF-1	WELLS FARGO BK NW AVIANCA NT TRANCHE A-2	2			2FE	1,766,318	.974508	1,729,112	1,774,344	1,769,128		2,403			4.008	4.100	FIAN	65,930	61,955	10/29/2015	08/25/2027
94988Y-AG-9	WELLS FARGO BK NW AVIANCA NT TRANCHE A-1	2			1FE	9,585,920	.982479	9,461,617	9,630,350	9,600,722		8,042			3.728	3.819	FIAN	323,645	374,225	12/09/2015	11/25/2027
94988Y-AH-7	Wells Fargo Bank Northw Class B Senior	2			2FE	4,108,215	.982807	4,056,331	4,127,292	4,114,503		3,454			4.228	4.321	FIAN	110,686	174,918	12/09/2015	11/25/2027
94989F-AA-2	Wells Fargo Bank Northw Class A Senior	1			1FE	3,454,102	.989162	3,428,066	3,465,626	3,458,466		2,100			3.880	3.946	FIAN	121,645	140,513	07/30/2015	05/25/2027
94989F-AB-0	Wells Fargo Bank Northw Class B Senior	1			2FE	1,480,212	.989356	1,469,458	1,485,267	1,482,106		923			4.380	4.449	FIAN	58,852	67,981	07/30/2015	05/25/2027
94989F-AC-8	Wells Fargo Bank Northw Class A Senior	1			1FE	2,937,488	.977677	2,880,708	2,946,482	2,940,797		1,616			3.599	3.658	FIAN	95,816	110,716	08/26/2015	08/25/2027
94989F-AD-6	Wells Fargo Bank Northw Class B Senior	1			2FE	1,258,926	.978086	1,235,105	1,262,778	1,260,329		692			4.099	4.159	FIAN	18,736	51,889	08/26/2015	08/25/2027
94989F-AE-4	WELLS FARGO BK NW NT TRANCHE CL A-1 SER	1			1FE	3,532,998	.983653	3,486,293	3,544,230	3,537,096		2,014			3.748	3.810	FIAN	119,973	138,648	08/31/2015	08/25/2027
94989F-AF-1	Wells Fargo Bank Northw Class B Senior	1			2FE	1,514,136	.983952	1,494,578	1,518,955	1,515,875		865			4.248	4.311	FIAN	58,276	67,348	08/31/2015	08/25/2027
94989F-AG-9	Wells Fargo Bank Northw Class A Senior	1			1FE	9,346,602	.976711	9,166,828	9,385,404	9,360,424		7,114			3.575	3.657	FIAN	121,455	336,362	10/14/2015	08/25/2027
94989F-AH-7	Wells Fargo Bank Northw Class B Senior	1			2FE	4,005,498	.977138	3,930,357	4,022,315	4,011,424		3,087			4.075	4.159	FIAN	148,111	171,140	10/14/2015	08/25/2027
95000U-2A-0	WELLS FARGO & CO-SENIOR UNSECURED	2			1FE	8,527,014	.960076	8,544,677	8,900,000	8,543,924		16,910			3.584	4.101	MN	34,556	159,488	06/15/2018	05/22/2028
95040Q-AC-8	WELLTOWER INC-SENIOR UNSECURED	1			2FE	421,311	.998221	399,288	400,000	418,644		(2,313)			4.250	3.493	AO	4,250	17,000	10/30/2017	04/01/2026
95040Q-AF-1	Welltower Inc-SENIOR UNSECURED	1			2FE	14,955,150	.990065	14,850,980	15,000,000	14,954,824		(326)			4.950	4.969	MS	278,438		12/21/2018	09/01/2048
955278-C*5	West Penn Power Company First Mortgage	1			1	66,600,000	.963114	64,143,392	66,600,000	66,600,000					4.140	4.140	JD	122,544	2,757,240	12/15/2017	12/15/2047
95709T-AD-2	WESTAR ENERGY INC-NOTE	1			1FE	8,378,832	102.6723	8,624,477	8,400,000	8,396,863		1,793			5.100	5.124	JJ	197,540	428,400	06/27/2005	07/15/2020
95709T-AH-3	WESTAR ENERGY INC-SECURED	1			1FE	278,469	.977664	254,193	260,000	276,846		(468)			4.125	3.700	MS	3,575	10,725	04/27/2015	03/01/2042
95709T-AK-6	WESTAR ENERGY INC-SECURED	1			1FE	304,499	103.7163	272,774	263,000	301,164		(963)			4.625	3.710	MS	4,055	12,164	05/11/2015	09/01/2043
958254-AD-6	WESTERN GAS PARTNERS LP-SENIOR UNSECURED	1			2FE	9,845,871	.896178	8,433,033	9,410,000	9,832,706		(8,361)			5.450	5.127	AO	128,211	512,845	05/24/2017	04/01/2044
958254-AH-7	Western Gas Partners LP-SENIOR UNSECURED	1			2FE	84,520	.934724	79,452	85,000	84,547		27			4.500	4.571	MS	1,275	1,902	02/21/2018	03/01/2028
958587-BJ-5	WEST MASS ELECTRIC CO-SENIOR UNSECURED N	1			1FE	18,827,480	100.7386	19,140,333	19,000,000	18,946,344		18,305			3.500	3.609	MS	195,806	665,000	09/13/2011	09/15/2021
958587-BJ-5	WEST MASS ELECTRIC CO-SENIOR UNSECURED N	1			1FE	156,514	100.7386	151,108	150,000	153,035		(1,181)			3.500	2.644	MS	1,546	5,250	12/15/2015	09/15/2021
959802-AL-3	WESTERN UNION CO/THE-BOND	1			2FE	708,768	101.8579	713,006	700,000	701,350		(1,065)			5.253	5.085	AO	9,193	36,771	10/04/2010	04/01/2020
959802-AM-1																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
962166-AU-8	Weyerhaeuser Co-SENIOR UNSECURED NOTE				2FE	379,594		118,4620	300,000	351,877					7.950	4.703	MS	7,023	23,850	10/06/2014	03/15/2025
962166-BR-4	Weyerhaeuser Co-DEBENTURE				2FE	28,266,569		122,2837	22,623,000	27,429,104				(241,711)	7.375	5.128	MS	491,265	1,609,556	10/04/2018	03/15/2032
962166-BV-5	WEYERHAEUSER CO-SENIOR UNSECURED				2FE	2,649,216		102,7526	2,400,000	2,494,288				(123,630)	7.375	2.063	AO	44,250	171,007	09/27/2017	10/01/2019
963320-AT-3	Whirlpool Corp-SR UNSECURED				2FE	664,781		96,8386	665,000	643,977				20	3.700	3.704	MN	4,101	24,605	10/07/2015	05/01/2025
96332H-CE-7	Whirlpool Corp-SENIOR UNSECURED NOTE				2FE	5,841,225		102,3309	5,850,000	5,846,310				915	4.700	4.719	JD	22,913	274,950	05/29/2012	06/01/2022
96332H-CF-4	Whirlpool Corp-SENIOR UNSECURED NOTE				2FE	4,844,844		97,8683	4,810,000	4,825,849				(3,510)	3.700	3.613	MS	59,323	177,970	12/02/2013	03/01/2023
96332H-CG-2	Whirlpool Corp-SENIOR UNSECURED BOND				2FE	11,958,937		93,7013	11,625,000	11,945,601				(7,045)	5.150	4.950	MS	199,563	598,688	01/25/2017	03/01/2043
96468#-AA-7	Whitebridge Pet Brands L Senior Sub Note				5	2,726,557		98,0938	2,674,674	2,726,556				2	11.500	11.675	MON	27,872	317,102	11/30/2018	08/18/2021
96808#-AA-8	Wild Jack Solar LLC Senior Secured				2	56,228,813		98,5002	55,385,494	56,228,813					4.050	4.050	JD	955,187	2,256,818	11/18/2015	12/31/2034
96949L-AC-9	WILLIAMS PARTNERS LP-SENIOR UNSECURED				2FE	3,766,901		92,3916	3,630,000	3,764,632				(2,024)	5.100	4.847	MS	54,511	107,918	08/01/2018	09/15/2045
96949L-AE-5	Williams Partners LP-SENIOR UNSECURED				2FE	182,447		90,7404	185,000	182,457				10	4.850	4.939	MS	2,991	623	08/01/2018	03/01/2048
96950F-AD-6	WILLIAMS PARTNERS LP-SENIOR UNSECURED NO				2FE	8,639,640		101,9881	7,500,000	7,707,217				(166,791)	5.250	2.897	MS	115,938	393,750	01/01/2013	03/15/2020
96950F-AF-1	WILLIAMS PARTNERS LP-SENIOR UNSECURED NO				2FE	1,678,907		106,3783	1,420,000	1,670,828				(5,979)	6.300	4.947	AO	18,886	79,678	08/01/2018	04/15/2040
96950F-AG-9	WILLIAMS PARTNERS LP-NOTE				2FE	4,124,629		100,7941	4,125,000	4,124,760				38	4.125	4.126	MN	130,098	130,098	11/02/2010	11/15/2020
96950F-AK-0	WILLIAMS PARTNERS LP-SENIOR UNSECURED				2FE	395,101		100,4580	350,000	393,836				(922)	5.800	4.911	MN	2,594	20,300	10/30/2017	11/15/2043
96950F-AN-4	WILLIAMS PARTNERS LP-SENIOR UNSECURED NO				2FE	1,527,970		95,3126	1,460,000	1,524,901				(1,320)	5.400	5.080	MS	25,623	78,840	05/16/2017	03/04/2044
96950F-AP-9	WILLIAMS PARTNERS LP-SENIOR UNSECURED NO				2FE	191,976		90,6668	185,000	191,827				(137)	4.900	4.651	JJ	4,180	11,137	10/30/2017	01/15/2045
96950F-AP-9	WILLIAMS PARTNERS LP-SENIOR UNSECURED NO				2FE	203,410		90,6668	205,000	203,462				18	4.900	4.651	JJ	4,632	4,900	08/01/2018	01/15/2045
97064#-AE-1	WILLIS NORTH AMERICA INC-SENIOR UNSECURE				2FE	6,936,864		102,2949	5,931,000	6,062,930				(172,174)	7.000	3.924	MS	122,245	415,170	12/02/2013	09/29/2019
97064#-AF-8	WILLIS NORTH AMERICA INC-SENIOR UNSECURE				2FE	64,944		97,6360	65,000	64,954				7	3.600	3.614	MN	299	2,340	05/11/2017	05/15/2024
97164#-AH-7	Wilmington Investments, Senior Note Ser				2	25,800,000		105,8101	25,800,000	25,800,000					5.850	5.848	MN	150,930	1,509,300	05/25/2011	05/25/2023
97164#-AK-0	Wilmington Investments, Senior Note Ser				2	20,800,000		100,8866	20,800,000	20,800,000					4.860	4.858	JD	36,504	1,010,880	12/18/2013	12/18/2020
97164#-AN-4	Wilmington Investments, Senior Note Ser				2	16,800,000		98,0463	16,800,000	16,800,000					4.190	4.190	MS	181,846	703,920	09/28/2015	09/28/2025
97164#-AP-9	Wilmington Investments, Senior Unsecure				2	13,300,000		98,7176	13,300,000	13,300,000					4.440	4.440	JD	26,245	590,520	06/15/2017	06/15/2027
97314#-AA-3	Wind Energy Transmission Senior Secured				1	20,636,667		94,1202	20,636,667	20,636,667					3.770	3.670	MJSD	192,600	753,851	12/18/2014	12/18/2034
97651#-AE-4	WinWholesale, Inc. Senior Note				2	16,500,000		100,5158	16,500,000	16,500,000					4.510	4.509	FA	289,392	629,087	02/11/2014	02/11/2024
97665#-BW-7	Wisconsin Electric Power-SENIOR UNSECURE				1FE	8,333,037		115,9287	8,161,381	8,295,376				(37,661)	5.625	3.983	MN	50,600	198,000	05/29/2018	05/15/2033
97665#-BZ-0	WISCONSIN ELECTRIC POWER-SENIOR UNSECURE				1FE	254,406		117,9786	195,000	249,389				(2,135)	5.700	3.578	JD	926	11,115	08/02/2016	12/01/2036
97665#-CC-0	WISCONSIN ELECTRIC POWER-SENIOR UNSECURE				1FE	1,723,629		101,1730	1,500,000	1,532,527				(33,413)	4.250	1.948	JD	2,833	63,750	01/01/2013	12/15/2019
97665#-CE-6	WISCONSIN ELECTRIC POWER-SENIOR UNSECURE				1FE	16,577,811		91,3857	17,398,000	16,601,120				15,121	3.650	3.945	JD	28,223	624,440	07/05/2018	12/15/2042
97665#-CG-1	WISCONSIN ELECTRIC POWER-SENIOR UNSECURE				1FE	2,176,870		98,8599	2,160,000	2,176,131				(316)	4.250	4.200	JD	7,650	55,498	07/23/2018	06/01/2044
97665#-CJ-5	WISCONSIN ELECTRIC POWER-SR UNSECURED				1FE	5,957,732		98,8631	5,975,000	5,958,783				311	4.300	4.317	JD	11,419	265,124	11/13/2015	12/15/2045
97665#-CJ-5	WISCONSIN ELECTRIC POWER-SR UNSECURED				1FE	4,333,134		98,8631	4,290,000	4,332,734				(399)	4.300	4.237	JD	8,199	92,235	07/23/2018	12/15/2045
97665#-AL-0	WEC Energy Group Inc-SR UNSECURED				2FE	14,247,578		98,9712	14,103,391	14,248,205				219	3.550	3.552	JD	22,483	505,875	06/04/2015	06/15/2025
97682#-BE-6	WISCONSIN POWER & LIGHT-SENIOR UNSECURED				1FE	361,640		126,2887	257,000	353,221				(3,576)	6.375	3.598	FA	6,189	16,384	08/02/2016	08/15/2037
97682#-BJ-5	WISCONSIN POWER & LIGHT-SR UNSECURED				1FE	144,218		95,9797	150,000	146,614				815	2.250	2.870	MN	431	3,375	12/15/2015	11/15/2022
97682#-BK-2	WISCONSIN POWER & LIGHT-SR UNSECURED				1FE	775,740		94,9839	795,000	776,844					4.100	4.246	AO	6,881	32,595	12/15/2015	10/15/2044
97682#-BK-2	WISCONSIN POWER & LIGHT-SR UNSECURED				1FE	732,887		94,9839	673,000	729,117				(1,347)	4.100	3.595	AO	5,825	27,593	08/02/2016	10/15/2044
97684#-BJ-0	WISCONSIN PUBLIC SERVICE-SECURED				1FE	27,022,406		107,8311	24,537,000	26,991,624				(22,063)	4.752	4.112	MN	194,333	656,964	12/21/2018	11/01/2044
97786#-AF-9	Wolseley Capital, Inc. Gtd Senior Note				2	10,800,000		102,3640	10,800,000	10,800,000					5.320	5.318	MN	71,820	574,560	11/16/2005	11/16/2020
97786#-AK-8	Wolseley Capital, Inc. Gtd Senior Note				2	500,000		97,8150	500,000	500,000					3.730	3.730	MS	6,217	18,650	09/01/2015	09/01/2025
98074#-FF-5	Woodward, Inc. Senior Note Ser				2	3,700,000		100,5662	3,700,000	3,700,000					4.350	4.350	MN	13,860	80,475	05/31/2018	05/30/2027
98074#-GF-4	Woodward, Inc. Senior Note Ser				2	1,900,000		99,2997	1,900,000	1,900,000					4.610	4.610	MN	7,542	43,795	05/31/2018	05/30/2033
98074#-G#-8	Woodward, Inc. Senior Note Ser				2	11,700,000		98,0011	11,700,000	11,700,000					4.410	4.410	MN	44,431	257,985	05/31/2018	05/30/2029
98074#-G#-6	Woodward, Inc. Senior Note Ser				2	4,000,000		98,2444	4,000,000	4,000,000					4.460	4.460	MN	15,362	89,200	05/31/2018	05/30/2030
9812#-AH-6	WPX Energy Inc-SENIOR UNSECURED				4FE	4,008,000		90,5000	4,008,000	4,008,000					5.750	5.750	JD	120,351	120,351	05/09/2018	06/01/2026
9825#-AQ-8	Wm Wrigley Jr Co-SENIOR UNSECURED NOTE				1FE	6,693,367		100,2803	6,700,000	6,697,911				984	3.375	3.391	AO	43,969	232,825	10/16/2013	10/21/2020
9825#-AQ-8	Wm Wrigley Jr Co-SENIOR UNSECURED NOTE				1FE	7,406,683		100,2803	7,220,183	7,271,598				(40,084)	3.375	2.779	AO	47,250	250,200	07/02/2015	10/21/2020
98302#-AG-5	Wyeth LLC-SENIOR UNSECURED NOTE				1FE	34,897,361		127,2051	33,594,870	33,144,415				(315,013)	6.500	4.199	FA	715,271	1,716,650	12/09/2015	02/01/2034
98302#-AL-4	Wyeth LLC-NOTE				1FE	1,364,748		123,6505	1,068,000	1,329,125				(10							

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
98389B-AA-0	XCEL ENERGY INC-SENIOR UNSECURED			1	2FE	30,661	101.7698	26,460	26,000	30,367	(125)				4.800	3.686	MS	367	1,248	08/02/2016	09/15/2041
98389B-AR-1	XCEL ENERGY INC-SR UNSECURED			1	2FE	6,680,450	97.7200	6,483,721	6,635,000	6,637,309	(4,903)				3.300	3.209	JD	18,246	218,955	03/03/2016	06/01/2025
98389B-AV-2	Xcel Energy Inc-SENIOR UNSECURED			1	2FE	21,714,300	101.1435	22,115,020	21,865,000	21,720,178	5,828				4.000	4.085	JD	38,871	413,006	06/20/2018	06/15/2028
983919-AH-4	XILINX INC-SR UNSECURED			1	1FE	99,955	99.6472	99,647	100,000	99,979	8				3.000	3.009	MS	883	3,000	12/15/2015	03/15/2021
98419M-AB-6	Xylem Inc/NY-SENIOR UNSECURED NOTE			1,5	2FE	19,512,883	103.2560	19,362,573	18,752,000	19,050,634	(102,797)				4.875	4.246	AO	228,540	914,160	07/02/2015	10/01/2021
98419M-AJ-9	XYLEM INC-SENIOR UNSECURED			1,5	2FE	44,907	95.0261	42,762	45,000	44,925	9				3.250	3.274	MN	244	1,463	10/03/2016	11/01/2026
98419M-AK-6	XYLEM INC-SENIOR UNSECURED			1	2FE	9,306,382	96.4194	9,044,144	9,380,000	9,309,019	1,266				4.375	4.422	MN	68,396	410,375	02/09/2017	11/01/2046
98426#-AA-4	YWI HLDGS CORP SR SUB NT			2	6*	4,812,311	92.9817	4,567,480	4,912,234	4,560,105	116,695				14.500	15.322	MJSD	834,844	834,844	02/07/2018	03/04/2021
98478*-AM-9	Yankee Gas Services Comp First Mortgage				1	2,237,120	101.4099	2,028,198	2,000,000	2,031,758	(37,093)				5.260	3.307	MN	17,533	105,200	01/01/2013	11/01/2019
98478*-AO-0	Yankee Gas Services Comp First Mortgage				1	23,876,820	101.5492	22,340,824	22,000,000	22,357,480	(275,851)				4.870	3.525	AO	267,850	1,071,400	01/01/2013	04/01/2020
988745-AA-3	ZACHRY HOLDINGS INC-SENIOR UNSECURED NOT			1	4FE	3,018,648	98.0000	2,841,020	2,899,000	2,901,328	(29,187)				7.500	6.452	FA	90,594	217,425	11/10/2015	02/01/2020
988745-AA-3	ZACHRY HOLDINGS INC-SENIOR UNSECURED NOT			1	4FE	3,173,888	98.0000	3,145,800	3,210,000	3,198,263	9,724				7.500	7.849	FA	100,313	240,750	05/06/2016	02/01/2020
98951U-AA-2	ZIFF DAVIS MEDIA Secured				6*	0.0000		0.0000	142,488						13.500	0.000	JD			04/15/2011	12/31/2078
98956P-AA-0	Zimmer Biomet Holdings I-NOTE			1	2FE	11,501,541	101.1620	10,723,173	10,600,000	10,721,956	(130,327)				4.625	3.332	MN	42,216	490,250	01/01/2013	11/30/2019
98956P-AB-8	Zimmer Biomet Holdings I-SENIOR NOTE			1	2FE	5,576,784	104.9192	5,276,385	5,029,000	5,528,656	(13,522)				5.750	4.977	MN	24,901	289,168	02/12/2016	11/30/2039
98956P-AF-9	Zimmer Biomet Holdings I-SR UNSECURED			1	2FE	21,100,298	95.0454	20,102,092	21,150,000	21,116,320	4,612				3.550	3.578	AO	187,706	750,825	03/10/2015	04/01/2025
98956P-AH-5	Zimmer Biomet Holdings I-SR UNSECURED			1	2FE	23,311,060	90.7772	21,332,650	23,500,000	23,321,239	3,408				4.450	4.499	FA	395,061	1,045,750	03/10/2015	08/15/2045
98956P-AH-5	Zimmer Biomet Holdings I-SR UNSECURED			1	2FE	24,963,645	90.7772	22,163,262	24,415,000	24,941,145	(10,755)				4.450	4.311	FA	410,443	1,086,468	09/20/2016	08/15/2045
98978V-AH-6	Zoetis Inc-SENIOR UNSECURED NOTE			1	2FE	12,011,688	101.3941	12,268,680	12,100,000	12,018,708	1,768				4.700	4.747	FA	236,958	730,654	10/30/2013	02/01/2043
98978V-AH-6	Zoetis Inc-SENIOR UNSECURED NOTE			1	2FE	9,605,007	101.3941	9,384,020	9,255,000	9,602,981	(1,673)				4.700	4.441	FA	181,244	123,140	12/20/2018	02/01/2043
98978V-AK-9	Zoetis Inc-SENIOR UNSECURED			1	2FE	5,197,850	102.6341	5,131,703	5,000,000	5,186,428	(11,422)				4.500	3.856	MN	30,000	112,500	07/11/2018	11/13/2025
98978V-AL-7	Zoetis Inc-SENIOR UNSECURED			1	2FE	3,214,117	92.3544	3,190,846	3,455,000	3,224,473	10,356				3.000	3.912	MS	31,383	51,825	07/10/2018	09/12/2027
98978V-AM-5	Zoetis Inc-SENIOR UNSECURED			1	2FE	8,875,544	91.8841	8,618,731	9,380,000	8,879,665	4,121				3.950	4.274	MS	112,182	185,255	09/12/2018	09/12/2047
C1467#-AA-5	CSL Group, Inc. Senior Secured			1	3	11,999,999	99.3861	11,926,331	11,999,999	11,999,999					5.440	5.439	MS	192,213	628,773	03/15/2011	03/15/2021
C6781#-AA-3	Nustef Banking USD SR SUB NT				5G1	1,479,104	92.4949	1,368,316	1,479,341	1,479,119	15				11.000	11.014	FMJAN	135,522	202,383	09/30/2018	11/23/2023
C9716#-AF-6	Waste Connections Inc. Senior Note Ser				2FE	24,200,000	101.4249	24,544,826	24,200,000	24,200,000					4.640	4.640	AO	280,720	1,122,880	04/01/2011	04/01/2021
C9716#-AK-5	Waste Connections Inc. Senior Notes				2	45,000,000	94.8165	42,667,425	45,000,000	45,000,000					3.490	3.490	FA	309,738	1,573,640	04/20/2017	02/20/2027
G1093*-AA-7	BIF II SAFE HARBOR HOLDINGS LLC			2	1FE	22,500,000	98.1200	22,077,000	22,500,000	22,500,000					4.610	4.610	MJSD	262,194	1,037,250	12/16/2016	12/31/2026
G8472#-AA-9	STERIS Corporation Senior Note Ser			1	2	5,000,000	94.0828	4,704,140	5,000,000	5,000,000					3.930	3.930	FA	67,683	196,500	02/27/2017	02/27/2027
G8472#-AC-5	STERIS Corporation Senior Note Ser			1	2	10,000,000	92.1276	9,212,760	10,000,000	10,000,000					4.030	4.030	FA	138,811	403,000	02/27/2017	02/27/2029
G8472#-AE-1	STERIS Corporation Senior Note Ser			1	2	31,165,000	93.1245	29,674,122	31,865,000	31,865,000					3.040	3.040	FA	337,772	1,014,617	02/27/2017	02/27/2029
L2289#-AB-7	DH Japan Finance SA Senior Note Ser			1	1	93,284,236	81.0955	78,684,673	97,027,175	97,027,175					0.650	0.650	MN	85,285	626,722	05/11/2017	05/11/2032
Q1297#-AK-4	CSL Finance Pty Ltd Gtd Senior Note				1	15,000,000	94.3621	14,154,315	15,000,000	15,000,000					3.170	3.170	AO	114,913	475,500	10/04/2017	10/04/2027
Q8458*-AA-0	Servco Australia Pty Ltd Senior Note Ser				3	34,443,500	107.0473	34,304,003	32,045,650	32,045,650					6.130	6.130	FA	758,007	2,085,430	02/01/2017	02/15/2029
U1065P-AA-9	Braskem America Finance -SENIOR UNSECURE			1,5	2FE	315,375	108.4500	325,350	300,000	314,982	(319)				7.125	6.680	JJ	9,441	21,375	10/03/2017	07/22/2041
008474-A8-7	Agnico Eagle Mines Limit Senior Note Ser			A	2	25,700,000	102.8513	26,432,784	25,700,000	25,700,000					6.670	6.669	AO	399,978	1,714,190	04/07/2010	04/07/2020
008474-B8-6	Agnico Eagle Mines Limit Senior Note Ser			A	2	20,000,000	102.1235	20,424,700	20,000,000	20,000,000					5.020	5.019	JJ	437,856	1,004,000	07/24/2012	07/24/2024
00908P-AC-1	Air Canada 2017-1 Class -SECURED			A	1	15,653,814	94.8700	15,432,503	16,267,000	15,688,061					3.700	4.615	JJ	277,533	23,105	09/25/2018	01/15/2026
013716-A0-8	RIO TINTO ALCAN INC-SR UNSECURED			A	1	148,567	128.7559	145,494	113,000	142,392		34,247			7.250	4.462	MS	2,412	8,193	05/11/2015	03/15/2031
013716-AU-9	RIO TINTO ALCAN INC-SR UNSECURED			A	1	409,148	121.4435	412,908	340,000	399,638		(2,746)			6.125	4.501	JD	926	20,825	04/27/2015	12/15/2033
013716-AW-5	RIO TINTO ALCAN INC-BOND			A	1	6,021,126	114.8741	5,827,562	5,073,000	6,003,443		(17,685)			5.750	4.192	JD	24,308	171,355	07/16/2018	06/01/2035
015644-A*-8	Aligma Central Corporati Senior Note			A	1	11,000,000	98.5414	10,839,554	11,000,000	11,000,000					5.110	5.108	JJ	533,995	562,100	07/19/2011	07/19/2021
015644-A8-6	Aligma Central Corporati Senior Note			A	1	16,837,782	100.8244	12,121,693	12,022,579	12,022,579					5.520	5.518	JJ	309,968	698,717	07/19/2011	07/19/2021
01626P-AG-1	Alimentation Couche-Tard-SENIOR UNSECURE			A	1	253,312	91.5490	251,760	275,000	251,760		84			4.500	5.020	JJ	5,328		10/04/2018	07/26/2047
032479-AD-9	ANADARKO FINANCE CO-COMPANY GUARANTEE			A	1	5,230,511	118.2546	4,950,139	4,186,000	5,230,511					7.500	7.500	MN	52,325	313,950	10/30/2017	05/01/2031
06366R-JJ-5	BANK OF MONTREAL-SR UNSECURED			A	1	596,046	96.9708	581,825	600,000	597,694		559			2.550	2.538	MN	2,338	15,300	12/15/2015	11/06/2022
06366R-JJ-5	BANK OF MONTREAL-SR UNSECURED			A	1	11,960,298	96.9708	11,563,765	11,925,000	11,945,831	(5,232)				2.550	2.501	MN	46,458	304,088	02/24/2016	11/06/2022
06367V-HL-2	BANK OF MONTREAL-SR UNSECURED			A	2	555,755	99.9613	549,787	550,000	550,000		(1,920)	</								

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
09784Y-CF-3	Bonavista Energy Corpora Senior Note Ser	A	1	3		12,900,000	.95	95,5910	12,331,239	12,900,000					3.780	3.780	MN	51,471	487,620	05/23/2013	05/23/2025
11271L-AA-0	BROOKFIELD FINANCE INC-SENIOR UNSECURED	A	1,5	1FE		23,011,015	.97	97,9646	23,235,000	23,059,175		19,591			4.250	4.370	JD	79,548	987,488	05/25/2016	06/02/2026
11271L-AB-8	BROOKFIELD FINANCE INC-SENIOR UNSECURED	A	1	2FE		31,911,822	.91	9515	32,700,000	31,919,561		8,332			4.700	4.854	MS	431,186	1,395,600	05/30/2018	09/20/2047
11271L-AC-6	Brookfield Finance Inc-SENIOR UNSECURED	A	1	1FE		23,670,886	.94	4013	24,800,000	23,723,802		52,916			3.900	4.487	JJ	419,120	505,093	06/19/2018	01/25/2028
11283W-AC-8	BROOKFIELD RES PPTYS INC-SR UNSECURED	A	1	4FE		1,498,488	.91	2500	1,565,000	1,515,960		5,908			6.375	6.991	MN	12,748	99,769	10/19/2015	05/15/2025
12201P-AB-2	BURLINGTON RESOURCES FIN SR UNSECURED	A	1	1FE		1,029,841	.129	0945	978,536	758,000		974,440			7.200	4.247	FA	20,618	54,576	12/09/2015	08/15/2031
12201P-AN-6	BURLINGTON RESOURCES FIN-SR UNSECURED	A	1	1FE		869,517	.132	0827	858,538	650,000		840,385			7.400	4.400	JD	4,008	48,100	08/02/2016	12/01/2031
134808-AC-8	Canacol Energy Ltd-SENIOR UNSECURED	A	1	4FE		1,000,000	.92	0010	920,010	1,000,000		1,000,000			7.250	7.250	MN	11,681	36,250	04/26/2018	05/03/2025
136375-BD-3	CANADIAN NATL RAILWAY-SR UNSECURED	A	1	1FE		607,427	.125	1124	550,494	440,000		569,267			6.900	3.286	JJ	13,999	30,360	12/09/2015	07/15/2028
136375-BL-5	CANADIAN NATL RAILWAY-SENIOR UNSECURED	A	1	1FE		102,628	.123	4269	92,570	75,000		99,839			6.250	3.479	FA	1,953	4,688	08/02/2016	08/01/2034
136375-BN-1	CANADIAN NATL RAILWAY-SR UNSECURED	A	1	1FE		16,314,394	.123	3364	14,364,990	11,647,000		15,894,761			6.200	3.406	JD	60,176	722,114	08/02/2016	06/01/2036
136375-BQ-4	CANADIAN NATL RAILWAY-BOND	A	1,5	1FE		611,900	.125	6493	552,857	440,000		597,210			6.375	3.714	MN	3,584	28,050	08/02/2016	11/15/2037
136375-BZ-4	CANADIAN NATL RAILWAY-SR UNSECURED	A	1	1FE		247,559	.103	3759	258,440	250,000		247,768			4.500	4.560	MN	1,688	11,250	10/29/2013	11/07/2043
136375-CK-6	Canadian National Railwa-SENIOR UNSECURE	A	1	1FE		11,538,240	.85	7626	11,406,419	13,300,000		11,555,733			3.200	3.988	FA	176,151	212,800	06/27/2018	08/02/2046
136375-CP-5	Canadian National Railwa-SENIOR UNSECURE	A	1	1FE		25,900,693	.92	4866	25,683,537	27,770,000		25,917,972			3.650	4.042	FA	416,704	612,135	07/03/2018	02/03/2048
136385-AC-5	CANADIAN NATL RESOURCES-SR UNSECURED	A	1	2FE		105,666	.120	3507	95,000	95,000		104,354			7.200	6.094	JJ	3,154	6,840	12/09/2015	01/15/2032
136385-AL-5	CANADIAN NATURAL RESOURC-SENIOR UNSECURE	A	1	2FE		7,504,675	.108	7628	6,525,768	6,000,000		7,281,717			6.250	4.567	MS	110,417	354,266	10/04/2018	03/15/2038
136385-AP-6	CANADIAN NATURAL RESOURC-SENIOR UNSECURE	A	1	2FE		248,977	.116	9036	222,117	190,000		248,280			6.750	4.699	FA	5,344	12,825	04/25/2012	02/01/2039
136385-AY-7	CANADIAN NATURAL RESOURC-SENIOR UNSECURE	A	1	2FE		1,656,465	.96	3843	1,508,414	1,565,000		1,655,272			4.950	4.581	JD	6,456	41,711	10/04/2018	06/01/2047
13645R-AF-1	CANADIAN PACIFIC RR CO-SENIOR UNSECURED	A	1	2FE		25,569,789	.116	2828	29,310,237	25,206,000		25,525,492			5.950	5.832	MN	191,636	1,499,757	04/06/2017	05/15/2037
13645R-AJ-3	CANADIAN PACIFIC RR CO-NOTE	A	1	2FE		2,890,227	.101	4141	2,941,007	2,900,000		2,890,140			1.286	2.298	MN	26,865	210,250	05/12/2009	05/15/2019
13645R-AQ-7	CANADIAN PACIFIC RR CO-SENIOR UNSECURED	A	1,5	2FE		4,340,811	.114	1923	4,065,245	3,560,000		4,249,088			5.750	4.404	JJ	94,389	204,700	01/01/2013	01/15/2042
13645R-AU-8	CANADIAN PACIFIC RR CO-SENIOR UNSECURED	A	1	2FE		11,269,815	.104	5087	10,497,902	10,045,000		11,217,367			4.800	4.069	FA	200,900	482,160	04/20/2017	08/01/2045
13645R-AV-6	CANADIAN PACIFIC RR CO-SENIOR UNSECURED	A	1	2FE		10,333,913	.103	8925	9,420,970	9,068,000		10,212,070			4.800	3.753	MS	128,161	435,264	08/01/2016	09/15/2035
13645R-AX-2	CANADIAN PACIFIC RR CO-SR UNSECURED	A	1	2FE		26,713,269	.116	3038	27,912,904	24,000,000		26,711,006			6.125	5.499	MS	432,833	1,407,814	08/01/2018	09/15/2115
15135U-AD-1	CENOVUS ENERGY INC-SENIOR UNSECURED NOTE	A	1	2FE		8,537,972	.101	7900	8,070,700	7,928,771		8,002,527			5.700	4.474	AO	95,410	617,961	12/02/2013	10/15/2019
15135U-AF-6	CENOVUS ENERGY INC-SENIOR UNSECURED NOTE	A	1	2FE		9,494,351	.97	5912	8,673,906	8,888,000		9,434,731			6.750	6.195	MN	76,659	599,940	12/09/2015	11/15/2039
15135U-AG-4	CENOVUS ENERGY INC-SENIOR UNSECURED	A	1	2FE		447,075	.94	9310	447,190	450,000		447,757			3.000	3.146	FA	5,100	13,500	10/19/2017	08/15/2022
15135U-AR-0	Cenovus Energy Inc-SENIOR UNSECURED	A	1	2FE		127,426	.86	1057	107,632	125,000		127,415			5.400	5.267	JD	300	3,375	07/27/2018	06/15/2047
20825U-AC-8	CONOCO FUNDING CO-SR UNSECURED	A	1	1FE		1,819,054	.130	2460	1,758,321	1,350,000		1,700,310			7.250	4.155	AO	20,663	97,875	10/30/2017	10/15/2031
20825V-AB-8	CONOCOPHILLIPS CANADA-SENIOR UNSECURED	A	1	1FE		1,291,495	.119	2340	1,323,498	1,110,000		1,277,644			5.950	4.688	AO	13,943	66,045	08/02/2016	10/15/2036
22576C-AA-8	Crescent Point Energy Co Gtd Senior Note	A	1	2		38,400,000	.102	0386	39,182,822	38,400,000		38,400,000			6.030	6.029	MS	623,904	2,315,520	03/24/2010	03/24/2020
22576C-DE-7	Crescent Point Energy Co Gtd Senior Note	A	1	2		10,000,000	.98	2146	9,821,460	10,000,000		10,000,000			4.000	3.999	MN	43,333	400,000	05/22/2012	05/22/2022
22576C-EF-4	Crescent Point Energy Co Gtd Senior Note	A	1	2		13,550,000	.96	9100	13,131,305	13,550,000		13,550,000			3.780	3.779	JD	27,032	512,190	06/12/2013	06/12/2023
22576C-FF-3	Crescent Point Energy Co Gtd Senior Note	A	1	2		18,500,000	.96	1206	17,782,311	18,500,000		18,500,000			3.750	3.749	JD	21,198	693,750	06/24/2014	06/20/2024
292505-AD-6	ENCANA CORP-BOND	A	1	2FE		246,329	.105	8057	211,611	200,000		239,687			6.500	4.693	FA	4,911	13,000	10/06/2014	08/15/2034
292505-AE-4	ENCANA CORP-SENIOR UNSECURED NOTE	A	1	2FE		20,503,629	.106	6732	18,243,246	17,102,000		20,026,293			6.625	5.181	FA	428,025	1,133,008	10/06/2014	08/15/2037
292505-AG-9	ENCANA CORP-SENIOR UNSECURED NOTE	A	1	2FE		5,491,880	.108	4192	4,851,761	4,475,000		5,330,911			6.500	4.940	FA	121,198	290,875	02/27/2017	02/01/2038
292505-AH-7	ENCANA CORP NT	A	1	2FE		1,001,250	.101	0280	1,000,000	1,000,000		1,000,085			6.500	6.453	MN	10,111	65,000	03/30/2016	05/15/2019
292505-AK-0	ENCANA CORP-SENIOR UNSECURED NOTE	A	1	2FE		15,882,200	.98	8789	15,919,510	16,100,000		15,906,617			5.150	5.240	MN	105,947	829,150	03/12/2012	11/15/2041
292505-AL-0	ENCANA CORP-SENIOR UNSECURED NOTE	A	1	2FE		3,296,845	.98	8789	3,245,205	3,282,000		3,295,473			5.150	5.119	MN	21,597	169,023	03/13/2014	11/15/2041
292766-AA-9	Enerplus Corporation Senior Note Ser	A	1	2		17,700,000	.99	2169	17,561,391	17,700,000		17,700,000			4.400	4.399	MN	99,513	778,800	05/15/2012	05/15/2024
318069-AA-2	Finning International In Senior Note Ser	A	1	2FE		28,700,200	.99	6664	28,305,258	28,400,000		28,512,035			3.980	3.840	JJ	508,644	1,130,320	01/01/2013	01/19/2022
318069-AB-0	Finning International In Senior Note Ser	A	1	2FE		18,400,000	.100	0419	18,407,710	18,400,000		18,400,000			4.080	4.079	JD	337,824	750,720	01/19/2012	01/19/2024
318069-BA-9	Finning International In Senior Note Ser	A	1	2FE		9,000,000	.101	8048	9,162,432	9,000,000		9,000,000			4.530	4.530	AO	99,660	407,700	04/03/2012	04/03/2027
335934-AK-1	FIRST QUANTUM MINERALS L-SENIOR UNSECURE	A	1	4FE		200,000	.88	0000	176,000	200,000		200,000			7.250	7.249	AO	10,503	206,625	03/16/2017	04/01/2023
335934-AK-1	FIRST QUANTUM MINERALS L-SENIOR UNSECURE	A	1	4FE		3,660,464	.88	0000	3,256,000	3,700,000		3,662,969			7.250	7.525	AO	194,310		08/16/2018	04/01/2023
335934-AL-9	First Quantum Minerals L-SENIOR UNSECURE	A	1	4FE		3,413,935	.82	5000	2,887,500	3,500,000		3,417,171			7.500						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
559222-AR-5	Magna International Inc-SR UNSECURED	A	1		1FE	9,174,081	101.6697	9,363,781	9,210,000	9,183,777		3,234			4.150	4.198	AO	95,554	382,215	09/16/2015	10/01/2025
57701R-AH-5	Mattamy Group Corp-SENIOR UNSECURED	A	1		4FE	1,470,000	89.5000	1,342,500	1,500,000	1,471,144		1,144			6.500	6.858	AO	24,375	48,750	08/16/2018	10/01/2025
629288-AA-5	NHL Canada Funding LP Senior Note Canadi				1PL	700,935	96.5936	677,058	700,935	700,935					3.980	3.980	JAJO	8,447	4,649	07/12/2018	07/12/2025
629288-AC-1	NHL Canada Funding LP Senior Note Canadi				1PL	8,287,293	92.9090	7,699,641	8,287,293	8,287,293					4.220	4.220	JAJO	105,889	58,287	07/12/2018	07/12/2030
644535-AF-3	NEW GOLD INC-SENIOR UNSECURED	A	1		5FE	5,728,500	84.0000	4,788,000	5,700,000	5,715,208		(7,698)			6.250	6.092	MMN	45,521	356,250	03/20/2017	11/15/2022
669771-AS-6	NOVA GAS TRANSMISSION-DEBTURE	A	1		1FE	4,263,919	115.5594	3,640,122	3,150,000	3,662,877		(109,568)			7.875	3.698	AO	62,016	248,063	01/01/2013	04/01/2023
67077M-AA-6	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	454,817	101.1445	480,436	475,000	467,803		12,987			6.500	10.715	MMN	3,945	30,875	04/12/2018	05/15/2019
67077M-AB-4	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	3,057,093	101.7430	3,052,291	3,000,000	3,036,556		(20,536)			4.875	3.860	MS	36,969	68,250	04/12/2018	03/30/2020
67077M-AC-2	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	147,106	97.1638	145,746	150,000	147,419		313			3.625	3.993	MS	1,601	2,311	04/12/2018	03/15/2024
67077M-AD-0	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	190,261	92.5406	185,081	200,000	191,147		886			3.000	3.802	AO	1,500	2,817	04/12/2018	04/01/2025
67077M-AF-5	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	14,750,126	107.6138	13,796,089	12,820,000	14,704,011		(46,115)			5.875	4.650	JD	62,765	451,905	04/18/2018	12/01/2036
67077M-AJ-7	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	8,292,035	96.5290	8,011,910	8,300,000	8,293,035		1,000			3.150	3.173	AO	65,363	122,736	04/12/2018	10/01/2022
67077M-AN-8	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	421,395	91.0376	396,013	435,000	421,781		386			4.125	4.389	MS	5,283	7,627	04/12/2018	03/15/2035
67077M-AP-3	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	20,757,593	120.3929	19,612,003	16,290,000	20,644,971		(112,621)			7.125	4.820	MMN	122,514	702,187	04/12/2018	05/23/2036
67077M-AQ-1	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	30,910,643	109.5092	29,130,533	26,601,000	30,833,621		(77,022)			6.125	4.918	JJ	751,294	420,905	04/12/2018	01/15/2041
67077M-AR-9	Nutrien Ltd-SENIOR UNSECURED	A	1		2FE	12,302,901	95.5523	11,198,732	11,720,000	12,293,636		(9,265)			4.900	4.561	JD	47,857	365,306	04/12/2018	06/01/2043
716442-AH-1	PETRO-CANADA-SENIOR UNSECURED	A	1		1FE	513,938	109.0552	496,201	455,000	507,899		(2,581)			5.350	4.268	JJ	11,225	24,343	08/02/2016	07/15/2033
716442-AJ-1	PETRO-CANADA-SENIOR UNSECURED BOND	A	1		1FE	5,346,490	116.3327	5,203,562	4,473,000	5,248,941		(22,583)			6.800	5.347	MMN	38,865	304,164	12/15/2015	05/15/2038
717046-AF-3	Peyto Exploration & Deve Senior Note				2	28,083,000	101.5250	22,327,909	21,992,523	21,992,523					4.500	4.498	JD	75,191	1,041,962	12/04/2013	12/04/2020
717046-CB-3	Peyto Exploration & Deve Senior Unsecur				2	39,767,756	95.3344	34,944,066	36,654,204	36,654,204					3.950	3.950	JJ	747,220	772,761	01/02/2018	01/02/2028
725906-AN-1	Placer Dome Inc-SENIOR UNSECURED NOTE	A	1		2FE	9,750,762	112.9783	9,983,895	8,837,000	9,672,790		(18,570)			6.450	5.565	AO	120,330	503,171	08/01/2018	10/15/2035
763169-AF-6	Richardson International Senior Secured	A	1		2	18,100,000	101.6427	18,397,329	18,100,000	18,100,000					6.149	6.148	MS	296,792	1,112,969	09/25/2009	09/25/2019
763169-BB-7	Richardson International Senior Secured	A	1		2	39,750,000	102.2777	40,655,386	39,750,000	39,750,000					4.590	4.589	JD	1,890,411	1,824,525	12/18/2013	12/18/2023
77509N-AF-0	ROGERS COMMUNICATIONS IN-SENIOR UNSECURE	A	1		2FE	86,949	136.2454	81,747	60,000	83,982		(1,271)			8.750	4.684	MMN	875	5,250	08/02/2016	05/01/2032
775109-AL-5	ROGERS COMMUNICATIONS IN-NOTE	A	1		2FE	19,793,464	131.3371	21,256,910	16,185,000	19,290,865		(84,128)			7.500	5.837	FA	458,575	1,213,875	08/02/2016	08/15/2038
775109-AX-9	ROGERS COMMUNICATIONS IN-SENIOR UNSECURE	A	1		2FE	10,184,944	98.7086	9,703,060	9,830,000	10,165,265		(8,558)			4.500	4.265	MS	130,248	442,350	03/03/2017	03/15/2043
775109-AZ-4	ROGERS COMMUNICATIONS IN-SENIOR UNSECURE	A	1		2FE	26,530,981	107.0918	23,720,828	22,150,000	26,345,441		(90,243)			5.450	4.192	AO	301,794	1,089,714	05/30/2018	10/01/2043
775109-BB-6	ROGERS COMMUNICATIONS IN-SENIOR UNSECURE	A	1		2FE	27,536,603	103.9891	28,856,979	27,750,000	27,551,407		3,801			5.000	5.050	MS	408,542	1,386,382	03/03/2014	03/15/2044
775109-BB-6	ROGERS COMMUNICATIONS IN-SENIOR UNSECURE	A	1		2FE	16,566,210	103.9891	15,311,357	14,724,000	16,472,821		(39,967)			5.000	4.218	MS	216,770	730,450	08/01/2018	03/15/2044
775109-BG-5	Rogers Communications IN-SENIOR UNSECURE	A	1		2FE	13,518,128	95.1353	12,938,398	13,600,000	13,518,894		766			4.300	4.368	FA	220,924	303,772	02/05/2018	02/15/2048
780082-AD-5	Royal Bank of Canada-SUBORDINATED	A	1		1FE	14,250,600	102.9408	14,411,708	14,000,000	14,236,557		(14,043)			4.650	4.369	JJ	278,483	325,500	06/29/2018	01/27/2026
78012K-CB-1	ROYAL BANK OF CANADA-SR UNSECURED	A	1		1FE	149,107	99.1283	148,692	150,000	149,739		214			2.150	2.299	MS	1,030	3,225	12/15/2015	03/06/2020
820439-AF-4	Shawcor Limited Senior Note Ser	A	1		3	3,477,661	80.6774	2,805,687	3,477,661	3,477,661					3.820	3.820	MS	33,581	280,306	03/20/2013	03/31/2025
820439-A*8	Shawcor Limited Senior Note Ser	A	1		3	993,618	94.3496	937,474	993,618	993,618					2.980	2.980	MS	7,485	42,993	03/20/2013	03/31/2020
820439-A*8	Shawcor Limited Senior Note Ser	A	1		3	2,484,044	85.4228	2,121,940	2,484,044	2,484,044					3.670	3.670	MS	23,044	91,164	03/20/2013	03/31/2023
820439-B*7	Shawcor Limited Senior Note Ser	A	1		3	2,235,639	75.4411	1,686,591	2,235,639	2,235,639					4.070	4.070	MS	23,000	90,991	03/20/2013	03/31/2028
83088G-A*6	Calumet Concession Partn Senior Secured	A	1		2FE	700,000	100.9829	706,880	700,000	700,000					3.886	3.886	FMAN	6,876	27,202	02/25/2016	02/25/2026
83088G-A*6	Calumet Concession Partn Senior Secured	A	1		2FE	41,600,000	108.6934	45,216,454	41,600,000	41,600,000					4.732	4.732	FMAN	497,596	1,968,512	02/25/2016	02/25/2036
85853F-A*6	Stella-Jones Inc. Senior Note Ser	A	1		2	25,000,000	95.5992	23,877,300	25,000,000	25,000,000					3.540	3.540	JJ	845,667	897,292	01/17/2017	01/17/2024
85853F-A*6	Stella-Jones Inc. Senior Note Ser	A	1		2	25,000,000	93.3836	23,345,900	25,000,000	25,000,000					3.810	3.810	JJ	910,167	963,083	01/17/2017	01/17/2027
867224-AA-5	SUNCOR ENERGY INC-SR UNSECURED	A	1		1FE	343,575	97.8102	342,336	350,000	345,505		663			3.600	3.844	JD	1,050	12,600	12/15/2015	12/01/2024
867224-AA-5	SUNCOR ENERGY INC-SR UNSECURED	A	1		1FE	964,899	97.8102	904,745	925,000	950,946		(4,132)			3.600	3.057	JD	2,775	33,300	08/02/2016	12/01/2024
867229-AC-0	SUNCOR ENERGY INC-SR UNSECURED	A	1		1FE	1,204,858	122.1243	1,117,437	915,000	1,165,641		(13,957)			7.150	4.376	FA	27,259	65,423	10/30/2017	02/01/2032
867229-AD-8	SUNCOR ENERGY INC-SR UNSECURED	A	1		1FE	149,838	111.3073	146,343	123,000	146,343		(1,005)			5.950	4.292	JD	610	7,319	05/11/2015	12/01/2034
867229-AE-6	SUNCOR ENERGY INC-SR UNSECURED	A	1		1FE	3,334,471	115.1724	3,011,757	2,615,000	3,278,854		(21,004)			6.500	4.522	JD	7,554	169,975	08/02/2016	06/15/2038
86722T-AB-8	SUNCOR ENERGY INC-SENIOR UNSECURED NOTE	A	1		1FE	3,853,779	121.4201	3,557,608	2,930,000	3,784,026		(21,742)			6.850	4.627	JD	16,725	176,159	08/01/2018	06/01/2039
87425E-AK-9	REPSOL OIL & GAS CANADA-SENIOR UNSECURED	A	1		2FE	2,994,700	105.5374	2,638,434	2,500,000	2,924,054		(13,236)			6.250	4.874	FA	65,104	156,250	01/01/2013	02/01/2038
87425E-AN-3	REPSOL OIL & GAS CANADA-SE																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
884903-BP-9	THOMSON REUTERS CORP-SENIOR UNSECURED	A	1		2FE	707,331		106,0590	595,000	701,752		(2,391)			5.650	4.438	MM	3,549	33,618	08/02/2016	11/23/2043
884903-BT-1	Thomson Reuters Corp-SENIOR UNSECURED NO	A	1		2FE	12,781,381		98,0163	12,850,096	12,850,772		6,498			3.850	3.915	MS	126,430	494,725	09/22/2014	09/29/2024
887147-AF-3	Timberwest Forest Corpor Senior Secured	A	1		2PL	12,800,000		101,0332	12,800,000	12,800,000					4.810	4.810	AO	133,397	615,680	10/13/2011	10/13/2023
887147-B*-6	Timberwest Forest Corpor Senior Secured	A	1		2PL	29,800,000		101,0581	29,800,000	29,800,000					4.990	4.990	AO	322,188	1,487,020	10/13/2011	10/13/2026
891140-AS-7	TORONTO-DOMINION BANK-SR UNSECURED	A	1		1FE	350,173		99,6247	350,000	350,025		(50)			2.125	2.110	JJ	3,698	7,438	12/15/2015	07/02/2019
891140-AV-0	TORONTO-DOMINION BANK-SR UNSECURED	A	1		1FE	200,331		99,4520	200,000	200,072		(87)			2.250	2.205	MM	700	4,500	12/15/2015	11/05/2019
891160-MJ-9	Toronto-Dominion Bank/Th-SUBORDINATED	A	2		1FE	45,118,760		94,6929	47,709,000	45,186,674		57,914			3.625	4.165	MS	509,227	741,603	12/19/2018	09/15/2031
893526-BZ-9	TransCanada PipeLines Lt-SENIOR UNSECURE	A	1		2FE	4,568,164		124,5589	3,960,973	4,447,324		(38,041)			7.625	4.567	JJ	111,808	242,475	08/02/2016	01/15/2039
893526-BY-8	TransCanada PipeLines Lt-DEBENTURE	A	1		2FE	22,932,511		111,5300	20,305,000	20,957,894		(306,850)			9.875	8.058	JJ	1,002,559	2,005,119	01/01/2013	01/01/2021
893526-DF-7	TransCanada PipeLines Lt-BOND	A	1		2FE	5,380,000		105,7382	5,338,000	5,376,288		(1,845)			5.600	5.524	MS	75,562	298,928	05/11/2015	03/31/2034
893526-DJ-9	TRANS-CANADA PIPELINES-SENIOR UNSECURED	A	1		1FE	501,738		111,6119	400,000	405,543		(2,653)			6.100	4.371	JD	2,033	24,928	08/02/2016	06/01/2040
893526-DM-2	TRANS-CANADA PIPELINES-SR UNSECURED	A	1		1FE	1,517,874		95,9700	1,630,000	1,565,959		16,419			2.500	3.680	FA	16,979	40,750	12/15/2015	08/01/2022
89352H-AB-5	TransCanada PipeLines Lt-BOND	A	1		2FE	7,034,371		106,3326	6,830,000	7,003,471		(6,326)			5.850	5.611	MS	117,647	399,555	04/27/2015	03/15/2036
89352H-AD-1	TransCanada PipeLines Lt-SENIOR NOTE	A	1		2FE	6,032,348		108,8110	4,628,000	5,818,591		(41,046)			6.200	4.203	AO	60,575	286,936	12/09/2015	10/15/2037
89352H-AE-9	TRANSCANADA PIPELINES LTD SR NT	A	1		2FE	1,391,602		119,6960	1,208,930	1,358,800		(10,829)			7.250	4.564	FA	27,663	73,225	08/02/2016	08/15/2038
89352H-AL-3	TransCanada PipeLines Lt-SR UNSECURED	A	1		1FE	711,255		98,8138	620,551	705,027		(1,801)			5.000	4.190	AO	6,542	31,400	05/11/2015	10/16/2043
89352H-AM-1	TransCanada PipeLines Lt-SR UNSECURED	A	1		1FE	1,394,945		98,8138	1,457,504	1,399,037		1,428			5.000	5.377	AO	15,365	73,750	12/15/2015	10/16/2043
89352H-AN-1	TransCanada PipeLines Lt-SR UNSECURED	A	1		2FE	3,719,712		95,5885	3,315,009	3,693,202		(10,849)			4.625	4.040	MS	53,465	160,395	10/30/2017	03/01/2034
89352H-AY-5	TransCanada PipeLines Lt-SENIOR UNSECURE	A	1		1FE	851,704		96,5262	845,000	851,675		(29)			4.875	4.824	MM	5,264	3,776	10/04/2018	05/15/2048
91911K-AK-8	VALEANT PHARMACEUTICALS-FIRST LIEN	A	1		3FE	2,784,000		101,0000	2,811,840	2,784,000					7.000	7.000	MS	57,381	182,781	03/09/2017	03/15/2024
91911K-AN-2	VALEANT PHARMACEUTICALS-SECURED	A	1		3FE	1,351,000		93,2500	1,259,808	1,351,000					5.500	5.499	MM	12,384	39,778	11/14/2017	11/01/2025
92660F-AK-0	VIDEOTRON LTD / LTEE-SENIOR UNSECURED	A	1		3FE	8,504,000		94,5000	8,036,280	8,504,000					5.125	5.125	AO	92,009	435,830	03/31/2017	04/15/2027
96467A-AB-0	Whitecap Resources Inc Senior Unsecure	A	1		3	34,475,072		96,7729	32,917,400	34,015,102				(2,889,376)	3.540	3.540	MM	105,289	1,267,760	05/31/2017	05/31/2024
98417E-AC-4	GLENCORE FINANCE CANADA-SENIOR UNSECURED	A	1		2FE	5,215,433		105,0873	4,576,553	5,123,386		(23,238)			6.900	5.393	MM	38,397	300,495	12/09/2015	11/15/2037
98417E-AK-6	GLENCORE FINANCE CANADA-SENIOR UNSECURED	A	1		2FE	6,444,390		102,1364	6,128,182	6,160,882		(51,991)			4.950	3.952	MM	37,950	287,000	01/01/2013	11/15/2021
98417E-AN-0	GLENCORE FINANCE CANADA-SR UNSECURED	A	1		2FE	15,840,862		96,3819	13,907,910	14,430,000		(30,429)			6.000	5.283	MM	110,630	865,800	03/16/2017	11/15/2041
98417E-AT-7	GLENCORE FINANCE CANADA -SENIOR UNSECURE	A	1,5		2FE	2,628,600		99,6836	2,492,089	2,598,435		(23,933)			4.250	3.146	AO	19,479	106,250	09/22/2017	10/25/2022
98462Y-BF-6	Yamana Gold, Inc. Senior Note Ser	A	1		2	2,650,000		100,5055	2,650,000	2,650,000					4.760	4.760	MS	63,420	126,140	03/23/2012	03/23/2022
98462Y-C*-9	Yamana Gold, Inc. Senior Note Ser	A	1		2	17,450,000		101,5546	17,271,278	17,450,000					4.910	4.910	MS	430,777	856,795	03/23/2012	03/23/2024
C0445F-AG-1	ARC Resources Ltd. Senior Secured	A	1		2	2,700,000		105,1255	2,838,389	2,700,000					8.210	8.207	AO	47,413	205,866	04/14/2009	04/14/2021
C0445F-AK-2	ARC Resources Ltd. Senior Note Ser	A	1		2	13,760,000		102,4283	14,094,134	13,760,000					5.360	5.358	MM	69,656	720,122	05/27/2010	05/27/2022
C0445F-AM-8	ARC Resources Ltd. Senior Note Ser	A	1		2	16,900,000		98,6392	16,670,025	16,900,000					3.810	3.810	FA	228,939	643,890	08/23/2012	08/23/2024
C0555F-AA-4	Axiom Solarlights Holdco Senior Secured	A	2		2FE	55,153,977		108,9641	53,611,853	49,201,391		22,557		(4,128,785)	5.375	5.590	JAJO	720,680	2,822,487	03/31/2015	04/30/2034
C1466F-AA-6	CPR Leasing Ltd Senior Secured	A	1		1	9,649,185		102,9717	9,935,930	9,649,185					5.410	5.409	MS	171,107	509,960	03/03/2004	03/03/2024
C2617E-AD-8	Computershare Investor S Gtd Senior Note	A	1		2	40,600,000		99,3711	40,344,667	40,600,000					4.420	4.419	FA	707,838	1,794,520	02/09/2012	02/09/2024
C3298E-AB-6	ALS Canada Limited Gtd Senior Note	A	1		2	5,000,000		98,6888	4,934,440	5,000,000					4.170	4.169	JJ	198,075	208,500	09/24/2013	07/19/2022
C3322E-AE-8	Enermark, Inc. Senior Note Ser	A	1		2	11,340,000		104,9456	11,900,831	11,340,000					7.970	7.962	JD	32,637	892,919	06/18/2009	06/18/2021
C3346F-AA-8	FA MGT Limited Partnersh Senior Secured	A	1		3	55,456,965		95,7277	52,632,340	54,981,306					3.890	3.892	FMAN	558,162	2,251,784	11/17/2016	11/17/2026
C4111F-AG-6	Graymont Western Canada, Gtd Senior Note	A	2		2FE	19,057,140		100,5669	19,165,175	19,057,140					4.700	4.699	JD	24,890	894,828	06/21/2012	06/21/2027
C4335F-AB-1	Heico Canada Holding Com Senior Note Ser	A	1		2	17,480,000		104,9093	18,338,146	17,480,000					6.500	6.497	JD	31,561	1,136,200	12/21/2010	12/21/2022
C4861F-AG-8	Irving Oil Limited Senior Note Ser	A	1		2FE	3,000,000		101,7168	3,051,504	3,000,000					5.710	5.710	AO	39,970	171,300	04/07/2005	04/07/2020
C4861F-AB-3	Irving Oil Limited Senior Note Ser	A	1		2PL	8,800,000		102,3695	9,008,516	8,800,000					6.290	6.290	MS	378,938	553,520	03/31/2010	03/31/2020
C4861F-AC-1	Irving Oil Limited Senior Note Ser	A	1		2PL	6,450,000		105,2424	6,788,135	6,450,000					6.390	6.390	MS	310,261	412,155	03/31/2010	03/31/2022
C4862F-AD-4	Island Timberlands Finan Senior Note Ser	A	1		2FE	25,000,000		98,7858	24,696,450	25,000,000					3.180	3.180	FA	265,000	795,000	08/28/2015	08/28/2020
C4931F-AJ-2	Keyera Partnership Gtd Senior Note	A	1		2	14,150,000		101,2922	14,332,846	14,150,000					5.140	5.139	MS	228,295	735,993	09/08/2010	09/08/2020
C4931F-AP-8	Keyera Partnership Gtd Senior Note	A	1		2	13,000,000		98,2037	12,766,481	13,000,000					4.190	4.189	JD	18,157	551,850	06/19/2012	06/19/2024
C4931F-AU-7	Keyera Partnership Gtd Senior Note	A	1		2	10,000,000		100,8074	10,080,740	10,000,000					4.750	4.749	MM	54,097	480,500	11/20/2013	11/20/2025
C4931F-AV-5	Keyera Partnership Gtd Senior Note	A	1		2	10,000,000		100,5762	10,057,620	10,000,000					4.950	4.949	MM	56,375	500,500	11/20/2013	11/20/2028
C4931F-BA-0	Keyera Corp Senior Note Ser	A	1		2	30,319,109		96,2328	29,218,694	29,323,363				(2,490,842)	3.960	3.960	AO	258,842	1,222,576	10/13/2016	10/13/2026
C4931F-BC-6</																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
00105N-AA-1	AES EL SALVADOR TRUST I1-SENIOR UNSECURE	D	1		4FE	17,140,750	89.1250	16,443,563	18,450,000	17,622,150		156,839			6.750	8.011	MS	321,722	1,245,375	10/22/2015	03/28/2023
00107T-AA-6	AES PANAMA SA-SENIOR UNSECURED 144A	D	1		3FE	400,000	100.6250	400,000	400,000	400,000					6.000	5.997	JD	400	24,000	06/18/2015	06/25/2022
001201-AA-3	AGL Energy Limited Gtd Senior Note	D	1		2FE	8,650,000	101.6467	8,792,440	8,650,000	8,650,000					5.080	5.079	MS	137,929	439,420	09/08/2010	09/08/2022
001201-AA-1	AGL Energy Ltd Gtd Senior Note	D	1		2	17,300,000	103.7697	17,952,158	17,300,000	17,300,000					5.280	5.279	MS	286,719	913,440	09/08/2010	09/08/2025
00131L-2B-0	AIA Group Ltd Sr Unsecured 144A	D	1		1FE	274,536	108.3741	257,930	238,000	271,843		(771)			4.875	3.976	MS	3,545	11,603	05/11/2015	03/11/2044
00131L-AB-1	AIA GROUP LTD-SENIOR UNSECURED	D	2		1FE	359,998	96.3136	337,098	350,000	357,303		(1,113)			3.200	2.816	MS	3,422	11,200	08/02/2016	03/11/2025
00131L-AE-5	AIA GROUP LTD-SENIOR UNSECURED	D	2		1FE	255,577	102.6593	256,648	250,000	255,545		(31)			4.500	4.358	MS	3,281	(1,469)	10/04/2018	03/16/2046
00131L-AF-2	AIA Group Ltd-SENIOR UNSECURED	D	1		1FE	398,752	100.0707	400,283	400,000	398,809		57			3.900	3.938	AO	3,683	7,800	03/27/2018	04/06/2028
00168B-AB-2	ALS Group General Partne Gtd Senior Note	D	1		2	6,000,000	99.8336	5,990,016	6,000,000	6,000,000					4.260	4.259	JD	17,040	255,600	12/07/2010	12/07/2020
00168B-AF-3	ALS Group General Partne Gtd Senior Note	D	1		2	23,000,000	99.6087	22,910,001	23,000,000	23,000,000					3.400	3.399	JJ	351,900	782,000	09/24/2013	07/19/2019
00183F-AA-3	ANNO 2017 JOINT HOLDING (UK) LTD	B	1		2FE	35,038,888	100.6000	33,827,858	33,626,101	33,626,101				(2,024,951)	3.263	3.263	FMAN	452,943	848,515	06/29/2018	05/31/2033
00183F-AA-3	Anno 2017 Joint Holding Senior Secured	B	1		2FE	59,853,462	101.3757	58,146,060	57,357,000	57,357,000				(3,515,068)	3.263	3.265	MIN	1,513,008	188,972	06/29/2018	05/31/2033
00185A-AD-6	Aon PLC-SENIOR UNSECURED NOTE	D	1		2FE	12,057,529	101.2030	12,245,558	12,100,000	12,076,688		4,149			4.000	4.043	MIN	45,711	484,000	11/21/2013	11/27/2023
00185A-AD-6	Aon PLC-SENIOR UNSECURED NOTE	D	1		2FE	8,652,323	101.2030	8,728,755	8,625,000	8,639,468		(2,747)			4.000	3.960	MIN	32,583	345,000	01/17/2014	11/27/2023
00185A-AF-1	Aon PLC-SENIOR UNSECURED NOTE	D	1		2FE	17,317,206	97.6477	17,039,524	17,450,000	17,370,904		12,874			3.500	3.592	JD	28,841	610,750	08/12/2014	06/14/2024
00185A-AG-9	Aon PLC-SR UNSECURED	D	1		2FE	4,012,439	95.3512	3,611,903	3,788,000	3,998,505		(4,637)			4.600	4.238	JD	8,228	174,248	05/16/2017	06/14/2044
00185A-AH-7	AON PLC-SENIOR UNSECURED	D	1		2FE	754,977	98.1220	686,854	700,000	752,424		(1,094)			4.750	4.269	MIN	4,249	33,250	08/02/2016	05/15/2045
00289L-AA-3	Abengoa Transmission Sur -SECURED NOTE	D	1		2FE	37,836,931	110.0000	39,706,458	36,096,780	37,724,884		(41,294)			6.875	6.393	AO	885,306	2,096,069	04/30/2018	04/30/2043
00401M-AB-2	ABU DHABI CRUDE OIL PIPE-SECURED	D	1		1FE	28,208,375	97.6330	28,069,488	28,750,000	28,218,545		10,170			4.600	4.740	MIN	839,788	1,266,565	07/18/2018	11/02/2047
00434G-2A-7	ACCESS BANK PLC-SENIOR UNSECURED	D	1		4FE	1,484,000	105.9474	1,483,264	1,400,000	1,474,067		(9,933)			10.500	8.332	AO	29,400	73,500	07/25/2018	10/19/2021
00507U-AH-4	ACTAVIS FUNDING SCS-SR UNSECURED	D	1		2FE	568,351	94.4182	542,905	575,000	568,695		122			4.850	4.292	JD	1,239	27,888	12/15/2015	06/15/2044
00507U-AH-4	ACTAVIS FUNDING SCS-SR UNSECURED	D	1		2FE	368,294	94.4182	321,022	340,000	367,400		(603)			4.850	4.319	JD	733	16,490	10/30/2017	06/15/2044
00507U-AS-0	ACTAVIS FUNDING SCS-SENIOR UNSECURED NOT	D	1		2FE	50,071	97.6224	48,811	50,000	50,055		(8)			3.800	3.779	MS	559	1,900	12/13/2016	03/15/2025
00507U-AS-0	ACTAVIS FUNDING SCS-SENIOR UNSECURED NOT	D	1		2FE	11,677,992	97.6224	11,427,678	11,706,000	11,686,525		2,659			3.800	3.830	MS	130,977	221,050	12/13/2016	03/15/2025
00507U-AT-8	ACTAVIS FUNDING SCS-SR UNSECURED	D	1		2FE	9,280,767	94.8598	9,053,419	9,544,000	9,300,773		9,729			4.550	4.777	MS	127,863	434,252	12/14/2016	03/15/2035
00507U-AT-8	ACTAVIS FUNDING SCS-SR UNSECURED	D	1		2FE	1,162,800	94.8598	1,043,458	1,100,000	1,157,323		(2,561)			4.550	4.096	MS	14,737	50,050	10/20/2016	03/15/2035
00507U-AU-5	ACTAVIS FUNDING SCS-SR UNSECURED	D	1		2FE	14,056,038	94.9278	13,134,210	13,836,000	14,041,516		(4,136)			4.750	4.650	MS	193,512	657,210	10/30/2017	03/15/2045
00507U-AU-5	ACTAVIS FUNDING SCS-SR UNSECURED	D	1		2FE	63,040,293	94.9278	61,100,278	64,365,000	63,087,952		23,544			4.750	4.885	MS	900,216	3,057,338	12/13/2016	03/15/2045
00652M-AC-6	ADANI PORTS AND SPECIAL-SENIOR UNSECURED	D	1		2FE	4,900,579	98.3564	4,917,820	5,000,000	4,903,893		3,314			3.950	4.632	JJ	88,875		11/23/2018	01/19/2022
00652M-AD-4	ADANI PORTS AND SPECIAL-SENIOR UNSECURED	D	2		2FE	6,663,788	89.2033	6,494,000	7,280,000	6,695,515		31,727			4.000	5.170	JJ	387,742	281,556	06/04/2018	07/30/2027
00652X-AA-6	ADANI TRANSMISSION LTD-SECURED	D	1		2FE	6,542,778	85.1572	5,790,690	6,800,000	6,589,534		22,687			4.000	4.484	FA	111,822	272,000	11/24/2016	08/03/2026
00653M-AA-9	ADCB Finance Cayman Ltd-SENIOR UNSECURED	D	1		1FE	11,381,000	98.4280	11,319,220	11,500,000	11,385,374		4,374			4.000	4.258	MS	117,556	80,000	11/14/2018	03/29/2023
00676L-AA-4	ADECOAGRO SA-SENIOR UNSECURED	D	2		3FE	150,000	85.0000	127,500	150,000	150,000					6.000	6.000	MS	2,500	9,000	09/14/2017	09/21/2027
00772B-AD-3	AERCAP IRELAND CAP LTD SR NT	D	1		2FE	3,001,915	99.9925	3,016,774	3,017,000	3,015,124		4,635			3.750	3.910	MIN	14,456	113,138	01/13/2016	05/15/2019
00772B-AF-8	AerCap Ireland Capital D-SENIOR UNSECURE	D	1		2FE	583,723	100.2886	576,659	575,000	582,880		(843)			4.500	3.888	MIN	3,306	12,938	09/21/2018	05/15/2021
00772B-AM-3	AERCAP IRELAND CAPITAL D-SENIOR UNSECURE	D	1		2FE	2,695,525	101.5723	2,539,308	2,500,000	2,636,204		(46,935)			5.000	2.922	AO	31,250	125,000	09/21/2017	10/01/2021
00774M-AB-1	AERCAP IRELAND CAPITAL D-SENIOR UNSECURE	D	1		2FE	21,142,475	86.9201	18,470,514	21,250,000	21,155,320		9,211			3.650	3.711	JJ	344,722	775,625	07/17/2017	07/21/2027
00774M-AE-5	AerCap Ireland Capital D-SENIOR UNSECURE	D	1		2FE	12,866,545	87.2704	11,737,867	13,450,000	12,907,878		41,333			3.875	4.419	JJ	228,743	260,594	02/16/2018	01/23/2028
00774M-AF-2	AerCap Ireland Capital D-SENIOR UNSECURE	D	1		2FE	398,996	97.2500	399,000	400,000	399,104		108			4.125	4.180	JJ	9,121		06/05/2018	07/03/2023
00774P-AB-4	Aerborne Funding Limited Senior Secured	D	2		2FE	15,581,379	95.7250	14,990,226	15,659,677	15,594,688		14,037			4.081	4.186	MON	64,312	633,752	02/22/2017	01/25/2030
00774P-AF-5	Aerborne Funding Limited Senior Secured	D	2		2FE	14,300,718	95.9314	13,787,818	14,372,581	14,312,635		12,922			4.127	4.232	MON	59,682	588,127	03/02/2017	01/25/2030
00774P-AK-4	Aerborne Funding Limited Senior Secured	D	2		2FE	42,688,710	95.9314	41,157,665	42,903,226	42,724,285		38,573			4.127	4.232	MON	178,156	1,755,601	03/02/2017	01/25/2030
00774P-AM-0	Aerborne Funding Limited Senior Secured	D	2		2FE	15,367,936	96.2577	14,867,157	15,445,161	15,380,516		13,910			4.198	4.304	MON	65,250	642,998	03/09/2017	01/25/2030
00776A-AA-7	Aerborne Funding II Limi Senior Secured	D	2		1PL	71,853,147	96.2855	69,184,162	71,853,147	71,853,147					4.180	4.180	MON	699,858	750,865	08/01/2018	05/25/2030
00786P-AC-8	AEROPUERTOS ARGENT 2000-SECURED	D	1		4FE	2,532,445	92.2500	2,306,250	2,500,000	2,523,225		(4,970)			6.875	6.606	FMAN	28,646	171,875	02/07/2017	02/01/2027
00786P-AC-8	AEROPUERTOS ARGENT 2000-SECURED	D	1		4FE	5,623,694	92.2500	5,193,675	5,625,232	5,625,232		956			6.875	6.898	FMAN	64,510	369,875	01/30/2017	02/01/2027
00830F-AB-8	AFREN PLC SR SECD NT	D	1		6*		0.0340	653	1,920,000	653		(1,037)			11.500	11.500	FA			03/31/2014	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
013822-AA-9	Alcoa Nederland Holding -SENIOR UNSECURE	D	1		3FE	213,000		203,000	200,000	212,316			(684)		6.750	4.897	MS	3,413		10/04/2018	09/30/2024
015398-AC-4	Alfa SAB de CV-SENIOR UNSECURED	D	1,5		2FE	5,124,500		4,906,250	5,000,000	5,123,346			(1,154)		6.875	6.669	MS	91,667	171,875	09/13/2018	03/25/2044
01609W-AC-6	ALIBABA GROUP HOLDING-SR UNSECURED	D	1		1FE	4,341,636		4,281,508	4,305,000	4,319,703			(17,492)		2.500	2.080	MN	9,866	107,625	09/26/2017	11/28/2019
01609W-AP-7	ALIBABA GROUP HOLDING-SR UNSECURED	D	1		1FE	392,075		395,805	400,000	395,907			1,312		3.125	3.493	MN	1,146	12,500	12/15/2015	11/28/2021
01609W-AP-7	ALIBABA GROUP HOLDING-SR UNSECURED	D	1		1FE	2,686,141		2,562,835	2,590,000	2,642,774			(18,416)		3.125	2.353	MN	7,419	71,599	08/04/2016	11/28/2021
01609W-AQ-5	ALIBABA GROUP HOLDING-SR UNSECURED	D	1		1FE	2,837,492		2,738,944	2,800,000	2,826,789			(4,217)		3.600	3.413	MN	9,240	88,590	05/18/2016	11/28/2024
01609W-AR-3	ALIBABA GROUP HLDG LTD SR NT	D	1		1FE	9,295,410		8,775,823	9,000,000	9,264,729			(11,986)		4.500	4.238	MN	104,625	405,000	05/03/2016	11/28/2034
01609W-AV-4	Alibaba Group Holding LT-SENIOR UNSECURE	D	1		1FE	17,445,467		15,494,279	17,475,000	17,445,552			506		4.200	4.210	JD	50,969	733,950	11/29/2017	12/06/2047
020564-AA-8	ALPEK SA DE CV-SR UNSECURED	D	1		2FE	12,497,500		12,756,250	13,000,000	12,637,335			51,714		4.500	5.302	MN	314,125	498,125	11/11/2018	11/20/2022
020564-AB-6	ALPEK SA DE CV-SENIOR UNSECURED NOTE	D	1		2FE	16,898,138		16,309,588	16,300,000	16,765,200			(77,162)		5.375	4.718	FA	348,657	642,681	12/21/2018	08/08/2023
02109T-AC-6	ALROSA FIN S A GTD NT	D	5		2FE	4,681,500		4,425,372	4,200,000	4,408,577			(106,224)		7.750	4.886	MN	515,511	315,511	12/16/2016	11/03/2020
02154C-AD-5	ALTICE FINANCING SA-1ST LIEN	D	1		4FE	13,538,700		13,171,200	13,720,000	13,599,111			24,473		6.625	6.872	FA	227,238	781,750	05/19/2016	02/15/2023
02154C-AE-3	ALTICE FINANCING SA USD 1ST LIEN 144A	D	1		4FE	5,220,000		4,380,000	4,800,000	5,198,296			(60,432)		7.500	5.779	MN	166,000	360,000	08/15/2017	05/15/2026
02154C-AE-3	ALTICE FINANCING SA USD 1ST LIEN 144A	D	1		4FE	2,600,000		2,372,500	2,600,000	2,600,000					7.500	7.493	MN	89,917	195,000	04/18/2016	05/15/2026
02154V-AA-9	Altice Luxembourg SA-SENIOR UNSECURED	D	1		5FE	564,750		546,000	600,000	566,012			1,262		7.750	9.762	MN	17,567		11/07/2018	05/15/2022
022069-AF-5	ALTOS HORNOS DE MEXICO-BOND	D			6*			332,3875	1,030,000					11.375	0.000	AO			10/01/2009	04/30/2002	
023150-AA-6	Ambac LSNi LLC-FIRST LIEN	D	2		5Z	586,291		587,024	586,291	586,291					7.803	7.255	FMAN	37,028		02/12/2018	02/12/2023
02364W-AJ-4	America Movil SAB de CV-UNSECURED NOTE	D	1		1FE	1,645,470		1,536,780	1,308,000	1,606,241			(12,508)		6.375	4.387	MS	27,795	83,385	08/02/2016	03/01/2035
02364W-AP-0	America Movil SAB de CV-BOND	D	1		1FE	853,032		836,656	720,000	841,634			(3,914)		6.125	4.758	MN	5,635	44,100	05/16/2017	11/15/2037
02364W-AV-7	America Movil SAB de CV-SENIOR NOTE	D	1		1FE	2,443,922		2,451,826	2,410,000	2,421,896			(9,425)		5.000	4.579	MS	30,460	120,500	12/15/2015	03/30/2020
02364W-AW-5	America Movil SAB de CV-SENIOR NOTE	D	1		1FE	2,511,010		2,511,236	2,150,000	2,497,446			(7,860)		6.125	4.887	MS	33,288	112,849	08/01/2018	03/30/2040
02364W-BE-4	America Movil SAB de CV-SENIOR UNSECURED	D	1		1FE	1,233,427		95,8755	1,179,269	1,234,454			(123)		4.375	4.349	JJ	24,664	53,813	10/30/2017	07/16/2042
034863-AT-7	ANGLO AMERICAN CAPITAL P-SENIOR UNSECURE	D	1		2FE	13,394,506		12,125,111	13,400,000	13,394,474			462		4.000	4.005	MS	163,778	536,000	09/06/2017	09/11/2027
039238-AA-4	Arcadis North America Gtd Senior Note	D	1		2PL	27,150,000		27,645,162	27,150,000	27,150,000					5.100	5.098	JD	703,864	1,384,650	06/28/2011	06/28/2021
03937L-AA-3	ARCH CAPITAL GROUP LTD-SENIOR UNSECURED	D	1		2FE	373,304		351,354	275,000	363,983			(3,987)		7.350	4.421	MN	3,369	20,213	08/02/2016	05/01/2034
03938H-AA-1	ARCELORMITTAL AS NT	D	1,5		3FE	18,342,725		17,576,051	19,400,000	18,812,154			117,125		5.000	5.807	AO	249,611	970,000	04/13/2016	04/03/2023
03938L-AQ-7	ArcelorMittal-SENIOR UNSECURED NOTE	D	1,5		2FE	675,789		664,636	655,000	665,488			(2,426)		5.250	4.198	FA	13,946	21,706	12/18/2018	08/05/2020
03938L-AU-8	ArcelorMittal-SENIOR UNSECURED NOTE	D	1,5		2FE	2,617,474		2,699,781	2,625,000	2,621,448			(43)		5.500	5.563	MS	48,125	138,281	01/01/2013	03/01/2021
03965U-AC-4	ARCOS DORADOS HOLDINGS I-SENIOR UNSECURE	D	2		3FE	2,747,000		2,606,216	2,747,000	2,747,000					5.875	5.875	AO	39,002	110,941	03/30/2017	04/04/2027
04363U-AB-2	ASCIANO FINANCE LTD-SENIOR UNSECURED NOT	D	1		2FE	8,656,213		8,339,469	8,235,000	8,343,001			(59,861)		4.625	3.829	MS	103,681	380,869	12/02/2013	09/23/2020
046353-AD-0	AstraZeneca PLC-NOTE	D	1		2FE	60,327,460		61,798,198	51,817,000	58,906,223			(219,585)		6.450	5.286	MS	984,091	3,342,197	12/15/2015	09/15/2037
046353-AF-5	ASTRAZENECA PLC-SR UNSECURED	D	1		2FE	398,708		397,120	400,000	399,742			349		1.950	2.040	MS	2,232	7,800	12/15/2015	09/18/2019
046353-AG-3	AstraZeneca PLC-SR UNSECURED	D	1		2FE	14,164,928		12,811,149	14,378,000	14,172,615			5,006		4.000	4.094	MS	164,548	575,120	05/16/2017	09/18/2042
046353-AL-2	ASTRAZENECA PLC-SR UNSECURED	D	1		2FE	297,804		289,894	300,000	298,395			202		3.375	3.463	MN	1,266	10,125	12/15/2015	11/16/2025
046353-AM-0	ASTRAZENECA PLC-SENIOR UNSECURED	D	1		2FE	319,776		288,605	305,000	319,303			(289)		4.375	4.086	MN	1,668	13,344	05/16/2017	11/16/2045
04965D-A8-5	Atresmedia Corporacion d Senior Unsecure	D			2	33,000,000		100,8221	33,000,000	33,000,000					4.750	4.750	JJ	740,208		07/11/2018	07/11/2025
052528-AK-2	AUST & NZ BANKING GROUP-SUBORDINATED	D	2		2FE	18,351,359		17,498,519	18,100,000	18,295,660			(22,236)		4.400	4.227	MN	92,913	796,400	06/01/2016	05/19/2026
05253J-AG-6	AUST & NZ BANKING GRP NY-SR UNSECURED	D	2		1FE	150,172		99,6602	150,000	150,022			(50)		2.250	2.215	JD	169	3,375	12/15/2015	06/13/2019
05389L-AA-1	Avolon Aerospace Leasing Secured Note A3	D	1		1Z	8,595,027		91,9731	8,595,027	8,595,027					3.426	3.426	MON	13,087	293,561	07/06/2016	07/15/2028
05389L-AB-9	Avolon Aerospace Leasing Secured Note B7	D	1		1Z	27,305,042		92,4563	27,305,042	27,305,042					3.526	3.526	MON	42,790	954,308	07/25/2016	07/15/2028
05389L-AD-5	Avolon Aerospace Leasing Secured Note A3	D	1		1Z	8,521,592		92,0339	8,521,592	8,521,592					3.450	3.450	MON	13,066	293,101	08/04/2016	08/15/2028
05389L-AF-0	Avolon Aerospace Leasing Secured Note A3	D	1		1Z	10,048,801		92,0339	10,048,801	10,048,801					3.450	3.450	MON	15,408	345,629	08/04/2016	08/15/2028
05389L-AH-6	Avolon Aerospace Leasing Secured Note B7	D	2		1Z	8,821,526		92,0230	8,821,526	8,821,526					3.449	3.449	MON	13,522	303,328	08/17/2016	08/15/2028
05389L-AK-9	Avolon Aerospace Leasing Secured Note B7	D	1		1Z	9,361,216		91,6300	9,361,216	9,361,216					3.392	3.392	MON	14,113	316,579	10/13/2016	10/15/2028
05389L-AM-5	Avolon Aerospace Leasing Secured Note B7	D	1		1Z	9,429,565		93,6848	9,429,565	9,429,565					3.827	3.827	MON	16,039	349,795	11/23/2016	11/15/2028
05400F-AA-9	Avolon Aerospace Funding Senior Secured	D	2		1FE	6,393,977		94,7116	6,055,838	6,393,977					4.096	4.096	MON	23,588	244,592	11/10/2017	11/20/2028
05400F-AC-5	Avolon Aerospace Funding Senior Secured	D	2		1FE	7,673,770		95,2980	7,673,770	7,673,770					4.216	4.216	MON	29,137	322,062	12/07/2017	12/20/2028
05400F-AE-1	Avolon Aerospace Funding Senior Secured	D	2		1FE	8,239,318		94,8037	8,239,318	8,239,318					4.202	4.202	MON	31,180	345,329	12/12/2017	12/20/2028
05400F-AG-6	Avolon Aerospace Funding Senior Secured	D	2		1FE	8,202,955		95,6288	8,202,955	8,202,955					4.279	4.279	MON	31,611	350,658	12/22/2017	12/20/2028
05400F-AJ-0	Av																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
055451-AQ-1	BHP BILLITON FIN USA LTD-SR UNSECURED	D			1FE	90,016	99.2169	97,233	98,000	93,661			1,258		2.875	4.396	FA	2,164	2,818	12/15/2015	02/24/2022
055451-AR-9	BHP Billiton Finance USA-SR UNSECURED	D			1FE	10,276,500	95.4648	9,737,410	10,200,000	10,275,504	(996)				4.125	4.075	FA	148,431	210,375	06/18/2018	02/24/2042
055451-AU-3	BHP BILLITON FIN USA LTD-SR UNSECURED	D	1		1FE	237,945	102.4310	256,078	250,000	242,134		1,449		3.850	4.594	MS	2,433	9,625	12/15/2015	09/30/2043	
055451-AV-0	BHP Billiton Finance USA-SR UNSECURED	D			1FE	79,303,011	109.2490	76,331,184	69,869,000	79,158,781	(128,028)				5.000	4.133	MS	883,067	2,912,070	10/04/2018	09/30/2043
055650-BR-8	BP CAPITAL MARKETS PLC-SENIOR UNSECURED	D	1		1FE	2,715,625	103.1233	2,578,083	2,500,000	2,638,811		(61,173)			4.742	2.137	MS	36,224	118,550	09/26/2017	03/11/2021
055650-BU-1	BP CAPITAL MARKETS PLC-SENIOR UNSECURED	D	1		1FE	1,578,844	100.8634	1,517,994	1,505,000	1,556,759		(17,494)			3.561	2.299	MN	8,932	53,593	09/22/2017	11/01/2021
055650-BZ-0	BP CAPITAL MARKETS PLC-SR UNSECURED	D	1		1FE	827,861	99.1330	793,064	800,000	813,870					3.245	2.968	MN	3,966	25,960	12/15/2015	05/06/2022
055650-CB-2	BP CAPITAL MARKETS PLC-SR UNSECURED	D	1		1FE	190,897	96.7371	193,474	200,000	194,655					2.500	3.244	MN	764	5,000	12/15/2015	11/06/2022
055650-CD-8	BP CAPITAL MARKETS PLC-SENIOR UNSECURED	D	1		1FE	19,677,562	97.1008	19,662,912	20,250,000	19,924,676		88,101			2.750	3.145	MN	78,891	556,875	12/15/2015	05/10/2023
055650-CP-1	BP CAPITAL MARKETS PLC-SR UNSECURED	D	1		1FE	1,734,000	100.9300	1,688,558	1,673,000	1,711,719		(6,879)			3.814	3.316	FA	24,992	63,808	12/15/2015	02/10/2024
055650-CR-7	BP CAPITAL MARKETS PLC-SR UNSECURED	D	1		1FE	224,658	99.7212	224,373	225,000	224,960					2.237	2.284	MN	713	5,033	12/15/2015	05/10/2019
055650-CX-4	BP CAPITAL MARKETS PLC-SR UNSECURED	D	1		1FE	250,848	99.1454	247,864	250,000	250,234		(207)			2.315	2.229	FA	2,219	5,788	12/15/2015	02/13/2020
055650-CZ-9	BP CAPITAL MARKETS PLC-SR UNSECURED	D	1		1FE	148,936	99.0900	148,635	150,000	149,424		167			3.062	3.188	MS	1,327	4,593	12/15/2015	03/17/2022
055650-DA-3	BP CAPITAL MARKETS PLC-SENIOR UNSECURED	D	1		1FE	1,474,139	98.0350	1,372,490	1,400,000	1,455,865		(8,134)			3.506	2.801	MS	14,180	49,084	10/20/2016	03/17/2025
05567L-T3-1	BNP PARIBAS-SR UNSECURED	D			1FE	221,463	103.4773	206,955	200,000	208,995		(4,235)			5.000	2.717	JJ	4,611	10,000	12/15/2015	01/15/2021
05574L-XH-6	BNP PARIBAS-SR UNSECURED	D			1FE	503,682	99.8843	499,422	500,000	500,241		(1,163)			2.450	2.212	MS	3,539	12,250	12/15/2015	03/17/2019
05578D-AG-7	BPCE SA-SR UNSECURED	D			1FE	153,778	100.3916	150,587	150,000	152,530		(428)			4.000	3.646	AO	1,267	6,000	12/15/2015	04/15/2024
05578D-AN-2	BPCE SA-SR UNSECURED	D			1FE	251,542	99.6161	249,040	250,000	250,240		(440)			2.500	2.319	JJ	2,882	6,250	12/15/2015	07/15/2019
05578D-AA-1	BPCE SA-SR UNSECURED	D			2FE	213,133	103.5424	207,085	200,000	208,596		(1,562)			5.700	4.689	AO	2,185	11,400	12/09/2015	10/22/2023
05578D-AB-9	BPCE SA-SUBORDINATED	D			2FE	1,333,695	100.4144	1,295,346	1,290,000	1,324,201		(4,215)			5.150	4.602	JJ	29,527	41,512	10/04/2018	07/21/2024
05578D-AD-5	BPCE SA-SUBORDINATED	D			2FE	1,305,004	96.7751	1,258,076	1,300,000	1,303,755		(526)			4.500	4.445	MS	17,225	58,500	08/02/2016	03/15/2025
05581K-AB-7	BNP PARIBAS-SENIOR UNSECURED	D			1FE	458,181	97.3621	452,734	465,000	458,587		327			3.800	4.105	JJ	8,393	10,255	10/04/2018	01/10/2024
05607M-AA-5	HEATHROW FUNDING LTD-SENIOR SECURED BOND	D			1FE	595,140	102.5543	615,326	600,000	598,529		526			4.875	4.978	JJ	13,488	29,250	06/22/2011	07/15/2021
05674X-AA-9	BAHIA SUL HOLDINGS GIBH-SENIOR UNSECURED	D	1		2FE	7,129,500	102.0000	7,140,000	7,000,000	7,122,223		(7,277)			5.750	5.464	JJ	186,715	201,250	05/29/2018	07/14/2026
05675Z-AF-5	BAIDU INC-SR UNSECURED	D			1FE	199,230	99.4725	198,945	200,000	199,734		171			3.000	3.092	JD	3,017	6,000	12/15/2015	06/30/2020
05890J-AA-8	BBVA COLOMBIA SA-SUBORDINATED	D			2FE	4,849,550	97.2500	4,813,875	4,950,000	4,874,779		9,736			4.875	5.158	AO	46,922	241,313	04/07/2016	04/21/2025
05890M-AA-1	BANCO DE CREDITO E INVER-SENIOR UNSECURE	D	1		1FE	13,477,924	90.0000	13,140,000	14,600,000	13,495,600		16,819			3.500	4.542	AO	112,136	237,806	11/13/2018	10/12/2027
059514-AC-3	BANCO DE BOGOTA SA-SUBORDINATED	D	5		3FE	9,327,385	101.1250	9,606,875	9,500,000	9,361,838		14,132			6.250	6.500	MN	80,816	593,750	05/09/2016	05/12/2026
059514-AE-9	BANCO DE BOGOTA SA-SENIOR UNSECURED	D			2FE	11,231,256	92.1785	10,416,171	11,300,000	11,239,071		5,616			4.375	4.450	FA	203,243	494,375	09/01/2017	08/03/2027
05954T-AF-8	BANCO DE CREDITO DEL PERU SR NT	D	1,5		2FE	8,217,250	103.2000	7,740,000	7,500,000	7,715,539		(120,424)			5.375	3.621	MS	117,578	403,125	10/03/2014	09/16/2020
05954T-AH-4	BANCO DE CREDITO DEL PER-SUBORDINATED	D	1,5		2FE	1,648,125	106.1510	1,592,265	1,500,000	1,605,022		(5,052)			6.875	4.113	MS	30,078	103,125	04/12/2016	09/16/2026
059597-AE-4	BANCO GENERAL SA-SENIOR UNSECURED	D	1		2FE	12,759,314	91.7500	11,817,400	12,880,000	12,772,873		10,087			4.125	4.241	FA	212,520	528,000	07/31/2017	08/07/2027
05959L-AF-0	BANCO DO BRASIL SA/CAYMA-SENIOR UNSECURE	D	1		3FE	11,190,488	94.8750	10,673,438	11,250,000	11,205,823		5,906			4.625	4.700	JJ	239,922	520,313	10/18/2017	01/15/2025
05965B-AA-5	BANCO DO ESTADO RIO GRANDE DO SUL SUB NT	D			4FE	335,750	102.2500	347,650	340,000	338,063		529			7.375	7.562	FA	10,378	25,075	12/17/2013	02/02/2022
05967B-AB-1	BANCO SANTANDER CHILE-SR UNSECURED	D			1FE	2,839,958	99.5298	2,766,928	2,780,000	2,811,492		(7,842)			3.875	3.545	MS	41,848	107,725	02/01/2016	09/20/2022
05968D-AA-8	BANCO INTERNAC DEL PERU-SUBORDINATED	D	1,5		3FE	5,362,500	105.0000	5,250,000	5,000,000	5,303,356		(1,969)			6.625	5.277	MS	143,542	331,250	05/17/2016	03/19/2029
05968D-AB-6	Banco Internacional del -UNSECURED	D			2FE	10,278,184	95.4010	10,291,287	10,787,400	10,312,996		34,812			3.375	4.576	JJ	164,852	114,148	11/14/2018	01/18/2023
05968L-AG-7	BANCOLOMBIA SA SR NT	D	1		2FE	6,940,250	103.7500	6,484,375	6,250,000	6,516,831		(102,869)			5.950	4.079	JD	28,924	367,710	08/14/2014	06/03/2021
05968L-AK-8	BANCOLOMBIA SA-SUBORDINATED	D	2		3FE	9,840,000	96.5302	9,498,572	9,840,000	9,840,000					4.875	4.875	AO	97,273	493,635	10/11/2017	10/18/2027
05968L-AK-8	BANCOLOMBIA SA-SUBORDINATED	D	2		3FE	398,315	96.5302	395,774	410,000	398,498		183			4.875	5.277	AO	4,053	9,994	10/16/2018	10/18/2027
05969B-AC-7	Banco Santander Mexico S-SUBORDINATED	D	2		2FE	20,697,500	100.3750	20,862,944	20,785,000	20,697,786		286			5.950	6.007	AO	309,177		12/13/2018	10/01/2028
05969L-AA-9	BANCO INBURSA SA SR NT	D	1		2FE	789,488	94.3760	755,008	800,000	793,723		1,003			4.125	4.288	JD	2,292	33,000	05/29/2014	06/06/2024
05971B-AD-1	Banco BTG Pactual SA/Lux-SENIOR UNSECURE	D			3FE	1,284,450	97.1130	1,262,469	1,300,000	1,286,751		2,301			5.500	5.781	JJ	29,990	44,886	04/18/2018	01/31/2023
059895-AH-5	BANGKOK BANK PCL/HK-SUBORDINATED	D			2FE	1,710,625	131.4491	1,577,389	1,200,000	1,626,992		(32,129)			9.025	4.613	MS	31,888	108,300	04/13/2016	03/15/2029
059895-AN-2	BANGKOK BANK PCL/HK-SR UNSECURED 144A	D	1		2FE	5,070,300	100.9861	5,049,305	5,000,000	5,034,911		(8,629)			3.875	3.672	MS	50,590	193,750	08/27/2014	09/27/2022
05990G-AA-3	BANCO DE CREDITO DEL PER-SENIOR UNSECURED	D	1		2FE	771,184	99.2500	794,000	800,000	784,777		3,151			4.250	4.748	AO	8,500	34,000	04/11/2014	04/01/2023
06034L-AA-8	BANISTMO SA-SENIOR UNSECURED	D	1		3FE	14,169,208	95.0000	13,490,000	14,200,000	14,176,000		5,775			3.650	3.698	MS	146,852	518,300	09/28/2017	09/19/2022
061202-AA-5	BANK OF CHINA-SUBORDINATED NOTE	D			2FE	18,934,900	103.0539														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
067687-AC-7	BARMINGO FINANCE PTY LTD-SECURED	D	1		3FE	300,000	97.6155	292,847	300,000	300,000					6.625	6.626	MN	2,540	19,875	04/11/2017	05/15/2022
06849A-AB-5	BARRICK INTL BARBADOS-SENIOR UNSECURED N	D	1		2FE	5,890,465	114.0182	5,700,911	5,000,000	5,753,936		(25,686)			6.350	5.054	AO	67,028	317,500	01/01/2013	10/15/2036
06849U-AC-9	BARRICK PD AU FIN PTY LT-SENIOR UNSECURE	D	1		2FE	5,930,402	101.9041	5,390,728	5,290,000	5,393,187		(96,393)			4.950	3.027	JJ	120,744	261,855	01/01/2013	01/15/2020
06849U-AD-7	BARRICK PD AU FIN PTY LT-NOTE	D	1		2FE	4,306,642	106.6485	4,451,508	4,174,000	4,305,527		(3,811)			5.950	5.670	AO	52,430	240,969	10/04/2018	10/15/2039
08523A-AA-6	Bermuda Skyport Corporat Senior Secured	D	2		1Z	45,000,000	100.4962	45,223,290	45,000,000	45,000,000					5.900	5.901	FA	1,003,000	2,655,000	03/15/2017	02/15/2042
08861J-AB-5	BHARTI AIRTEL INTL NETH BV SR UNSECURED	D	1		2FE	11,527,832	98.3480	10,326,540	10,500,000	11,143,181		(104,976)			5.350	4.070	MN	72,002	561,750	09/22/2017	05/20/2024
090688-AA-0	BIOSTIME INTL HOLDINGS-2ND LIEN	D	1		3FE	300,000	100.0154	300,046	300,000	300,000					7.250	7.245	JD	11,479	21,750	06/15/2016	06/21/2021
099514-AF-8	Boral Ltd. Gtd Senior Note	D	1		2	43,000,000	96.8650	41,651,950	43,000,000	43,000,000					4.010	4.010	MN	268,224	1,724,300	05/05/2015	05/05/2025
099514-B*-1	Boral Ltd. Gtd Senior Note	D	1		2	14,600,000	95.4868	13,941,073	14,600,000	14,600,000					4.160	4.160	MN	94,478	607,360	05/05/2015	05/05/2027
10553Y-AD-7	BRASKEM FINANCE LTD-SENIOR UNSECURED NOT	D	1		2FE	7,451,193	102.7010	7,750,844	7,547,000	7,498,388		18,916			5.750	6.051	AO	91,612	428,453	05/11/2016	04/15/2021
10553Y-AF-2	BRASKEM FINANCE LTD-SENIOR UNSECURED	D	1,5		2FE	13,685,000	105.0010	13,650,130	13,000,000	13,675,479		(9,521)			6.450	5.271	FA	344,717	1,117,112	12/13/2018	02/03/2024
111021-AE-1	British Telecommunicatio-BOND	D	1,5		2FE	18,498,435	135.2474	21,605,769	15,975,000	18,054,874		(113,638)			9.625	7.835	JD	68,338	1,501,206	08/02/2016	12/15/2030
11778B-AB-8	SKY GROUP FINANCE PLC-SENIOR UNSECURED N	D	1,5		2FE	38,596,675	122.9652	44,451,320	36,150,000	38,198,682		(68,325)			6.500	5.973	AO	496,058	2,349,750	07/27/2012	10/15/2035
12117F-AB-7	Bureau Veritas SA Senior Unsecure	C	1		2	63,500,000	93.7085	59,504,898	63,500,000	63,500,000					4.020	4.020	JJ	1,169,988		07/16/2018	07/19/2028
12503G-AB-7	CBQ FINANCE LTD-SUBORDINATED	D	1		2FE	21,394,801	102.1138	21,205,973	20,767,000	21,360,501		(456,331)			7.500	4.153	MN	186,038	1,026,663	11/20/2018	11/18/2019
12674T-AB-2	C&W Senior Financing DAC-SENIOR UNSECURE	D	1		3FE	900,000	96.1250	865,125	900,000	900,000					7.500	7.500	AO	15,000		10/04/2018	10/15/2026
14214X-C*-9	Carillion plc Senior Note Ser	D	1		6	1,282,500	5.0000	1,282,500	25,650,000	1,282,500			15,390,000		4.860	4.860	MN	1,987,619	1,246,590	11/27/2012	11/27/2022
14214X-C*-7	Carillion plc Senior Note Ser	D	1		6	405,000	5.0000	405,000	8,100,000	405,000			4,860,000		5.010	5.010	MN	647,042	405,810	11/27/2012	11/27/2024
143658-AF-9	CARNIVAL CORP-SENIOR UNSECURED NOTE	D	1		1FE	14,451,004	116.2308	13,889,577	11,950,000	13,209,085		(231,731)			7.200	4.697	AO	215,100	860,400	01/01/2013	10/01/2023
143658-BA-9	CARNIVAL CORP-SENIOR UNSECURED NOTE	D	1,5		1FE	22,681,273	101.2894	22,572,339	22,285,000	22,415,254		(70,200)			3.950	3.606	AO	185,832	880,258	07/02/2015	10/15/2020
151191-AZ-6	CELULOSA ARAUCO CONSTITU-SR UNSECURED	D	1		2FE	2,966,634	98.7500	2,962,500	3,000,000	2,979,008		3,207			4.500	4.643	FA	56,250	135,000	11/24/2014	08/01/2024
151290-BM-4	Cemex SAB de CV-SECURED NOTE	D	1,5		3FE	5,500,000	95.8760	5,273,180	5,500,000	5,500,000					5.700	5.698	JJ	148,042	313,500	09/04/2014	01/11/2025
151290-BM-4	Cemex SAB de CV-SECURED NOTE	D	1,5		3FE	4,908,000	95.8760	4,793,800	5,000,000	4,938,943		8,188			5.700	5.944	JJ	134,583	285,000	11/04/2014	01/11/2025
151290-BU-6	CEMEX SAB DE CV-SECURED	D	1		3FE	6,499,090	105.1250	6,833,125	6,500,000	6,498,828		1			7.750	7.750	AO	104,948	503,750	03/09/2016	04/16/2026
15132H-AD-3	Cencosud SA-SENIOR UNSECURED NOTE	D	1,5		2FE	10,762,779	97.5530	10,632,303	10,899,000	10,815,583		17,578			4.875	5.084	JJ	240,849	583,519	05/11/2016	01/20/2023
156830-AA-9	CERRO DEL AGUILA SA-SENIOR UNSECURED	D	1		2FE	11,085,570	92.2510	10,239,861	11,100,000	11,086,781		1,210			4.125	4.141	FA	171,703	484,625	08/09/2017	08/16/2027
16892D-AC-2	CHINA SOUTHERN POWER GRI-SENIOR UNSECURE	D	1		1FE	44,632,350	95.8430	43,129,336	45,000,000	44,744,657		59,897			3.500	3.680	MN	231,875	1,575,000	04/27/2017	05/08/2027
17178F-AA-4	CIELO SA/CIELO USA INC UNIT NT	D	1		1FE	17,178,575	94.7430	17,622,198	18,600,000	17,702,401		203,866			3.750	5.137	MN	87,188	697,500	11/29/2016	11/16/2022
18912A-AA-4	Cloud Leasing 39659 Desi Senior Secured	D	1		1FE	60,693,563	98.5711	60,066,579	60,937,313	60,717,801		40,378			3.800	3.881	MON	232,320	2,307,591	12/06/2017	05/14/2029
18912A-AB-2	Cloud Leasing 39659 Desi Senior Secured	D	1		1FE	24,900,000	94.9390	23,734,750	25,000,000	24,907,480		7,056			3.800	3.843	MON	44,861	950,000	12/06/2017	06/14/2029
19123M-AC-7	Coca-Cola European Partn-SENIOR UNSECURE	D	1		2FE	3,692,650	101.9809	3,569,332	3,500,000	3,650,215		(42,435)			4.500	2.655	MS	52,500	41,125	04/16/2018	09/01/2021
191241-AF-5	COCA-COLA FEMSA SAB DE C-SR UNSECURED	D	1		1FE	2,223,212	107.5612	2,017,848	1,876,000	2,205,741		(7,546)			5.250	4.112	MN	9,575	98,490	05/16/2017	11/26/2043
192714-AC-7	COLBUN SA-SENIOR UNSECURED	D	1		2FE	13,073,005	92.6692	12,612,278	13,610,000	13,095,920		22,903			3.950	4.470	AO	289,513	443,124	07/20/2018	10/11/2027
200303-AA-3	COMCEL TRUST SR NT	D	1		3FE	205,250	101.8240	203,648	200,000	204,854		(396)			6.875	6.002	FA	5,538		09/19/2018	02/06/2024
200303-AA-3	COMCEL TRUST SR NT	D	1		3FE	294,699	101.8240	305,472	300,000	296,812		498			6.875	7.125	FA	8,307	26,163	01/30/2014	02/06/2024
20271R-AF-7	COMMONWEALTH BK AUSTR NY-SR UNSECURED	D	1		1FE	149,978	99.8936	149,840	150,000	149,996		6			2.250	2.254	MS	1,013	3,375	12/15/2015	03/13/2019
20271R-AH-3	COMMONWEALTH BK AUSTR NY-SR UNSECURED	D	1		1FE	149,871	99.5077	149,262	150,000	149,974		35			2.300	2.324	MS	1,102	3,450	12/15/2015	09/06/2019
20271R-AM-2	COMMONWEALTH BK AUSTR NY-SR UNSECURED	D	1		1FE	297,574	98.5358	295,607	300,000	299,405		499			2.400	2.578	MN	1,180	7,200	12/15/2015	11/02/2020
20271R-AP-5	COMMONWEALTH BK AUSTR NY-SENIOR UNSECURE	D	1		1FE	2,396,088	98.4734	2,363,363	2,400,000	2,398,165		778			2.550	2.585	MS	18,020	61,200	03/08/2016	03/15/2021
202740-DJ-5	Commonwealth Bank of Aus-SENIOR UNSECURE	D	1		1FE	8,642,545	101.4472	7,544,628	7,437,000	7,587,074		(186,558)			5.000	2.398	AO	78,502	371,850	01/01/2013	10/15/2019
204483-AA-9	COMPANIA MINERA MILPO-SENIOR UNSECURED N	D	1		3FE	11,801,175	97.2510	11,402,680	11,725,000	11,798,374		(15,762)			4.625	4.458	MS	140,089	542,281	08/11/2017	03/28/2023
20557F-AG-6	Computershare Ltd Senior Unsecured Notes	C	1		2Z	40,100,000	96.0775	38,527,078	40,100,000	40,100,000					4.360	4.360	MN	199,119		11/20/2018	11/20/2028
210314-AA-8	Consortio Transmataro S-SENIOR UNSECURE	D	1,5		2FE	10,345,426	98.8750	10,290,910	10,400,000	10,345,539		113			4.375	4.527	MN	68,303	72,034	11/21/2018	05/07/2023
21684A-AA-4	COOPERATIVE RABOBANK UA-SUB NOTE	D	1		2FE	155,570	101.3930	152,090	150,000	153,653		(659)			4.625	4.073	JD	5,78	6,938	12/15/2015	12/01/2023
21684A-AB-2	Cooperative Centrale Ra-SUBORDINATED	D	1		2FE	4,077,432	108.8813	3,745,517	3,440,000	4,035,910		(12,720)			5.750	4.575	JD	16,483	197,800	12/09/2015	12/01/2043
21684A-AD-8	COOPERATIVE RABOBANK UA-SUB NOTE	D	1		2FE	2,005,798	102.5982	1,959,626	1,910,000	2,001,101		(1,636)			5.250	4.946	FA	100,275	100,275	12/15/2015	08/04/2045
21685W-CJ-4	Cooperative Centrale Ra-SENIOR UNSECURE	D	1		1FE	6,157,975	110.1512	5,769,720	5,238,000	6,044,209											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
225401-AC-2	CREDIT SUISSE GROUP AG-SENIOR UNSECURED	D		1	2FE	2,030,090	96.4705	1,876,351	1,945,000	2,021,118		(8,011)			4.282	3.713	JJ	39,792	83,285	12/11/2017	01/09/2028
225433-AF-8	CRED SUIS GP FUN LTD-SR UNSECURED	D			2FE	469,470	98.6910	458,913	465,000	465,250		(79)			4.875	4.813	MN	2,897	22,669	01/14/2016	05/15/2045
225460-AA-4	CREDIT SUISSE-SUBORDINATED	D			2FE	1,194,834	104.2500	1,146,750	1,100,000	1,167,710		(12,803)			6.500	4.985	FA	28,401	71,500	10/20/2016	08/08/2023
225460-AD-9	CREDIT SUISSE NEW YORK-SUBORDINATED NOTE	D			2FE	11,565,307	101.5468	10,449,165	10,290,000	10,497,847		(193,984)			5.400	3.398	JJ	257,765	555,660	12/02/2013	01/14/2020
225460-AN-7	CREDIT SUISSE NEW YORK-SR UNSECURED	D			1FE	298,564	99.7040	299,112	300,000	299,820		426			2.300	2.446	MN	633	6,900	12/15/2015	05/28/2019
225460-AP-2	CREDIT SUISSE NEW YORK-SR UNSECURED	D			1FE	1,175,999	98.1190	1,128,368	1,150,000	1,166,926		(2,675)			3.625	3.337	MS	12,969	41,688	12/15/2015	09/09/2024
225460-AR-8	CREDIT SUISSE NEW YORK-SR UNSECURED	D			1FE	850,944	98.7320	839,222	850,000	850,462		(162)			3.000	2.979	AO	4,392	25,500	12/15/2015	10/29/2021
227047-A8-6	Croda International plc Senior Note Ser	B			2	19,868,400	99.3490	20,479,405	20,613,600	20,613,600					1.430	1.430	JD	3,272	304,638	06/27/2016	06/27/2026
227047-B*-7	Croda International plc Senior Note Ser	B		1	2	36,999,200	100.7806	35,967,387	35,688,800	35,688,800					2.800	2.800	JD	11,049	1,046,658	06/27/2016	06/27/2026
232553-AA-5	CYDSA SAB DE CV-SENIOR UNSECURED	D		2	3FE	196,366	89.8760	179,752	200,000	196,676		272			6.250	6.500	AO	3,021	12,500	09/29/2017	10/04/2027
23330J-AA-9	DP WORLD LTD-SENIOR UNSECURED BOND	D			2FE	23,068,375	111.2890	22,257,800	20,000,000	22,918,730		(72,035)			6.850	5.567	JJ	681,194	1,368,097	05/25/2018	07/02/2037
23341C-AA-1	DNB BANK ASA-SENIOR UNSECURED	D			1FE	1,016,065	97.6057	976,057	1,000,000	1,008,626		(3,448)			2.375	2.008	JD	1,913	23,750	10/20/2016	06/02/2021
24023M-AA-2	DBS Group Holdings Ltd-SUBORDINATED	D		2	1FE	7,000,000	102.1751	7,152,257	7,000,000	7,000,000					4.520	4.520	JD	17,578	158,200	06/04/2018	12/11/2028
24668P-AE-7	DELHAIZE GROUP SA-SENIOR UNSECURED NOTE	D		1	2FE	12,011,397	108.1984	12,947,017	11,966,000	12,026,238		(2,631)			5.700	5.649	AO	170,516	279,124	11/09/2017	10/01/2040
24820R-AA-6	Statoil ASA-SENIOR UNSECURED NOTE	D		1	1FE	35,115,738	116.6768	40,836,880	35,000,000	35,038,282		(8,602)			7.875	7.840	JD	168,438	2,756,250	03/13/2006	12/09/2022
251526-BY-4	Deutsche Bank AG/New Yor-SENIOR UNSECURE	D			2FE	195,120	90.8377	181,675	200,000	195,538		418			3.700	4.164	MN	637	3,680	06/01/2018	05/30/2024
25155F-AB-2	VONOVIA FINANCE B.V.-SENIOR UNSECURED	D		1	2FE	765,018	103.2805	722,964	700,000	746,178		(8,796)			5.000	3.481	AO	8,653	35,000	10/20/2016	10/02/2023
25156P-AC-7	DEUTSCHE TELEKOM INT FIN-UNSECURED NOTE	D		1	2FE	11,071,384	130.4278	9,530,356	7,353,000	10,467,968		(204,637)			8.750	4.078	JD	28,595	621,701	08/20/2018	06/15/2030
25156P-AR-4	DEUTSCHE TELEKOM INT FIN-SENIOR UNSECURE	D		1	2FE	2,092,990	96.3119	1,723,983	1,790,000	2,075,262		(7,536)			4.875	3.831	MS	27,876	87,263	08/02/2016	03/06/2042
251889-A*-2	Devro plc Senior Note Ser	D			3	9,500,000	99.4114	9,444,083	9,500,000	9,500,000					4.050	4.050	AO	79,088	384,750	06/20/2014	04/17/2021
251889-A8-0	Devro plc Senior Note Ser	D			3	19,000,000	100.0139	19,002,641	19,000,000	19,000,000					4.570	4.570	AO	178,484	868,300	04/17/2014	04/17/2024
25243Y-AH-2	DIAGEO CAPITAL PLC-UNSECURED BOND	D		1	1FE	25,209,038	120.7230	26,528,876	21,975,000	24,901,193		(74,456)			5.875	4.743	MS	326,344	1,182,462	06/29/2018	09/30/2036
25243Y-AP-4	DIAGEO CAPITAL PLC-SENIOR UNSECURED NOTE	D			1FE	4,997,495	102.7389	5,095,851	4,960,000	5,095,851		(4,555)			4.828	4.726	JJ	110,422	239,469	04/26/2011	07/15/2020
25243Y-AU-3	DIAGEO CAPITAL PLC-SR UNSECURED	D		1	1FE	290,852	97.0096	291,029	300,000	294,364		1,198			2.625	3.092	AO	1,356	7,875	12/15/2015	04/29/2023
25243Y-AV-1	DIAGEO CAPITAL PLC-SR UNSECURED	D		1	1FE	1,185,344	97.7409	1,143,568	1,170,000	1,184,239		(364)			3.875	3.797	AO	7,808	74,161	10/30/2017	04/29/2043
25243Y-AV-1	DIAGEO CAPITAL PLC-SR UNSECURED	D		1	1FE	6,050,118	97.7409	6,025,725	6,165,000	6,053,728		1,756			3.875	3.991	AO	41,143	134,753	08/01/2018	04/29/2043
25243Y-AZ-2	Diageo Capital PLC-SENIOR UNSECURED	D		1	1FE	3,741,070	101.2037	3,744,537	3,700,000	3,739,178		(1,892)			3.875	3.737	MN	17,125	71,688	06/20/2018	05/18/2028
25380Q-AG-4	DIGICEL LTD SR NT	D		1	5FE	1,158,000	89.7500	1,077,000	1,200,000	1,184,578		5,994			6.000	6.609	AO	15,200	(23,000)	12/13/2013	04/15/2021
25461C-AA-0	DirectRoute (Tuan) Limit Senior Secured	B			2	49,184,932	101.6141	51,722,354	50,900,764	50,900,764					2.454	2.489	MN	896,034	1,299,888	11/30/2017	11/30/2040
268317-AC-8	ELECTRICITE DE FRANCE SA-SR UNSECURED	D			1FE	241,918	116.4863	203,851	175,000	203,851		(1,857)			6.950	4.351	JJ	5,237	12,163	04/27/2015	01/26/2039
268317-AK-0	ELECTRICITE DE FRANCE SA-SR UNSECURED	D			1FE	1,150,900	89.9276	937,945	1,043,000	1,143,148		(2,235)			4.875	4.246	JJ	22,457	50,846	12/09/2015	01/22/2044
268317-AL-8	ELECTRICITE DE FRANCE SA-SR UNSECURED	D			1FE	1,456,595	97.5640	1,246,868	1,278,000	1,456,398		(76)			6.000	5.260	JJ	33,867	60,734	08/01/2018	01/22/2114
268317-AP-9	ELECTRICITE DE FRANCE SA-SR UNSECURED	D		1	1FE	452,932	94.2035	428,626	455,000	453,133		70			4.750	4.785	AO	4,683	21,613	12/09/2015	10/13/2035
268317-AP-9	ELECTRICITE DE FRANCE SA-SR UNSECURED	D		1	1FE	637,030	94.2035	565,221	600,000	633,972		(1,422)			4.750	4.264	AO	6,175	28,500	10/20/2016	10/13/2035
26835P-AF-7	EDP FINANCE BV-SENIOR UNSECURED	D		1	2FE	273,845	93.5081	257,147	275,000	274,068		149			3.625	3.693	JJ	4,597	9,969	06/21/2017	07/15/2024
279158-AC-3	Ecopetrol SA-SENIOR UNSECURED NOTE	D		1	2FE	819,666	104.2510	806,903	774,000	817,900		(1,766)			5.875	4.524	MS	13,010	3,537	10/16/2018	09/18/2023
279158-AJ-8	Ecopetrol SA-SR UNSECURED	D		1	2FE	3,557,119	94.4220	3,437,905	3,641,000	3,560,883		1,134			5.875	6.042	MN	77,565	194,471	10/04/2018	05/28/2045
279158-AL-3	Ecopetrol SA-SR UNSECURED	D		1	2FE	151,504	100.6250	146,913	146,000	151,378		(126)			5.375	4.768	JD	109	1,613	10/04/2018	06/26/2026
28257V-AC-6	Eirles Three Ltd Senior Secured	D		1	1	9,873,500	102.2089	10,220,890	10,000,000	9,985,843		13,539			5.900	6.080	JD	316,267	593,000	12/19/2007	12/19/2019
283837-AA-0	El Puerto de Liverpool S-SENIOR UNSECURE	D		1	2FE	7,653,750	93.7510	7,500,080	8,000,000	7,668,653		14,903			3.950	4.780	AO	78,122	118,500	11/07/2018	10/02/2024
285295-AA-8	Electrocomponents plc Gtd Senior Note	D		1	2	27,550,000	98.6297	27,172,482	27,550,000	27,550,000					2.970	2.969	JD	413,663	818,235	06/29/2015	06/29/2020
286189-AA-3	ELEMENTIA SA-SENIOR UNSECURED	D		1	3FE	4,355,490	92.1250	4,145,625	4,500,000	4,403,207		12,939			5.500	5.928	JJ	114,125	247,500	02/03/2015	01/15/2025
286189-AA-3	ELEMENTIA SA-SENIOR UNSECURED	D		1	3FE	2,509,375	92.1250	2,303,125	2,500,000	2,506,853		(1,494)			5.500	5.423	JJ	63,403	137,500	03/06/2017	01/15/2025
29082H-AA-0	EMBRAER NETHERLANDS FINA-SENIOR UNSECURE	D		1	2FE	3,784,120	101.1260	3,788,090	3,738,000	3,783,642		(478)			5.050	4.827	JD	102,774	102,774	12/10/2018	06/15/2025
29082H-AB-8	EMBRAER NETHERLANDS FINA-SENIOR UNSECURE	D		1	2FE	9,809,804	103.2510	10,122,728	9,804,000	9,809,685		(119)			5.400	5.391	FA	220,590	520,817	10/04/2018	02/01/2027
29245V-AA-3	EMPRESA NACIONAL DE TELE-SR UNSECURED 14	D		1	2FE	29,302,104	97.3127	28,550,567	29,339,000	29,225,727		(19,109)			4.875	4.961	AO	342,352	1,134,751	10/16/2018	10/30/2024
29246B-AA-6	EMPRESAS PUBLIC MEDELLIN-SR UNSECURED	D		1	2FE	5,942,594	101.5000	5,262,775	5,185,000	5,308,472		(208,440)			7.625	3.420	JJ	166,928	395,356	11/03/2015	07/29/2019
29246Q-AB-1	Empresa de Transporte de-SENIOR UNSECURE	D																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
298785-DV-5	EUROPEAN INVESTMENT BANK-SR UNSECURED	D			1FE	457,039		122,4335	350,000	445,704			(4,321)		4.875	2.839	FA	6,446	13,379	08/02/2016	02/15/2036
31446Y-AB-8	Fenix Power Peru SA-SENIOR UNSECURED	D	1		2FE	8,879,632		94,3218	9,426,471	8,900,351					4.317	5.399	MS	211,302		11/14/2018	09/20/2027
31503A-AA-2	FERMACA ENTERPRISES SR SEC2 NT	D	1		2FE	2,717,650		99,8760	2,792,072	2,726,481			5,395		6.375	6.738	MS	45,049	178,120	05/09/2016	03/30/2038
31503A-AA-2	FERMACA ENTERPRISES SR SEC2 NT	D	1		2FE	25,093,048		99,8760	23,687,580	23,716,989			(82,772)		6.375	5.642	MS	382,189	1,360,792	04/05/2018	03/30/2038
31572U-AE-6	Fibria Overseas Finance -SENIOR UNSECURE	D	1		2FE	1,838,250		101,5400	1,827,720	1,800,000			1,835,726		5.250	4.824	MM	12,863	47,250	07/19/2018	05/12/2024
31572U-AG-1	Fibria Overseas Finance -SENIOR UNSECURE	D	2		2FE	8,058,000		94,3844	8,022,674	8,500,000			8,083,125		4.000	4.950	JJ	157,722		07/25/2018	01/14/2025
316502-AA-1	Fidus Re Ltd-UNSECURED	D	2		1FE	100,000,000		100,1783	100,000,000	100,000,000			100,000,000		4.646	4.711	MM	3,317,026		04/13/2018	03/31/2030
31772D-AC-6	FINANSBANK AS-SENIOR UNSECURED	D			3FE	598,026		93,4566	560,740	600,000			598,582		4.875	4.950	MM	3,413	29,250	05/11/2017	05/19/2022
33938E-AU-1	FLEXTRONICS INTL LTD SR NT	D	1		2FE	84,360		97,9629	83,268	85,000			84,532		4.750	4.850	JD	179	4,038	01/11/2016	06/15/2025
344419-AB-2	FOMENTO ECONOMICO MEXICA-SENIOR UNSECURE	D	1		1FE	12,056,283		95,6552	12,443,785	13,009,000			12,148,660		4.375	4.834	MM	80,629	569,144	09/18/2013	05/10/2043
35177P-AL-1	Orange SA-UNSECURED NOTE	D	1,5		2FE	5,800,777		138,1678	5,202,018	5,475,791			(106,147)		9.000	4.189	MS	112,950	338,850	08/02/2016	03/01/2031
35177P-AX-5	ORANGE SA-SR UNSECURED	D	1		2FE	2,008,283		104,7729	1,802,094	1,720,000			1,994,266		5.375	4.272	JJ	43,143	72,227	08/01/2018	01/13/2042
358070-AA-8	FRESNILLO PLC SR NT	D			2FE	4,755,313		101,6260	4,827,235	4,750,000			4,754,241		5.500	5.477	MM	34,833	261,250	02/26/2016	11/13/2023
36164Q-NA-2	GE CAPITAL INTL FUNDING-SENIOR UNSECURED	D			2FE	72,061,379		83,7567	80,229,672	73,669,828			73,669,828		4.418	6.710	MM	540,750	3,854,857	04/10/2018	11/15/2035
36190C-AA-5	GNL QUINTERO SA SR NT	D	1		2FE	32,910,570		96,5000	31,671,300	32,820,000			32,842,960		4.634	4.619	JJ	637,924	1,266,295	10/04/2018	07/31/2029
36249S-AA-1	GTL TRADE FINANCE INC-GTD BOND	D	1		2FE	12,097,500		104,0000	13,000,000	12,500,000			12,195,024		5.893	6.438	AO	46,365	797,519	11/10/2016	04/29/2024
36249S-AA-1	GTL TRADE FINANCE INC-GTD BOND	D	1		2FE	6,224,250		104,0000	6,240,000	6,000,000			6,208,661		5.893	5.107	AO	60,894	176,790	07/23/2018	04/29/2024
36256W-AA-2	GMR HYDERABAD INTERNATIO-FIRST LIEN	D	1		3FE	16,969,900		82,1191	13,960,247	17,000,000			16,972,648		4.250	4.272	AO	128,444	720,234	10/24/2017	10/27/2027
36728K-AA-8	Gas Natural de Lima y Ca-SENIOR UNSECURE	D	1		2FE	10,508,540		98,1250	10,521,944	10,723,000			10,512,511		4.375	4.890	AO	117,283		11/21/2018	04/01/2023
36863N-A*-0	Gemalto N.V. Senior Note	D			2	74,871,300		102,0700	82,641,629	80,965,640			80,965,640		1.940	1.940	MS	458,138	1,620,092	03/16/2015	03/16/2025
36863N-B*-9	Gemalto N.V. Senior Note Ser	D	2		2	40,000,000		100,4435	40,177,400	40,000,000			40,000,000		4.330	4.330	AO	351,211	1,732,000	04/18/2017	04/18/2028
372319-AA-1	GENNEIA SA-SENIOR UNSECURED	D			4FE	300,000		90,5000	271,500	300,000			300,000		8.750	8.750	JJ	11,740	26,250	01/12/2017	01/20/2022
37373W-AD-2	GERDAU TRADE INC-SENIOR UNSECURED	D	1		2FE	8,813,314		95,0000	8,455,000	8,900,000			8,820,877		4.875	5.000	AO	80,749	430,246	10/12/2017	10/24/2027
377373-AD-7	GLAXOSMITHKLINE CAP LTD-SR UNSECURED	D	1		1FE	18,735,177		98,7874	18,670,819	18,900,000			18,825,975		2.850	2.973	MM	79,301	538,650	12/15/2015	05/08/2022
37954J-AA-4	GLOBAL BANK CORPORATION-SENIOR UNSECURED	D	1		2FE	7,840,690		100,0000	7,753,875	7,750,000			7,767,624		5.125	4.834	AO	67,301	397,188	04/14/2015	10/30/2019
37954J-AB-2	GLOBAL BANK CORPORATION-SENIOR UNSECURED	D	2		2FE	9,694,374		96,9700	9,406,090	9,700,000			9,696,111		4.500	4.513	AO	86,088	436,500	10/13/2016	10/20/2021
37957T-AK-7	GLOBO COMUNICACOES PART-SECURED	D	2		3FE	4,000,000		94,1510	3,766,040	4,000,000			4,000,000		4.843	4.842	JD	132,377	193,720	06/01/2015	06/08/2025
382879-AA-2	Gorey To Enniscorthy M11 Senior Secured	B	2		2	56,529,602		102,8184	58,180,812	56,585,993			56,585,993		2.812	2.853	MM	771,193	1,565,450	12/31/2018	07/31/2042
400131-AG-3	GRUMA SAB DE CV SR NT	D	1		2FE	1,442,000		100,2500	1,403,500	1,400,000			1,429,400		4.875	4.452	JD	5,688	68,250	01/14/2016	12/01/2024
40049J-AV-9	GRUPO TELEVISIVA SAB-SR UNSECURED	D	1		2FE	6,306,750		109,7475	5,487,375	5,000,000			5,868,518		6.625	3.490	MS	94,774	331,250	04/07/2015	03/18/2025
40049J-AZ-0	GRUPO TELEVISIVA SAB-SENIOR UNSECURED BOND	D	1		2FE	11,401,061		107,1429	10,698,219	9,985,000			11,302,685		6.625	5.542	JJ	305,028	330,257	07/23/2018	01/15/2040
40049J-BA-4	GRUPO TELEVISIVA SAB SR NT	D	1		2FE	1,441,824		87,3262	1,205,101	1,380,000			1,437,918		5.000	4.717	MM	38,356	147,316	04/27/2015	05/13/2045
40049J-BA-4	GRUPO TELEVISIVA SAB SR NT	D	1		2FE	4,412,867		87,3262	3,992,553	4,572,000			4,417,967		5.000	5.236	MM	127,074	114,300	10/04/2018	05/13/2045
40049J-BC-0	GRUPO TELEVISIVA SAB SR UNSECURED	D	1		2FE	3,492,962		102,2626	3,354,214	3,280,000			3,489,899		6.125	5.655	JJ	84,266	170,683	07/12/2018	01/31/2046
40053D-AB-9	GRUPO CEMENTOS CHIHUAHUA-SENIOR UNSECURE	D	1		3FE	600,000		95,3750	572,250	600,000			600,000		5.250	5.250	JD	700	31,500	06/20/2017	06/23/2024
40053F-AB-4	GRUPO AVAL LTD SR NT	D	1		3FE	9,957,100		93,3750	9,337,500	10,000,000			9,978,216		4.750	4.812	MS	220,347	475,000	08/14/2014	09/26/2022
40053L-AA-3	GRUPO IDESA SA DE CV-SENIOR UNSECURED NO	D	1		3FE	20,499,944		69,8750	13,538,281	19,375,000			19,620,863		7.875	6.490	JD	55,098	1,525,213	10/16/2015	12/18/2020
404280-AG-4	HSBC Holdings PLC-SUBORDINATED NOTE	D			1FE	1,790,315		113,7837	1,607,764	1,413,000			1,750,786		6.500	4.498	MS	15,052	91,845	08/02/2016	05/02/2036
404280-AH-2	HSBC Holdings PLC-UNSECURED SUBORDINATED	D			1FE	11,431,139		113,3364	10,324,946	9,110,000			11,230,685		6.500	4.625	MS	174,355	592,150	11/03/2016	09/15/2037
404280-AJ-8	HSBC Holdings PLC-SUBORDINATED	D			1FE	1,829,919		118,0943	1,621,435	1,373,000			1,786,237		6.800	4.465	JD	7,780	93,364	08/02/2016	06/01/2038
404280-AM-1	HSBC Holdings PLC-SR UNSECURED	D			1FE	2,613,619		116,2402	2,264,360	1,948,000			2,580,285		6.100	3.942	JJ	55,123	118,828	10/30/2017	01/14/2042
404280-AN-9	HSBC Holdings PLC-SR UNSECURED	D			1FE	1,481,581		101,3025	1,392,909	1,375,000			1,429,951		4.000	2.705	MS	13,903	55,000	08/02/2016	03/30/2022
404280-AP-4	HSBC HOLDINGS PLC-SUBORDINATED	D			1FE	249,582		99,2411	248,103	250,000			249,715		4.250	4.274	MS	3,158	10,625	12/15/2015	03/14/2024
404280-AQ-2	HSBC Holdings PLC-SUBORDINATED	D			1FE	272,551		99,1184	235,902	238,000			237,147		5.250	4.361	MS	3,714	12,495	05/11/2015	03/14/2044
404280-AU-3	HSBC HOLDINGS PLC-SUBORDINATED	D			1FE	2,332,561		97,0589	2,237,208	2,305,000			2,326,164		4.250	4.089	FA	36,192	97,963	08/02/2016	08/18/2025
404280-AV-1	HSBC HOLDINGS PLC-SENIOR UNSECURED	D			1FE	4,136,560		99,7405	3,989,619	4,000,000			4,087,742		3.400	2.363	MS	42,689	136,000	09/22/2017	03/08/2021
404280-BB-4	HSBC Holdings PLC-SENIOR UNSECURED	D			1FE	415,192		95,8205	383,282	400,000			413,525		3.900	3.379	MM	1,560	15,600	12/11/2017	05/25/2026
404280-BK-4	HSBC HOLDINGS PLC-SENIOR UNSECURED	D	2		1FE	440,931		95,6753	401,836	420,000			438,846		4.041	3.409	MS	5,092	16,972	10/30/2017	03/13/2028
40435W-AA-8																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
43474T-AC-7	HOLCIM US FINANCE SARL-SENIOR UNSECURED	D	1		2FE	8,838,056	102.9755	9,164,820	8,900,000	8,866,807					5.150	5.242	MS	230,448	458,350	09/05/2013	09/12/2023
43475D-AA-5	HOLCIM CAPITAL CORP-SENIOR UNSECURED NOT	D	1		2FE	361,951	104.7068	314,121	300,000	357,486	(1,140)				6.500	5.123	MS	5,904	19,500	10/06/2014	09/12/2043
449786-AY-8	ING BANK NV-SUBORDINATED	D	1		2FE	471,731	104.4529	443,925	425,000	457,406	(6,106)				5.800	4.014	MS	6,573	24,650	08/02/2016	09/25/2023
45569F-AA-2	INDIKA ENERGY CAPITAL II-SENIOR UNSECURE	D	2		3FE	197,188	86.9465	173,893	200,000	197,552					5.875	6.125	MN	1,697	11,750	11/02/2017	11/09/2024
45580K-AK-4	INDUSTRIAL & COMMERCIAL -SENIOR UNSECURE	D	1		1FE	250,000	95.4851	238,713	250,000	250,000					3.538	3.538	MN	1,302	8,845	11/01/2017	11/08/2027
455881-AD-4	IND & COMM BK OF CHINA TIER 2 CAP NT SER	D	1		2FE	14,369,867	102.7467	14,179,045	13,800,000	14,250,974	(52,461)				4.875	4.305	MS	186,875	596,917	07/09/2018	09/21/2025
45631X-AA-7	INDUSTRIAL SENIOR TRUST-GTD SR NT 144A	D	1		3FE	1,174,797	97.2500	1,167,000	1,200,000	1,187,026					5.500	5.815	MN	11,000	66,000	09/17/2014	11/01/2022
45672B-AA-8	Informa PLC Senior Note Ser	D	1		2	27,000,000	97.4967	26,324,109	27,000,000	27,000,000					3.840	3.840	AO	216,000	1,036,800	10/16/2015	10/16/2022
456829-AB-6	Infraestructura Energeti-SENIOR UNSECURE	D	1		2FE	1,923,600	78.3890	1,567,780	2,000,000	1,924,834			1,236		4.875	5.125	JJ	45,229	97,500	12/07/2017	01/14/2048
456873-AC-2	Ingersoll-Rand Luxemour-SENIOR UNSECURED	D	1,5		2FE	170,972	97.5818	151,252	155,000	170,176			(340)		4.650	4.029	MN	1,201	7,208	08/02/2016	11/01/2044
458182-BV-3	INTER-AMERICAN DEVEL BK-SENIOR UNSECURED	D	1		1FE	973,010	121.9458	853,621	700,000	903,817	(29,137)				7.000	2.146	JD	2,178	49,000	08/02/2016	06/15/2025
458180-AD-1	INTER-AMERICAN DEVEL BK-UNSECURED	D	1		1FE	569,138	125.2848	501,139	400,000	535,515	(14,176)				6.750	2.348	JJ	12,450	27,000	08/02/2016	07/15/2027
4581X0-CE-6	INTER-AMERICAN DEVEL BK-SR UNSECURED	D	1		1FE	399,263	118.2032	354,610	300,000	393,146					4.375	2.668	JJ	5,724	13,125	08/02/2016	01/24/2044
46062J-AA-4	Interoceanica V Finance Senior Secured	D	2		2FE	47,000,000	110.9213	44,368,520	40,000,000	46,217,012	(2,583)				7.860	5.360	MN	1,571,476	3,187,906	11/07/2017	05/15/2030
461127-B8-0	Intertek Finance plc Senior Note Ser	D	1		2	15,000,000	99.8632	14,979,480	15,000,000	15,000,000					3.910	3.909	JD	26,067	586,500	12/21/2010	12/15/2020
461127-C8-9	Intertek Finance plc Senior Note Ser	D	1		2	22,300,000	99.0165	22,080,680	22,300,000	22,300,000					3.850	3.849	JJ	388,732	858,550	01/18/2012	01/18/2024
46132F-AC-4	INVESCO FINANCE PLC-SR UNSECURED	D	1		1FE	1,194,445	106.7482	1,065,347	998,000	1,182,545			(4,162)		5.375	4.173	MN	4,619	53,643	05/16/2017	11/30/2043
46137N-AB-4	Inversiones Latin Americ Senior Secured	C	2		2FE	32,237,201	100.6450	32,445,131	32,237,201	32,237,201					5.350	5.350	MS	628,563	1,724,216	09/27/2017	03/31/2033
465077-AK-1	ISRAEL ELECTRIC CORP LTD-SECURED NOTE	D	1		2FE	21,081,850	100.7280	21,152,880	21,000,000	21,052,841			(7,969)		5.000	4.948	MN	142,917	1,050,000	06/05/2015	11/12/2024
46507M-AE-2	ISRAEL ELECTRIC CORP LTD-SECURED NOTE	D	1		2FE	14,931,500	108.9236	14,377,915	13,200,000	14,339,465			(203,289)		6.875	4.707	JD	891,458	915,139	03/28/2018	06/21/2023
46507N-AE-0	ISRAEL ELECTRIC CORP LTD-SECURED	D	1		2FE	219,404	108.9236	217,847	200,000	218,637			(767)		6.875	4.548	JD	7,257	4,392	10/16/2018	06/21/2023
46507V-AB-8	ISRAEL ELECTRIC CORP LTD-SECURED	D	1		2FE	20,508,875	118.5140	20,265,894	17,100,000	20,106,587			(144,808)		7.750	5.261	JD	721,525	1,137,787	11/21/2018	12/15/2027
46507W-AB-6	Israel Electric Corp Ltd-SECURED	D	1		2FE	626,549	118.5140	619,828	523,000	624,714			(1,835)		7.750	5.026	JD	1,801	33,890	10/16/2018	12/15/2027
46590P-AB-9	JSL EUROPE SA-SENIOR UNSECURED	D	1		3FE	894,033	92.1260	829,134	900,000	894,924			691		7.750	7.875	JJ	30,031	69,750	07/19/2017	07/26/2024
46611D-AB-1	JBS SA-SENIOR UNSECURED NOTE	D	1,5		3FE	1,910,063	100.8010	1,844,658	1,830,000	1,881,005			(13,782)		7.250	6.285	AO	53,255	132,675	10/25/2016	04/03/2024
46611D-AB-1	JBS SA-SENIOR UNSECURED NOTE	D	1,5		3FE	4,230,000	100.8010	4,032,040	4,000,000	4,152,987			(42,391)		7.250	5.916	AO	116,403	290,000	02/16/2017	04/03/2024
46650C-AA-7	JBS Investments II GmbH-SENIOR UNSECURED	D	1		3FE	9,882,241	98.0000	9,751,000	9,950,000	9,882,195			(46)		7.000	7.125	JJ	125,757	125,757	10/18/2018	01/15/2026
478375-AD-0	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	7,063,983	102.0877	6,839,875	6,700,000	6,843,741			(111,434)		5.000	3.227	MS	12,287	335,000	12/28/2016	03/30/2020
478375-AH-1	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	4,687,444	111.7107	8,148,182	7,294,000	4,785,808			51,456		6.000	10.304	JJ	201,801	437,640	12/28/2016	01/15/2036
478375-AJ-7	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	8,473,234	102.3447	7,368,815	7,200,000	8,411,507			(31,429)		5.700	4.493	MS	136,800	410,400	12/28/2016	03/01/2041
478375-AK-4	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	136,795	96.5746	115,889	120,000	135,976			(416)		5.250	4.317	JD	525	6,300	12/28/2016	12/01/2041
478375-AK-4	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	17,936,814	96.5746	17,335,132	17,937,260	17,937,260			263		5.250	5.255	JD	78,531	942,375	12/28/2016	12/01/2041
478375-AL-2	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1,5		2FE	817,025	94.5716	714,016	755,000	815,591			(151)		4.625	4.108	JJ	17,362	34,919	12/28/2016	07/02/2044
478375-AN-8	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1,5		2FE	896,331	92.9430	808,604	870,000	896,185			(25)		4.950	4.786	JJ	21,413	43,065	05/16/2017	07/02/2064
478375-AS-7	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	1,128,397	99.8455	1,063,355	1,065,000	1,126,015			(1,213)		5.125	4.796	MS	16,223	54,581	12/28/2016	09/14/2045
478375-AS-7	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	7,768,686	99.8455	7,797,937	7,810,000	7,770,015			675		5.125	5.160	MS	118,967	400,263	12/28/2016	09/14/2045
478375-AU-2	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	10,303,113	92.5199	9,645,200	10,425,000	10,305,683			1,623		4.500	4.572	FA	177,225	448,928	10/04/2018	02/15/2047
478375-AU-2	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	1		2FE	17,780,384	92.5199	16,198,384	17,508,000	17,771,589			(4,892)		4.500	4.405	FA	297,636	787,860	05/16/2017	02/15/2047
479142-D8-7	Johnson Matthey PLC Senior Note Series A	B	1,2		1Z	38,624,000	100.2677	39,041,034	38,936,800	38,936,800				312,800	1.400	1.400	JD	18,103		12/19/2018	12/19/2025
479142-E*8	Johnson Matthey PLC Senior Note Series C	B	1,2		1Z	22,720,000	100.1361	22,935,172	22,904,000	22,904,000				184,000	1.810	1.810	JD	13,767		12/19/2018	12/19/2028
48021P-A*9	Jones Lang LaSalle Finan Gtd Senior Note	B	2		2	19,243,360	99.8912	19,676,009	19,697,440	19,697,440				(980,400)	1.960	1.960	JD	48,992	398,202	06/27/2017	06/27/2027
48021P-A8-7	Jones Lang LaSalle Finan Gtd Senior Note	B	2		2	26,068,040	97.3847	25,985,315	26,683,160	26,683,160				(1,328,100)	2.210	2.210	JD	74,832	608,228	06/27/2017	06/27/2029
48344F-AA-8	KALLPA GENERACION SA-SENIOR UNSECURED	D	1		2FE	4,466,610	97.3650	4,381,425	4,500,000	4,473,571			2,868		4.875	4.970	MN	22,547	230,625	05/19/2016	05/24/2026
48661E-CF-3	Kayne Anderson Midstream SER I SR UNSECO	C	1		1FE	11,423,077	99.8764	11,408,958	11,423,077	11,423,077					3.820	3.820	FA	167,272	269,090	08/08/2013	08/08/2025
48661E-C8-5	Kayne Anderson Midstream SER H SR UNSECO	C	1		1FE	12,015,385	99.8137	11,993,000	12,015,385	12,015,385					3.720	3.720	FA	394,826	52,146	08/08/2013	08/08/2023
486670-AN-5	KazMunayGas National Co -SENIOR UNSECURE	D	1		2FE	8,075,000	97.2462	7,779,696	8,000,000	8,071,800			(3,200)		4.750	4.617	AO	76,000	190,000	07/18/2018	04/19/2027
48668N-AA-9	KazTransGas JSC-SENIOR UNSECURED	D	1,5		2FE	11,242,000	92.6654	11,119,848	12,000,000	11,279,197			37,197								

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
500769-BR-4	KFW-SENIOR UNSECURED	D			1FE	153,891	57.0548	142,637	250,000	163,313		3,972			0.000	2.477	N/A			08/02/2016	04/18/2036
500769-CH-5	KFW-SENIOR UNSECURED	D			1FE	148,085	55.8428	139,607	250,000	157,188		3,895			0.000	2.525	N/A			08/02/2016	06/29/2037
500769-HR-8	Kreditanstalt fuer Wiede-SENIOR UNSECURE	D			1FE	824,730	98.9985	841,487	850,000	825,983		1,253			2.375	3.133	JD	10,206		10/04/2018	12/29/2022
50247V-AB-5	LYB INTL FINANCE BV-SENIOR UNSECURED BON	D	1		2FE	9,447,189	95.3342	9,123,483	9,570,000	9,461,986		1,682			5.250	5.329	JJ	231,674	502,425	08/02/2016	07/15/2043
50247V-AC-3	LYB INTL FINANCE BV-SENIOR UNSECURED	D	1		2FE	10,229,009	90.8101	9,398,843	10,350,000	10,240,722		2,132			4.875	4.948	MS	148,566	504,562	02/25/2014	03/15/2044
50247V-AC-3	LYB INTL FINANCE BV-SENIOR UNSECURED	D	1		2FE	19,292,292	90.8101	16,391,219	18,050,000	19,232,542		(26,232)			4.875	4.434	MS	259,093	879,938	11/09/2016	03/15/2044
50247W-AB-3	LYB International Financ-SENIOR UNSECURE	D	1		2FE	3,422,844	91.0325	3,277,170	3,600,000	3,432,638		9,794			3.500	4.177	MS	41,650	63,000	05/31/2018	03/02/2027
51461T-AA-9	LANCER FIN SPV LTD-NOTE	D			6*		0.0100	763		7,634,882				5.850	0.000	MON			10/15/2010	12/12/2016	
524671-AA-2	LEGRAND FRANCE SA-SENIOR UNSECURED NOTE	D			1FE	22,828,035	123.3808	21,949,440	17,790,000	20,613,271		(379,843)			8.500	5.417	FA	571,257	1,512,150	03/27/2012	02/15/2025
532522-AA-7	LIMA METRO LINE 2 FIN LT-SECURED	D	2		2FE	53,875,000	99.5010	53,606,164	53,875,000	53,875,000					5.875	5.875	JAUJ	777,026	3,124,537	06/10/2015	07/05/2034
536333-AA-5	LIQUID TELECOM FINANCE-SECURED	D	2		4FE	800,000	100.5267	804,214	800,000	800,000					8.500	8.500	JJ	31,733	68,000	07/06/2017	07/13/2022
539439-AN-9	LLOYDS BANKING GROUP PLC-SUBORDINATED	D			2FE	1,249,654	91.0243	1,069,536	1,175,000	1,246,945		(1,292)			5.300	4.887	JD	5,190	62,275	11/09/2016	12/01/2045
53944V-AK-5	LLOYDS BANK PLC-SR UNSECURED	D			1FE	252,102	98.7351	246,838	250,000	250,761		(455)			2.700	2.507	FA	2,513	6,750	12/15/2015	08/17/2020
539473-AH-1	LLOYDS BANK PLC-SR UNSECURED	D			1FE	1,182,745	105.6218	1,056,218	1,000,000	1,076,561		(35,850)			6.375	2.528	JJ	28,333	63,750	12/15/2015	01/21/2021
549876-AD-2	LUKOIL INTL FINANCE BV-SR UNSECURED	D	1,5		2FE	7,117,500	102.5470	6,665,555	6,500,000	6,641,136		(160,940)			7.250	4.588	MM	73,306	471,250	11/20/2015	11/05/2019
552081-AD-3	LyondellBasell Industrie-SENIOR UNSECURE	D			2FE	15,744,397	105.7019	14,276,099	13,506,000	14,296,802		(281,762)			6.000	3.643	MM	103,546	810,360	07/30/2013	11/15/2021
552081-AG-6	LyondellBasell Industrie-SENIOR UNSECURE	D			2FE	10,400,000	100.1088	10,411,315	10,400,000	10,400,000					5.000	4.999	AO	109,778	520,000	07/17/2012	04/15/2019
552081-AG-6	LyondellBasell Industrie-SENIOR UNSECURE	D			1FE	783,445	100.1088	709,717		709,525		(13,278)			5.000	3.081	AO	7,484	35,450	01/01/2013	04/15/2019
552081-AM-3	LYONDELLBASELL IND NV-SENIOR UNSECURED	D			2FE	18,505,926	84.2217	17,110,481	20,316,000	18,537,978		15,575			4.625	5.161	FA	326,255	894,814	10/04/2018	02/26/2055
55302T-AD-7	MHP SA-SENIOR UNSECURED	D			2FE	200,000	92.6656	185,331	200,000	200,000					7.750	7.750	MM	2,196	15,500	04/27/2017	05/10/2024
55314W-AC-8	MMC NORILSK NICK VIA MMC-SR UNSECURED	D			4FE	7,353,850	104.9560	7,241,964	6,900,000	7,184,045		(66,238)			6.625	5.404	AO	97,774	457,125	05/04/2016	10/14/2022
55608J-AC-2	Macquarie Group Ltd-SENIOR UNSECURED NOT	D			2FE	6,492,534	102.6528	6,159,168	6,000,000	6,082,715		(76,332)			6.000	4.620	JJ	167,000	360,000	01/01/2013	01/14/2020
55608P-AV-6	MACQUARIE BANK LTD-SENIOR UNSECURED	D			1FE	4,061,960	98.8966	3,955,864	4,000,000	4,038,841		(18,393)			2.850	2.359	JJ	52,567	114,000	09/22/2017	01/15/2021
55608X-AA-5	MACQUARIE BANK LTD-SUBORDINATED NOTE	D			2FE	11,053,400	105.7871	10,578,710	10,000,000	10,332,553		(135,599)			6.625	5.049	AO	154,583	662,500	01/01/2013	04/07/2021
556607-AA-8	MARFRIG HOLDING EUROPE B-SENIOR UNSECURE	D	2		3FE	5,326,884	94.4760	5,101,704	5,400,000	5,341,491		8,837			7.000	7.250	MS	111,300	378,000	03/08/2017	03/15/2024
556656-AH-5	MARFRIG HOLDING EUROPE B-SENIOR UNSECURE	D	2		3FE	3,700,875	100.2500	3,759,375	3,750,000	3,715,406		6,168			8.000	8.250	JD	19,167	296,166	05/25/2016	06/08/2023
58406F-AA-2	MEDCO STRAITS SERVICES P-SENIOR UNSECURE	D	1		4FE	594,030	97.4156	584,494	600,000	595,319		1,031			8.500	8.750	FA	18,983	51,000	08/10/2017	08/17/2022
58517F-AA-8	Meggitt PLC Senior Note Ser	D			2	32,239,400	100.9933	30,802,957	30,500,000	30,873,069		(246,494)			5.020	4.140	JD	319,049	1,212,051	01/01/2013	06/15/2020
58517F-AB-6	Meggitt PLC Senior Note Ser	D			2Z	14,600,000	101.3802	14,801,509	14,600,000	14,600,000					5.170	5.170	AO	180,318	574,502	10/05/2010	10/05/2020
58517F-AC-4	Meggitt PLC Senior Note Ser	D			2Z	8,600,000	101.6632	8,743,035	8,600,000	8,600,000					5.120	5.118	JD	19,570	420,750	06/15/2010	06/15/2022
59132V-AA-6	METALSA SA DE CV-SR UNSECURED	D	1		3FE	6,329,500	95.1160	6,372,772	6,700,000	6,454,935		48,429			4.900	5.869	AO	61,100	328,300	04/13/2016	04/24/2023
591555-AD-9	Metinvest BV-SENIOR UNSECURED	D	1		4FE	1,584,224	90.9908	1,455,853	1,600,000	1,585,595		1,371			7.750	8.000	AO	44,089	49,858	04/04/2018	04/23/2023
59284B-AE-8	MEXICHEM SAB DE CV-SENIOR UNSECURED	D	1		2FE	4,480,000	90.1430	4,507,150	5,000,000	4,493,870		7,250			5.875	6.705	MS	84,861	293,750	01/04/2017	09/17/2044
59284B-AG-3	MEXICHEM SAB DE CV-SENIOR UNSECURED	D	1		2FE	195,748	86.5425	173,085	200,000	195,793		51			5.500	5.648	JJ	5,072	11,000	09/27/2017	01/15/2048
59284M-AB-0	MEXICO CITY ARPT TRUST-SECURED	D	1		2FE	16,551,727	88.0010	15,021,771	17,070,000	16,566,377		6,919			5.500	5.710	AO	159,083	897,109	11/10/2016	10/31/2046
59284M-AD-6	MEXICO CITY AIRPORT TRUS-SECURED	D	1		2FE	4,183,052	87.8760	3,778,668	4,300,000	4,183,300		479			5.500	5.690	JJ	99,199	176,997	10/04/2018	07/31/2047
597433-AC-5	HSBC Bank PLC-SUBORDINATED	D			1FE	343,350	115.2544	303,119	263,000	317,376		(7,429)			7.650	3.929	MM	3,353	20,120	05/11/2015	05/01/2025
602736-AA-8	MINEJESA CAPITAL BV-SECURED	D	1		2FE	900,000	89.1334	802,201	900,000	900,000					4.625	4.625	FA	16,303	41,625	08/03/2017	08/10/2030
603374-AD-1	MINERVA LUXEMBOURG SA-SENIOR UNSECURED	D	1		3FE	10,900,560	93.1250	10,243,750	11,000,000	10,916,466		7,922			6.500	6.625	MS	200,597	715,000	09/08/2016	09/20/2026
60447K-AA-8	MINSUR SA-SENIOR UNSECURED NOTE	D	1		2FE	6,210,000	102.1000	6,126,000	6,000,000	6,202,349		(7,651)			6.250	5.481	FA	150,000		10/04/2018	02/07/2024
606822-AV-6	Mitsubishi UFJ Financial-SENIOR UNSECURE	D			1FE	13,795,472	99.4614	13,825,135	13,900,000	13,799,155		3,683			3.961	4.056	MS	181,997	275,289	07/17/2018	03/02/2028
606822-BB-9	Mitsubishi UFJ Financial-SENIOR UNSECURE	D			1FE	20,000,000	99.8051	19,961,020	20,000,000	20,000,000					4.286	4.286	JJ	369,072		07/17/2018	07/26/2038
60682V-AB-6	MITSUBISHI UFJ TR & BANK-SR UNSECURED	D			1FE	801,770	99.4299	795,439	800,000	800,367		(472)			2.450	2.389	AO	4,083	19,600	12/09/2015	10/16/2019
60682V-AD-2	MITSUBISHI UFJ TRUST & B-SENIOR UNSECURE	D			1FE	4,042,139	98.9043	3,956,172	4,000,000	4,005,073		(13,531)			2.650	2.292	AO	21,200	106,000	09/26/2017	10/19/2020
625454-AA-1	MULTIBANK INC-SENIOR UNSECURED	D			2FE	599,736	97.0772	582,463	600,000	599,762		49			4.375	4.385	MM	3,792	26,250	11/06/2017	11/09/2022
62854A-AM-6	MYLAN NV-SENIOR UNSECURED	D	1		2FE	99,896	97.7964	97,796	100,000	99,940		23			3.150	3.175	JD	140	3,150	01/31/2017	06/15/2021
62854A-AN-4	MYLAN NV-SENIOR UNSECURED	D	1		2FE	6,745,303	91.1413	6,193,051	6,795,000	6,754,110		4,601			3.950	4.044	JD	11,929	268,403	01/31/2017	06/15/2026
62854A-AP-9	MYLAN NV-SENIOR UNSECURED	D	1		2FE	753,699	84.2648	589,854	700,000</												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
65120F-AB-0	NEWCREST FINANCE PTY LTD-SENIOR UNSECURE	D	1	5	2FE	203,427	98.8446	197,689	200,000	203,273	(69)				5.750	5.621	MN	1,469	11,500	10/20/2016	11/15/2041
65120F-AC-8	NEWCREST FINANCE PTY LTD-SENIOR UNSECURE	D	1		2FE	256,119	100.5335	246,307	245,000	245,000	(2,056)				4.200	3.217	AO	2,573	9,660	07/27/2018	10/01/2022
65504L-AJ-6	NOBLE HOLDING INTL LTD-SENIOR UNSECURED	D	1		4FE	1,352,221	84.0000	1,079,400	1,285,000	1,310,697	(7,497)				3.950	3.286	MS	14,945	50,758	01/01/2013	03/15/2022
65540J-AB-6	NongHyup Bank-SENIOR UNSECURED NOTE	D			1FE	5,989,140	99.7726	5,986,356	6,000,000	5,998,144	2,247				2.750	2.789	MS	42,167	165,000	09/22/2014	09/29/2019
65540J-AB-4	NONGHYUP BANK-SENIOR UNSECURED	D			1FE	696,878	95.9845	671,892	700,000	698,270	616				1.875	1.969	MS	9,974	13,125	09/07/2016	09/12/2021
65557F-AA-4	Nordea Bank AB-UNSECURED NOTE	D			1FE	19,309,860	101.7089	18,307,602	18,000,000	18,413,237	(164,032)				4.875	3.849	MN	117,000	877,500	01/01/2013	05/13/2021
656631-AD-2	Statoil ASA-SR UNSECURED	D	1		1FE	480,753	119.2437	417,353	350,000	439,732					7.150	2.994	MN	3,198	25,025	04/27/2015	11/15/2025
656631-AG-5	STATOIL ASA-SENIOR UNSECURED	D	1		1FE	624,521	121.0972	569,157	470,000	596,645	(11,832)				6.800	3.324	JJ	14,737	31,960	08/02/2016	01/15/2028
656631-AJ-9	Statoil ASA-SENIOR UNSECURED NOTE	D	1		1FE	272,377	125.4950	250,990	200,000	249,206	(3,885)				7.150	4.131	JJ	6,594	14,300	04/25/2012	01/15/2029
656631-AM-2	Statoil ASA-SR UNSECURED	D	1		1FE	279,544	123.7809	247,562	200,000	259,233	(5,766)				7.250	3.314	MS	3,947	14,500	04/27/2015	09/23/2027
66989G-AA-8	NOVARTIS SECS INVEST LTD-SR UNSECURED	D	1		1FE	274,973	100.2010	250,503	250,000	250,883	(8,111)				5.125	1.829	FA	5,018	12,813	12/15/2015	02/10/2019
66989P-AC-4	NOVATEK FIN LTD LN PARTN NT	D			2FE	2,207,500	98.0160	2,450,400	2,500,000	2,347,950	33,020				4.422	6.180	JD	5,528	110,550	03/28/2014	12/13/2022
67091T-AA-3	OFFICE CHERIFIEN DES PHO-SENIOR UNSECURE	D			2FE	11,212,870	102.2500	11,247,500	11,000,000	11,181,813	(21,442)				5.625	5.358	AO	113,438	618,750	12/12/2014	04/25/2044
67091T-AB-1	OFFICE CHERIFIEN DES PHO-SR UNSECURED	D			2FE	18,620,000	103.8000	17,646,000	17,000,000	18,527,586	(24,734)				6.875	6.168	AO	214,271	1,168,750	02/26/2015	04/25/2044
675757-AA-6	Odebrecht Drilling Norbe-1ST LIEN	D	1,5		6FE	1,443,737	58.7760	3,001,354	5,106,428	1,470,327	22,364				6.350	6.350	JD	(475,627)		12/03/2015	06/30/2021
675757-AB-4	Odebrecht Drilling Norbe-FIRST LIEN	D	1		4FE	557,412	96.0500	1,045,450	1,088,444	1,059,879	559,188				6.350	178.492	MJSD	320,835	6,691	01/17/2018	12/01/2021
675757-AC-2	OEBRECHT DRILLING NORBE VIII SR SECD NT	D	1		6*	105,660	56.1250	135,083	240,683	111,139	5,479				7.350	21.739	JD	11,205	2,366	09/01/2018	12/01/2026
675758-AH-9	OEBRECHT FINANCE LTD GTD NT	D	1,5		6FE	163,000	15.4486	30,897	200,000	30,897	(147,871)	5,011			5.125	8.722	JD	5,267	10,250	06/30/2015	06/26/2022
675758-AJ-5	OEBRECHT FINANCE LTD-GTD NT REGS	D	1,5		6FE	421,875	14.0000	56,000	400,000	56,000	(364,379)	(374)			7.125	6.686	JD	396	35,542	06/26/2014	06/26/2042
675758-AJ-5	OEBRECHT FINANCE LTD-GTD NT REGS	D	1,5		6FE	480,600	14.0000	140,000	1,000,000	140,000	(345,737)	1,887			7.125	15.100	JD	8,115	64,208	05/19/2016	06/26/2042
67576G-AC-1	Odebrecht Offshore Drill-FIRST LIEN	D	1		5FE	448,115	92.8750	431,282	464,368	452,244	7,022				6.720	8.425	MJSD	37,170		12/22/2017	12/01/2022
67576G-AD-9	Odebrecht Offshore Drill-ODBRCHT OFFSHRE	D	1		5G1	367,983	26.0010	408,014	1,569,225	389,927	21,944				7.720	37.938	MJSD	131,240		12/22/2017	12/01/2026
67576J-AB-7	OOGCOR O PERP	D	2		6*	800	1.0300	416	40,383	416	(406)				0.000	2.649	N/A			12/22/2017	01/01/9999
67576J-AB-7	OOGCOR O PERP	D	2		6*	4,342	1.0300	2,258	219,205	2,258	(2,202)	118			0.000	2.631	N/A			12/22/2017	01/01/9999
685218-AB-5	Orange SA-SR UNSECURED	D	1		2FE	3,124,538	106.9311	2,806,941	2,625,000	3,089,924	(10,497)				5.500	4.322	FA	58,151	144,375	08/02/2016	02/06/2044
68620Y-AA-3	Origin Energy Finance Lt Senior Note Ser	D			2Z	34,950,000	100.0796	34,977,820	34,950,000	34,950,000					4.400	4.398	JD	51,260	1,537,800	12/19/2013	12/19/2020
68715F-AA-7	Orora Delaware General P Gtd Senior Note	D			5G1	29,200,000	94.7649	27,671,351	29,200,000	29,200,000					3.260	3.259	JJ	436,237	951,920	07/16/2015	07/16/2023
69033C-AC-3	OVERSEA-CHINESE BANKING-SUBORDINATED	D			1FE	12,771,640	100.5309	12,566,363	12,500,000	12,689,153	(34,058)				4.250	3.935	JD	283,333	382,500	11/14/2015	06/19/2024
69033D-AC-1	OVERSEA-CHINESE BANKING-SUBORDINATED	D			1FE	1,124,378	100.5309	1,116,898	1,111,000	1,120,748	(1,836)				4.250	4.068	JD	1,574	44,701	10/16/2018	06/19/2024
69353U-AA-9	PPL WEM LTD/WESTERN PWR-SENIOR UNSECURED	D	1		2FE	10,246,291	103.2566	9,654,488	9,350,000	9,555,181	(110,576)				5.375	4.050	MN	83,760	502,563	06/05/2012	05/01/2021
69369E-AD-1	PERTAMINA PERSERO PT-SENIOR UNSECURED NO	D			2FE	20,037,500	99.5172	19,903,440	20,000,000	20,048,898	1,275				6.000	5.978	MN	193,333	895,000	07/24/2018	05/03/2042
69370P-AC-5	Pertamina Persero PT-SENIOR UNSECURED	D			2FE	15,689,760	105.0110	16,801,760	16,000,000	15,688,478	(1,282)				6.500	6.650	MN	158,000		10/31/2018	11/07/2048
697660-AA-6	PAMPA ENERGIA SA-SENIOR UNSECURED	D	1		4FE	14,752,500	83.7700	11,979,110	14,300,000	14,677,389	(49,050)				7.500	6.955	JJ	655,229	1,072,500	07/07/2017	01/24/2027
706451-BR-1	PETROLEOS MEXICANOS-NOTE	D	1		2FE	94,622	85.5000	81,225	95,000	94,670	2				6.625	6.650	JD	280	8,294	05/19/2011	06/15/2038
714264-AA-6	Pernod Ricard SA-BOND	D			2FE	17,656,575	104.8090	16,192,998	15,450,000	16,221,944	(322,763)				5.750	3.436	AO	207,288	888,375	07/02/2015	04/07/2021
714264-AD-0	Pernod Ricard SA-SR UNSECURED	D	1		2FE	15,360,884	101.9953	15,707,276	15,400,000	15,385,766	4,165				4.450	4.482	JJ	315,999	685,300	10/20/2011	01/15/2022
714264-AH-1	Pernod Ricard SA-SENIOR UNSECURED NOTE	D	1		2FE	6,509,298	101.4437	6,416,312	6,325,000	6,413,867	(23,095)				4.250	3.821	JJ	123,952	268,813	07/02/2015	07/15/2022
714264-AK-4	Pernod Ricard SA-SENIOR UNSECURED NOTE	D	1		2FE	72,675,432	109.1297	71,599,996	65,610,000	72,363,727	(133,799)				5.500	4.752	JJ	1,663,943	2,997,989	07/23/2018	01/15/2042
714264-AM-0	PERNOD RICARD SA-SENIOR UNSECURED	D			2FE	689,060	96.2016	698,424	726,000	698,981	921				3.250	4.028	JD	1,507	3,671	10/04/2018	06/08/2026
714295-AA-0	PERRIGO FINANCE PLC-SR UNSECURED	D	1		2FE	2,398,601	82.7242	2,057,351	2,487,000	2,401,689	1,227				4.900	5.138	JD	5,416	114,214	10/04/2018	12/15/2044
714295-AC-6	PERRIGO FINANCE PLC-SENIOR UNSECURED NOT	D	1		2FE	12,467,291	92.5378	11,585,733	12,520,000	12,486,186	4,916				3.900	3.951	JD	21,701	488,280	11/24/2014	12/15/2024
715457-AB-3	PERU ENHANCED PASS-THRU	D	2		2FE	7,043,000	87.2500	6,980,000	8,000,000	7,080,175	37,175				0.000	4.886	N/A			11/21/2018	06/02/2025
715604-AA-2	Peru LNG Srl-SENIOR UNSECURED	D	1		2FE	1,100,000	96.7550	1,064,305	1,100,000	1,100,000					5.375	5.375	MS	16,259	29,563	03/15/2018	03/22/2030
71568P-AB-5	PERUSAHAAN LISTRIK NEGAR-SENIOR UNSECURE	D			2FE	18,453,275	90.3400	18,519,700	20,500,000	18,589,959	35,142				5.250	5.986	AO	200,302	1,076,250	01/27/2015	10/24/2042
71638Y-AA-4	Petkim Petrokimya Holdin-SENIOR UNSECURE	D	2		4FE	12,704,920	90.7468	11,591,089	12,773,000	12,715,449	10,530				5.875	6.000	JJ	323,095	375,207	01/19/2018	01/26/2023
716420-AB-3	PETRA DIAMONDS US TREAS-2ND LIEN	D	1		4FE	306,000	92.5000	277,500	300,000	304,375	(1,625)				7.250	6.000	MN	3,625	21,750	01/11/2018	05/01/2022
716420-AB-3	PETRA DIAMONDS US TREAS-2ND LIEN	D	1		4FE	2,433,854	92.5000	2,266,250	2,450,000	2,437,681	3,067				7.250	7.419	MN	29,604	173,396	09/22/2017	05/01/2022
71645W-AQ-4	PETROBRAS GLOBAL FINANCE-SENIOR UNSECURE	D																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
716540-AU-6	PETROLEOS MEXICANOS-NOTE	D	1		2FE	443,807	101.1000	399,345	395,000	400,220	(15,115)				8.000	4.010	MN	5,091	31,600	06/23/2016	05/03/2019
716540-AX-0	PETROLEOS MEXICANOS-BOND	D	1		2FE	252,783	99.5970	239,033	240,000	245,470	(1,491)				5.500	4.324	JJ	5,867	8,907	10/04/2018	01/21/2021
716540-AZ-5	PETROLEOS MEXICANOS-SR UNSECURED	D	1		2FE	1,527,692	82.8000	1,136,844	1,373,000	1,516,017	(3,376)				6.500	5.665	JD	7,189	80,366	10/04/2018	06/02/2041
716540-BB-7	PETROLEOS MEXICANOS-SR UNSECURED NOT	D	1		2FE	1,581,528	97.3500	1,600,434	1,644,000	1,608,972	10,182				4.875	5.641	JJ	34,952	72,576	02/26/2016	01/24/2022
716540-BE-1	PETROLEOS MEXICANOS-SENIOR UNSECURED NOT	D	1		2FE	2,185,149	75.8180	1,645,251	2,170,000	2,183,915	(491)				5.500	5.450	JD	1,326	115,057	10/04/2018	06/27/2044
716540-BG-6	PETROLEOS MEXICANOS-SENIOR UNSECURED NOT	D	1		2FE	1,998,100	90.5000	2,081,500	2,300,000	2,107,434	40,672				3.500	5.834	JJ	33,765	80,500	02/26/2016	01/30/2023
716540-BR-2	PETROLEOS MEXICANOS-SR UNSECURED	D	1		2FE	9,403,440	80.5000	7,304,570	9,074,000	9,373,928	(8,408)				6.375	6.103	JJ	253,883	451,969	10/16/2018	01/23/2045
716540-BX-9	PETROLEOS MEXICANOS-SENIOR UNSECURED	D	1		2FE	374,767	75.6890	305,027	403,000	374,663	23				5.625	6.142	JJ	9,949	13,814	10/04/2018	01/23/2046
716540-CA-8	Petroleos Mexicanos-SENIOR UNSECURED	D	1		2FE	393,375	101.1000	379,125	375,000	390,537	(2,838)				6.375	4.281	FA	9,762		08/03/2018	02/04/2021
716540-CB-6	PETROLEOS MEXICANOS-SENIOR UNSECURED	D	1		2FE	2,174,699	97.2000	2,001,348	2,059,000	2,170,687	(4,012)				6.875	5.973	FA	57,802		10/16/2018	08/04/2026
716540-CC-4	PETROLEOS MEXICANOS-SENIOR UNSECURED	D	1		2FE	11,301,144	82.6890	9,666,344	11,690,000	11,302,675	1,531				6.750	7.018	MS	219,188	350,150	10/04/2018	09/21/2047
716540-CE-0	Petroleos Mexicanos-SENIOR UNSECURED	D	1		2FE	14,934	97.9500	14,693	15,000	14,944	11				5.375	5.500	MS	242	369	03/28/2018	03/13/2022
716540-CG-5	Petroleos Mexicanos-SENIOR UNSECURED	D	1		2FE	1,015,590	94.0000	940,000	1,000,000	1,015,224	(966)				6.500	6.258	MS	19,500		10/04/2018	03/13/2027
716540-CJ-9	Petroleos Mexicanos-SENIOR UNSECURED	D	1,5		2FE	1,106,104	80.0000	976,800	1,221,000	1,106,427	324				6.350	7.117	FA	29,937		10/04/2018	02/12/2048
73180Y-AB-0	POLYUS GOLD INTL LTD-SENIOR UNSECURED	D	1		3FE	14,500,000	96.7980	14,035,710	14,500,000	14,500,000					4.699	4.700	MS	176,017	681,428	10/19/2016	03/28/2022
74348B-AA-9	Promerica Financial Corp-SECURED	D	1		4FE	987,540	103.0000	1,030,000	1,000,000	987,538	(2)				9.700	10.000	MN	12,664		11/08/2018	05/14/2024
74735K-2A-9	COREDOO INTL FINANCE-SR UNSECURED 144A	D	1		1FE	4,767,500	96.5000	4,825,000	5,000,000	4,772,808		5,308			3.250	4.464	FA	58,881		11/20/2018	02/21/2023
74735P-AB-7	GGOG CONSTELLATION S A SR NT	D	1		6FE	8,759	43.0000	8,056	18,736	8,056	(842)				9.500	33.159	MN	396		11/09/2018	11/09/2024
74735P-AB-7	GGOG CONSTELLATION S A SR NT	D	1		6FE	3,246,089	43.0000	3,222,533	7,494,263	3,222,533	(431,888)		310,261		9.500	29.903	MN	297,503	690,762	05/09/2018	11/09/2024
74736B-AA-2	QSPDF LP Senior Secured	D	1		1FE	29,850,000	100.0800	29,873,880	29,850,000	29,850,000					4.740	4.737	JJ	620,980	1,414,890	01/23/2014	01/23/2019
74947L-AA-2	REC Ltd-SENIOR UNSECURED	D	1		2FE	9,943,700	100.2738	10,027,380	10,000,000	9,944,336	636				5.250	5.380	MN	70,000		10/31/2018	11/13/2023
75405T-AA-7	RAS LAFFAN LNG II-SECURED BOND	D	1		1FE	4,004,386	101.0100	3,575,053	3,539,306	3,542,924	(138,998)				5.298	1.715	MS	47,399	164,931	02/18/2015	09/30/2020
75405U-AA-4	RAS LAFFAN LNG 3-SECURED NOTE	D	1		1FE	14,754,985	108.2700	14,080,514	13,005,000	14,135,130					5.838	4.181	MS	337,867	751,943	07/24/2018	09/30/2027
756250-AD-1	Reckitt Benckiser Treasu-SENIOR UNSECURE	D	2		1FE	18,927,800	94.5117	18,902,340	20,000,000	19,004,068		76,268			2.750	3.763	JD	7,639	275,000	07/10/2018	06/26/2024
756250-AE-9	Reckitt Benckiser Treasu-SENIOR UNSECURE	D	2		1FE	25,835,512	92.9206	25,623,785	27,576,000	25,912,627		77,115			3.000	3.840	JD	11,490	413,640	07/12/2018	06/26/2027
75735K-AA-7	Rede D'or Finance Sarl-SENIOR UNSECURED	D	1		3FE	600,000	88.1250	528,750	600,000	600,000					4.950	4.950	JJ	13,530	14,850	01/11/2018	01/17/2028
758470-AQ-0	RELIANCE INDUSTRIES LTD-SR UNSECURED 144	D	1		2FE	5,125,000	97.7091	4,885,455	5,000,000	5,090,747		(13,071)			4.125	3.787	JJ	87,656	206,250	04/11/2016	01/28/2025
76706A-AA-2	Rio Energy SA / UGEN SA -SECURED	D	1		4FE	1,454,121	74.0000	1,110,000	1,500,000	1,456,617	2,496				6.875	7.444	FA	42,969	364,673	07/27/2018	02/01/2025
767201-AD-8	RIO TINTO FIN USA LTD-SENIOR UNSECURED N	D	1		1FE	16,983,431	124.6364	17,766,917	14,255,000	16,166,896	(152,558)				7.125	5.303	JJ	468,336	1,015,669	07/02/2015	07/15/2028
767201-AL-0	RIO TINTO FIN USA LTD-SR UNSECURED	D	1		1FE	26,849,193	110.2148	25,905,979	23,505,000	26,797,020	(53,165)				5.200	4.210	MN	200,315	824,204	06/12/2018	11/02/2040
767201-AS-5	RIO TINTO FIN USA LTD-SR UNSECURED	D	1		1FE	227,988	100.1616	250,404	250,000	233,941		2,066			3.750	4.923	JD	417	9,375	12/15/2015	06/15/2025
76720A-AD-8	RIO TINTO FIN USA PLC-SR UNSECURED	D	1		1FE	148,154	103.8904	166,225	160,000	148,848		240			4.750	5.273	MS	2,090	199,619	12/09/2015	03/22/2042
76720A-AD-8	RIO TINTO FIN USA PLC-SR UNSECURED	D	1		1FE	15,870,598	103.8904	15,271,891	14,700,000	15,855,022	(15,576)				4.750	4.209	MS	192,019	349,125	06/28/2018	03/22/2042
76720A-AG-1	RIO TINTO FIN USA PLC-SR UNSECURED	D	1		1FE	4,736,901	96.3905	4,539,995	4,710,000	4,736,549					4.125	4.067	FA	70,159	241,782	07/06/2018	08/21/2042
76720A-AG-1	RIO TINTO FIN USA PLC-SR UNSECURED	D	1		1FE	6,939,227	96.3905	7,039,401	7,303,000	6,951,024	4,105				4.125	4.447	FA	108,784	94,999	12/20/2018	08/21/2042
775371-AG-2	ROHM & HAAS HOLDINGS LTD-DEBENTURE	D	1		2FE	900,000	103.7243	933,518	900,000	900,000					9.800	9.795	AO	18,620	75,787	04/09/1990	04/15/2020
77819R-AA-7	ROSNEFT(ROSNEFT INT FIN)-SENIOR UNSECURE	D	1		3FE	11,127,000	97.0696	11,648,352	12,000,000	11,505,911		337,694			4.199	5.627	MS	160,962	503,880	05/05/2016	03/06/2022
77879R-AB-2	ROTOR Engines Securitization - Senior Se	D	2		1FE	25,720,325	100.4704	26,640,529	26,515,799	25,802,058		118,980			5.750	6.534	MON	1,862,010	127,055	03/28/2018	06/15/2046
78386F-AC-0	SACI Falabella-SENIOR UNSECURED	D	1		2FE	4,875,000	97.5230	4,876,151	5,000,000	4,876,151		1,724			4.375	4.848	JJ	93,576		11/21/2018	01/27/2025
78386F-AD-8	SACI Falabella-SENIOR UNSECURED	D	1		2FE	10,395,500	90.1570	10,388,055	11,500,000	10,407,268		11,768			3.750	5.099	AO	73,073		11/16/2018	10/30/2027
78406J-AB-0	SB CAP SA LN PARTN NT	D	5		3FE	10,493,750	102.5200	10,508,300	10,250,000	10,380,726		(37,768)			6.125	5.668	FA	251,125	627,813	10/21/2015	02/07/2022
78406J-AE-4	SB CAP SA LN PARTN NTE	D	2		3FE	12,122,100	100.0000	12,700,000	12,700,000	12,226,278		3,832			5.500	6.348	FA	203,342	682,077	10/25/2016	02/26/2024
78406J-AE-4	SB CAP SA LN PARTN NTE	D	2		3FE	4,196,925	100.0000	4,140,000	4,140,000	4,147,092					5.500	4.322	FA	66,287	227,700	07/13/2017	02/26/2024
78467K-B*-7	SSE PLC Senior Note Ser	D	1		1	68,250,000	99.6889	68,037,674	68,250,000	68,250,000		(34,080)			4.010	4.010	AO	570,172	2,736,825	04/16/2012	04/16/2024
78520L-AB-6	SABIC Capital II BV-SENIOR UNSECURED	D	1		1FE	12,180,589	99.4400	12,280,840	12,350,000	12,181,977		1,388			4.500	4.674	AO	125,044	92,500	11/15/2018	10/10/2028
786584-AF-9	Safran Senior Note Ser	D	1		1	67,300,000	103.0755	69,369,812	67,300,000	67,300,000					4.430	4.429	FA	1,175,993	2,981,390	02/09/2012	02/09/2024
79586K-AC-5	SAMARCO MINERACAO SA NT	D	1		6FE	105,750	78.5000	235,500	300,000	143,611		15,595			5.750	24.920	AO	451,710	107,493	12/21/2015	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest			Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
80413M-AB-0	SAUDI ELEC GLOBAL SUKUK-UNSECURED CTF 14	D			1FE	11,757,453	100.8308	11,192,219	11,100,000	11,710,332		(11,697)			5.500	5.109	AO	173,754	610,500	10/20/2016	04/08/2044
806854-AH-8	Schlumberger Investment -SR UNSECURED	D	1		1FE	12,541,566	100.4763	12,097,347	12,040,000	12,338,419		(58,569)			3.650	3.076	JD	36,622	439,460	12/15/2015	12/01/2023
80687P-AA-4	Schneider Electric SE-SR UNSECURED N	D	1,5		1FE	23,611,652	98.2575	23,385,285	23,800,000	23,701,614		24,257			2.950	3.067	MS	183,326	702,100	07/02/2015	09/27/2022
81663N-AA-5	SEMI CONDUCTOR MANUFACTUR-SR UNSECURE	D	5		2FE	616,002	100.0910	600,546	600,000	605,170		(6,599)			4.125	2.975	AO	5,775	24,750	05/02/2017	10/07/2019
81722B-AA-3	Senior plc Senior Unsecured Notes	C			2Z	27,500,000	94.8120	26,073,300	27,500,000	27,500,000					4.180	4.180	MS	348,043	3,268	09/12/2018	09/12/2028
81733L-AA-5	SEPLAT Petroleum Develop-SR UNSECURE	D	1		4FE	594,078	99.0000	594,000	600,000	594,694		616			9.250	9.500	AO	13,875	29,292	03/12/2018	04/01/2023
822582-AD-4	SHELL INTERNATIONAL FIN-SENIOR NOTE	D	1		1FE	40,075,320	126.3369	46,523,563	36,825,000	39,584,488		(74,612)			6.375	5.734	JD	104,338	2,347,594	10/30/2017	12/15/2038
822582-AJ-1	SHELL INTERNATIONAL FIN-NOTE	D	1		1FE	4,236,266	100.9249	4,289,308	4,250,000	4,248,578		1,623			4.300	4.340	MS	50,256	182,750	01/29/2010	09/22/2019
822582-AN-2	SHELL INTERNATIONAL FIN-SENIOR UNSECURED	D	1		1FE	7,781,950	115.4738	7,009,257	6,070,000	7,539,889		(44,278)			5.500	3.823	MS	89,027	333,850	12/02/2013	03/25/2040
822582-AT-9	SHELL INTERNATIONAL FIN-SR UNSECURED	D	1		1FE	57,971	90.6491	54,389	60,000	58,029		50			3.625	3.837	FA	785	2,175	10/30/2017	08/21/2042
822582-BF-8	SHELL INTERNATIONAL FINA-SENIOR UNSECURE	D	1		1FE	332,998	102.5396	312,746	305,000	332,307		(592)			4.375	3.832	MS	1,853	13,344	10/30/2017	05/11/2045
822582-BO-4	SHELL INTERNATIONAL FINA-SENIOR UNSECURE	D	1		1FE	511,854	96.5663	482,832	500,000	511,566		(235)			4.000	3.862	MS	2,833	20,000	10/30/2017	05/10/2046
822582-BY-7	SHELL INTERNATIONAL FINA-SENIOR UNSECURE	D	1		1FE	123,639	92.6604	115,826	125,000	123,689		27			3.750	3.812	MS	1,419	4,688	10/30/2017	09/12/2046
82460C-AJ-3	SHINHAN BANK GLOBAL MTN TRANCHE 000009	D	1		2FE	10,471,685	96.5300	10,135,650	10,500,000	10,478,131		2,485			3.875	3.970	MS	109,630	406,875	04/28/2016	03/24/2026
82481L-AA-7	SHIRE ACQUISITIONS INVES-SENIOR UNSECURE	D	1		2FE	499,110	98.5986	492,993	500,000	499,664		446			1.900	1.992	MS	2,586	9,500	09/27/2017	09/23/2019
82481L-AB-5	SHIRE ACQUISITIONS INVES-SENIOR UNSECURE	D	1		2FE	2,487,625	96.6984	2,417,460	2,500,000	2,491,370		3,002			2.400	2.531	MS	16,333	60,000	09/21/2017	09/23/2021
82481L-AD-1	SHIRE ACQUISITIONS INVS-SENIOR UNSECURE	D	1		2FE	2,078,668	90.4922	1,922,959	2,125,000	2,083,728		4,429			3.200	3.488	MS	18,511	67,427	08/01/2018	09/23/2026
82571A-AB-0	SIAM COML BK PUB CO LTD TRANCHE TR 2	D	1		2FE	13,161,880	100.0075	13,000,975	13,000,000	13,009,314		(35,924)			3.500	3.215	AO	106,167	455,000	07/30/2014	04/07/2019
826200-AD-9	SIEMENS FINANCIERINGSMAT-NOTE	D	1		1FE	975,407	114.5705	836,365	730,000	921,582		(22,685)			6.125	2.347	FA	16,643	44,713	08/02/2016	08/17/2026
82620K-AM-5	Siemens Financieringsmaa-SENIOR UNSECURE	D	1		1FE	2,774,597	84.3181	2,752,986	3,265,000	2,775,103		506			3.300	4.224	MS	31,725		12/19/2018	09/15/2046
82620K-AT-0	SIEMENS FINANCIERINGSMAT-SENIOR UNSECURE	D	1		1FE	101,979,906	98.6330	99,777,143	101,160,000	101,965,492		(14,050)			4.200	4.151	MS	1,239,210	4,338,861	12/19/2018	03/16/2047
83051G-AC-2	SKANDINAVISKA ENSKILDA-SR UNSECURED	D	1		1FE	766,384	99.8156	758,599	760,000	760,459		(1,990)			2.375	2.108	MS	4,813	18,050	12/09/2015	03/25/2019
833636-AE-3	SOCIEDAD QUIMICA Y MINER-SENIOR UNSECURE	D	1		2FE	1,298,375	96.0068	1,248,088	1,300,000	1,298,734		259			3.625	3.649	AO	47,125		07/26/2017	04/03/2023
83367T-BJ-7	SOCIETE GENERALE-SUBORDINATED	D	1		2FE	200,606	95.7145	191,429	200,000	200,457		(64)			4.250	4.207	AO	1,818	8,500	08/02/2016	04/14/2025
83367T-BR-9	SOCIETE GENERALE-SUBORDINATED	D	1		2FE	521,782	98.7820	498,849	505,000	518,055		(1,596)			4.750	4.312	MS	2,465	23,888	08/02/2016	11/24/2025
84302L-AA-0	SOUTHERN GAS CORRIDOR-SENIOR UNSECURED	D	1		3FE	10,100,380	108.0040	10,152,376	9,400,000	9,988,428		(63,994)			6.875	5.801	MS	174,128	553,629	03/24/2017	03/24/2026
846502-AC-6	SPARC EM SPC SR SEC2 NT SER 2017-1	D	2		2FE	920,021	90.6260	928,138	1,024,141	931,726		26,088			0.000	5.220	N/A			07/06/2018	12/05/2022
85255A-A*-1	Stagecoach Group PLC Senior Note	D	1		2	21,650,000	99.2629	21,490,418	21,650,000	21,650,000					4.360	4.360	AO	191,410	943,940	10/18/2012	10/18/2022
85628U-AE-6	STATE BANK INDIA/LONDON-SENIOR UNSECURED	D	1		2FE	5,215,268	100.0218	5,201,134	5,200,000	5,200,946		(3,418)			3.622	3.554	AO	38,715	188,344	07/17/2014	04/17/2019
856899-AC-3	STATE GRID OVERSEAS INV-SENIOR UNSECURED	D	1		1FE	2,130,720	101.3961	2,027,922	2,000,000	2,123,071		(2,947)			4.375	3.979	MS	9,479	87,500	04/26/2016	05/22/2043
857004-AD-7	STATE GRID OVERSEAS INV-SENIOR UNSECURED	D	1		1FE	6,951,400	108.4004	6,504,024	6,000,000	6,892,534		(20,298)			4.850	3.919	MS	43,650	291,000	05/10/2016	05/07/2044
85771P-AC-6	Statoil ASA-SENIOR UNSECURED NOTE	D	1		1FE	8,528,325	110.0780	9,136,476	8,300,000	8,514,117		(6,356)			5.100	4.895	FA	157,562	423,300	08/02/2016	08/17/2040
85771P-AE-2	Statoil ASA-SR UNSECURED	D	1		1FE	115,456	99.2029	108,131	109,000	115,076		(1,633)			4.250	3.880	MS	489	4,633	08/02/2016	11/23/2041
85771P-AF-9	STATOIL ASA-SENIOR UNSECURED	D	1		1FE	196,044	99.7337	184,507	185,000	191,324		(1,985)			3.150	1.993	JJ	2,558	5,828	08/02/2016	01/23/2022
85771P-AG-7	Statoil ASA-SR UNSECURED	D	1		1FE	2,006,017	97.1621	1,948,100	2,005,000	2,006,300		(311)			2.450	2.433	JJ	22,378	49,123	08/02/2016	01/17/2023
85771P-AL-6	Statoil ASA-SENIOR UNSECURED BOND	D	1		1FE	2,292,585	95.4318	2,223,561	2,330,000	2,294,767		516			3.950	4.046	MS	11,760	80,011	10/04/2018	05/15/2043
85771P-AQ-5	Statoil ASA-SR UNSECURED	D	1		1FE	1,310,330	107.6214	1,210,741	1,125,000	1,296,659		(3,930)			4.800	3.841	MS	7,950	50,253	10/04/2018	11/08/2043
85771P-AX-0	Statoil ASA-SR UNSECURED	D	1		1FE	221,818	99.5814	212,108	213,000	218,683		(883)			3.250	2.753	MS	981	6,923	05/11/2015	11/10/2024
85805R-AB-4	SEVERSTAL (STEEL CAP)-SENIOR UNSECURED	D	1		2FE	7,420,500	102.3714	7,165,998	7,000,000	7,289,158		(57,502)			5.900	4.696	AO	84,894	378,256	07/16/2018	10/17/2022
86400G-AB-5	STUDIO CITY CO LTD-SECURED	D	1		3FE	900,000	101.8350	916,515	900,000	900,000					7.250	7.250	MS	5,619	65,250	11/22/2016	11/30/2021
86425Q-AA-6	SUAM FINANCE BV-SENIOR UNSECURED 144A	D	1		2FE	400,150	99.0010	396,004	400,123	400,123		(27)			4.875	4.867	AO	4,008	9,750	10/03/2018	04/17/2024
865622-AW-4	SUMITOMO MITSUI BANKING-SR UNSECURED	D	1		1FE	300,479	98.8673	296,602	300,000	300,270		(72)			3.200	3.173	JJ	4,347	9,600	12/15/2015	07/18/2022
865622-BE-3	SUMITOMO MITSUI BANKING-SR UNSECURED	D	1		1FE	156,671	101.6915	152,537	150,000	154,202		(844)			3.950	3.282	JJ	2,666	5,925	12/15/2015	07/19/2023
865622-BG-8	SUMITOMO MITSUI BANKING-SR UNSECURED	D	1		1FE	150,555	99.9861	149,979	150,000	150,004		(186)			2.450	2.323	JJ	1,746	3,675	12/15/2015	01/10/2019
865622-BM-5	SUMITOMO MITSUI BANKING-SR UNSECURED	D	1		1FE	99,597	99.5159	99,516	100,000	99,938		115			2.250	2.369	JJ	1,063	2,250	12/15/2015	07/11/2019
865622-BR-4	SUMITOMO MITSUI BANKING-SR UNSECURED	D	1		1FE	249,279	99.2042	248,010	250,000	249,807		179			2.450	2.525	JJ	2,807	6,125	12/15/2015	01/16/2020
865622-BW-3	SUMITOMO MITSUI BANKING-SR UNSECURED	D	1		1FE	254,221	99.4807	248,702	250,000	253,035		(406)			3.650	3.441	JJ	4,005	9,125	12/15/2015	07/23/2025
86562M-AA-8	SUMITOMO MITSUI FINANCIA-SUBORDINATED	D	1		2FE	784,737	100.6571	729,764	725,0												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest			Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
87261P-AD-7	ROSNEFT FINANCE SA-SR UNSECURED	D		5	3FE	6,851,460		102,821.0	6,810,863	6,687,155			(54,970)		7.250	6.320	FA	198,766	468,957	10/16/2015	02/02/2020
874060-AU-0	Takeda Pharmaceutical Co-SENIOR UNSECURE	D		1	2FE	203,786		102,258.0	204,516	200,000			(13)		5.000	4.754	MN	972		12/17/2018	11/26/2028
877409-AB-1	Taylor Wimpey PLC Senior Notes	B		2		30,948,400		100,772.4	32,313,275	32,065,600				(1,596,000)	2.020	2.020	JD	5,393	668,079	06/28/2016	06/28/2023
87936U-AA-7	TELEFONICA CHILE SA SR NT	D		1	2FE	1,864,000		98,389.7	1,967,795	2,000,000			15,672		3.875	4.848	AO	17,007	77,500	02/24/2014	10/12/2022
879385-AD-4	TELEFONICA EUROPE BV-SENIOR UNSECURED	D		1	2FE	821,976		127,262.5	782,664	615,000			(6,734)		8.250	4.715	MS	14,939	24,013	10/04/2018	09/15/2030
87938W-AC-7	TELEFONICA EMISIONES SAU-SENIOR NOTE	D		1	2FE	5,480,613		113,950.1	4,706,140	4,130,000			(44,601)		7.045	4.583	JD	8,890	290,959	08/02/2016	06/20/2036
87938W-AP-8	TELEFONICA EMISIONES SAU-SENIOR NOTE	D		1	2FE	127,248		103,634.9	124,362	120,000			(1,047)		5.462	4.471	FA	2,458	5,939	12/02/2013	02/16/2021
87938W-AU-7	TELEFONICA EMISIONES SAU-SENIOR UNSECURE	D		1	2FE	1,453,462		91,539.8	1,286,134	1,405,000			(946)		5.213	4.987	MS	22,990	55,949	10/04/2018	03/08/2047
87938W-AW-3	Telefonica Emisiones SAU-SENIOR UNSECURE	D		1	2FE	27,975,000		89,251.0	24,967,967	27,975,000					4.895	4.895	MS	437,440	690,147	02/27/2018	03/06/2048
87946F-AA-1	Teleperformance SE Senior Note Ser	D		1	2	25,800,000		98,337.5	25,371,075	25,800,000					3.640	3.639	JD	57,391	939,120	12/09/2014	12/09/2021
87969N-AC-9	Telstra Corp Ltd-NOTE	D		1	1FE	1,205,536		103,898.7	1,220,810	1,175,000			(3,522)		4.800	4.452	AO	12,377	56,400	12/02/2013	10/12/2021
87973P-AB-0	TEMASEK FINANCIAL I LTD-SENIOR UNSECURED	D		5	1FE	2,226,798		123,727.7	2,120,693	2,151,008			(13,793)		5.375	3.624	MN	9,725	92,128	01/01/2013	11/23/2039
87973P-AE-4	Temasek Financial I Ltd-SENIOR UNSECURED	D		1	1FE	1,194,912		102,003.3	1,224,400	1,195,062			150		3.625	3.676	FA	18,125		07/25/2018	06/01/2028
88032W-AB-2	TENCENT HOLDINGS LTD-TENCENT HOLDINGS LT	D		1	1FE	6,631,710		100,106.8	6,406,835	6,400,000			(77,574)		3.375	3.125	MN	35,400	216,000	04/28/2016	05/02/2019
88032W-AC-0	TENCENT HOLDINGS LTD-SR UNSECURED	D		1	1FE	4,356,212		99,591.9	4,267,513	4,285,000			(29,808)		2.875	2.151	FA	47,909	123,194	09/27/2017	02/11/2020
88034Q-AA-5	TENGIZCHEVROIL FIN CO IN-SENIOR UNSECURE	D		2	2FE	14,017,500		92,228.0	13,834,200	15,000,000					4.000	4.990	FA	336,667	351,111	11/20/2018	08/15/2026
88165F-AG-7	TEVA PHARMACEUT FIN BV-SENIOR UNSECURED	D		1	3FE	1,633,547		88,436.0	1,503,412	1,700,000			11,609		2.950	3.764	JD	1,811	50,150	08/10/2017	12/18/2022
88166J-AA-1	TEVA PHARM FIN IV BV-SENIOR UNSECURED NO	D		1	3FE	3,621,968		94,746.3	3,264,009	3,445,000			(19,998)		3.650	3.004	MN	17,814	125,743	01/10/2013	11/10/2021
88167A-AC-5	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D		1	3FE	1,190,441		91,921.2	1,171,995	1,275,000			6,513		2.200	4.763	JJ	12,467	(10,206)	12/18/2018	07/21/2021
88167A-AD-3	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D		1	3FE	2,249,155		86,124.6	2,239,240	2,600,000			48,204		2.800	5.736	JJ	32,356	63,367	04/30/2018	07/21/2023
88167A-AE-1	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D		1	3FE	19,760,335		76,321.5	18,734,639	24,547,000			224,991		3.150	6.207	AO	193,308	578,111	06/29/2018	10/01/2026
88167A-AF-8	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D		1	3FE	36,020,207		66,097.8	23,762,159	35,950,000			(1,392)		4.100	4.088	AO	368,488	1,532,420	07/19/2016	10/01/2046
88322Y-AC-5	Thaioil Treasury Center -SENIOR UNSECURE	D		5	2FE	16,833,740		100,819.3	17,139,281	17,000,000			678		4.625	4.749	MN	89,545		11/15/2018	11/20/2028
88322Y-AD-3	Thaioil Treasury Center -SENIOR UNSECURE	D		5	2FE	17,173,905		100,675.6	17,490,367	17,373,000			(798)		5.375	5.453	MN	106,349		11/15/2018	11/20/2048
88556L-AC-0	THREE GORGES FIN I CAYMA-SENIOR UNSECURE	D		1	1FE	9,980,400		94,521.1	9,452,110	10,000,000			1,781		3.150	3.173	JD	25,375	315,000	05/24/2016	06/02/2026
89152U-AF-9	Total Capital SA-SENIOR UNSECURED NOTE	D		1	1FE	2,832,750		102,112.2	2,552,805	2,500,000			(42,559)		4.125	2.309	JJ	43,828	103,125	01/01/2013	01/28/2021
89153V-AB-5	Total Capital Internatio-SENIOR UNSECURE	D		1	1FE	17,210,641		98,811.2	17,044,932	17,250,000			17,230,909		2.875	2.912	FA	184,599	495,938	12/15/2015	02/17/2022
892330-AC-5	Toyota Industries Corp-SENIOR UNSECURED	D		1	1FE	28,875,792		100,267.6	29,278,139	29,200,000			12,607		3.566	3.703	MS	303,704	520,636	07/16/2018	03/16/2028
892331-AD-1	Toyota Motor Corp-SENIOR UNSECURED	D		1	1FE	35,000,000		101,675.9	35,586,565	35,000,000					3.669	3.669	JJ	574,300		07/10/2018	07/20/2028
89366L-AA-2	TRANSELEC SA-UNSECURED NOTE	D		1	2FE	10,468,987		100,338.0	10,410,068	10,375,000			(11,944)		4.625	4.480	JJ	206,599	479,844	07/02/2015	07/26/2023
89366L-AD-6	TRANSELEC SA-SR UNSECURED	D		1	2FE	1,025,000		96,725.0	967,250	1,000,000			(2,429)		4.250	3.936	JJ	19,715	417,485	01/26/2015	01/14/2025
89366L-AC-5	TRANSELEC SA-SR UNSECURED	D		1	2FE	18,680,850		96,725.0	18,397,095	18,690,200			9,440		4.250	4.581	JJ	374,985		11/27/2018	01/14/2025
893817-AA-4	TRANSOCEAN INC-SENIOR UNSECURED NOTE	D		1	4FE	10,255,063		80,000.0	7,280,000	9,100,000			(72,735)		7.450	6.077	AO	143,123	677,950	06/20/2013	04/15/2027
89382P-AA-3	Transocean Pontus Ltd-FIRST LIEN	D		1,5	4FE	252,450		96,500.0	246,075	255,000			217		6.125	6.390	FA	6,985		07/10/2018	06/01/2025
893830-AT-6	TRANSOCEAN INC-SENIOR UNSECURED NOTE	D		1	4FE	4,398,250		66,500.0	2,926,000	4,400,000			4,398,250		6.800	6.800	MS	88,098	299,200	11/12/2014	03/15/2038
893830-AZ-2	TRANSOCEAN INC-SENIOR UNSECURED NOTE	D		1,5	5FE	6,495,054		83,250.0	4,224,938	5,075,000			(4,316)		9.350	7.085	JD	21,089	473,075	05/03/2012	12/15/2041
89387Y-AC-5	Transportadora de Gas In-SENIOR UNSECURE	D		1	2FE	15,020,000		101,000.0	15,150,000	15,000,000			(331)		5.550	5.532	MN	138,750		11/23/2018	11/01/2028
89388A-AA-0	TRANSPORT DE GAS PERU-SENIOR UNSECURED N	D		1,5	2FE	3,722,500		96,375.0	3,855,000	4,000,000			20,797		4.250	5.027	AO	28,806	170,000	06/11/2014	04/30/2028
89400P-AG-8	Transurban Finance Co PI-SECURED	D		1	2FE	456,421		91,359.3	452,229	495,000			816		3.375	4.494	MS	816		10/04/2018	03/22/2027
89641U-AA-9	TRINITY ACQUISITION PLC-SENIOR UNSECURED	D		1	2FE	13,728,137		102,846.5	14,305,948	13,910,000			16,501		4.625	4.779	FA	243,039	643,338	07/02/2015	08/15/2023
89641U-AB-7	TRINITY ACQUISITION PLC-SENIOR UNSECURED	D		1	2FE	33,199,919		110,908.2	33,701,687	30,387,000			(48,953)		6.125	5.452	FA	703,121	1,749,386	09/07/2018	08/15/2043
89641U-AC-5	TRINITY ACQ PLC SR NT	D		1,5	2FE	24,895		99,371.6	24,843	25,000			9		4.400	4.453	MS	324	1,100	03/17/2016	03/15/2026
89641U-AD-5	TRINITY ACQ PLC SR NT	D		1,5	2FE	7,111,628		99,371.6	6,900,364	6,944,000			(7,079,825)		4.400	4.074	MS	89,963	305,536	01/12/2017	03/15/2026
89675*-AP-2	Triton Container Interna Senior Secured	D		1	2	9,520,000		103,776.1	9,520,000	9,520,000					6.600	6.598	AO	106,465	601,704	04/30/2010	04/30/2022
89675*-AR-8	Triton Container Interna Senior Secured	D		1	2	4,080,000		103,858.7	4,237,435	4,080,000					6.650	6.648	AO	45,974	259,827	06/30/2010	04/30/2022
898324-AB-4	TRUST F/1401-SENIOR UNSECURED 144A	D		1	2FE	678,150		94,500.0	661,500	700,000			287		6.950	7.205	JJ	20,406	48,650	03/05/2014	01/30/2044
899415-AE-3	Tulow Oil PLC-SENIOR UNSECURED	D		1	4FE	1,700,000		92,375.0	1,570,375	1,700,000					7.000	7.001	MS	39,667	52,227	03/16/2018	03/01/2025
900111-AA-3	TURKCELL ILETISIM HIZMETLERI NT	D		1	3FE	295,527		91,114.8	273,344	300,000			296,658		5.750	5.950	AO	3,642	17,250	10/07/2015	10/15/2025
900148-AE-7	TURKIYE GARANTI BANKASI-SUBORDINATED	D		2	4FE	500,000		85,388.0	42												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
902133-AQ-0	TYCO ELECTRONICS GROUP S-SR UNSECURED	D		1	1FE	150,153	99.4169	149,125	150,000	150,023		(44)			2.350	2.320	FA	1,469	3,525	12/15/2015	08/01/2019
90261X-HE-5	UBS AG STAMFORD CT-SR UNSECURED	D			1FE	450,872	99.5947	448,176	450,000	450,149		(245)			2.375	2.319	FA	4,067	10,688	12/15/2015	08/14/2019
90261X-HK-1	UBS AG STAMFORD CT-SR UNSECURED	D			1FE	499,545	99.0081	495,041	500,000	499,857		106			2.350	2.372	MS	3,101	11,750	12/15/2015	03/26/2020
90351D-AB-3	UBS GROUP FUNDING-SR UNSECURED	D			1FE	1,535,095	99.6302	1,489,471	1,495,000	1,525,787		(4,008)			4.125	3.772	MS	16,616	61,669	08/02/2016	09/24/2025
90351D-AF-4	UBS GROUP FUNDING-SR UNSECURED	D			1FE	736,530	99.3560	695,492	700,000	729,109		(3,457)			4.125	3.474	AO	6,096	28,875	10/20/2016	04/15/2026
90352J-AA-1	UBS GROUP FUNDING SWITZE-SR UNSECURE	D		2	1FE	279,994	97.5232	273,065	280,000	279,982		2			3.491	3.492	MM	1,032	9,775	03/16/2017	05/23/2023
90352J-AC-7	UBS GROUP FUNDING SWITZE-SR UNSECURE	D		2	1FE	1,075,503	98.6039	1,020,550	1,035,000	1,071,287		(3,667)			4.253	3.750	MS	11,983	35,256	08/01/2018	03/23/2028
90470T-AB-4	UNIFIN FINANCIERA SA DE-SR UNSECURED	D		1	3FE	595,710	85.0000	510,000	600,000	596,346		466			7.000	7.125	JJ	19,367	42,000	05/10/2017	01/15/2025
904752-AA-0	Unigel Luxembourg SA-SECURED	D		1,5	4FE	999,430	104.0000	1,040,000	1,000,000	999,752		322			10.500	10.500	JJ	63,875		05/15/2018	01/22/2024
904845-AA-2	UNION ANDINA DE CEMENTOS-SR UNSECURE	D		1	3FE	452,400	101.6250	459,752	452,400	452,400					5.875	5.873	AO	17,793	(58,014)	10/28/2014	10/30/2021
91020Q-AA-4	UNITED ENERGY DISTRIBUTION PTY-GTD SR NT	D			1FE	31,000,000	98.3126	30,476,906	31,000,000	31,000,000					3.280	3.280	AO	220,307	1,016,800	10/13/2015	10/13/2022
91724R-AD-6	Urbi Desarrollos Urbanos-SR UNSECURE	D		1,5	6*		1.2540	2,508	200,000						9.750	0.000	FA			01/01/2013	02/03/2022
91821X-AB-9	VEB FIN LTD LN PARTN NT	D			2FE	6,939,181	102.1250	6,786,206	6,645,000	6,759,488		(70,322)			6.902	5.702	JJ	219,127	446,932	06/01/2016	07/09/2020
91832C-AA-4	VM HOLDING SA-SR UNSECURED	D		1	2FE	6,958,170	96.7500	6,772,500	7,000,000	6,963,122		3,354			5.375	5.453	MM	59,573	371,143	05/08/2017	05/04/2027
91911T-AH-6	VALE OVERSEAS LIMITED GTD NT	D		1	2FE	2,349,675	114.3500	2,590,028	2,265,000	2,342,634		(2,246)			6.875	6.546	MM	31,052	149,474	02/06/2017	11/21/2036
91911T-AK-9	VALE OVERSEAS LIMITED-SR UNSECURED	D			2FE	11,939,781	115.5000	14,027,475	12,145,000	11,952,123		3,926			6.875	7.020	MM	118,287	834,864	06/05/2015	11/10/2039
91911T-AM-5	VALE OVERSEAS LIMITED-SR UNSECURED	D			2FE	2,084,146	101.7500	2,271,060	2,232,000	2,146,869		24,914			4.375	5.761	JJ	94,938	44,049	08/11/2016	01/11/2022
92334N-AC-7	VEOLIA ENVIRONNEMENT SA-SR UNSECURED	D		1	2FE	19,143,665	102.9533	19,110,621	15,800,000	19,104,690		(35,862)			6.750	5.047	JD	88,875	630,563	10/23/2018	06/01/2038
92718W-AE-9	VIMPELCOM HOLDINGS BV-SR UNSECURED	D			3FE	10,635,275	102.5710	10,359,671	10,100,000	10,490,317		(84,316)			5.950	4.896	FA	230,364	600,950	06/02/2017	02/13/2023
92718W-AG-4	VIMPELCOM HOLDINGS BV-SR UNSECURED	D		1	3FE	1,100,000	95.7500	1,053,250	1,100,000	1,100,000					4.950	4.950	JD	2,269	35,062	06/13/2017	06/16/2024
92857T-AH-0	VODAFONE GROUP PLC-SR UNSECURED	D			2FE	942,255	124.5817	872,072	700,000	908,892		(14,251)			7.875	4.444	FA	20,825	55,125	08/02/2016	02/15/2030
92857W-AQ-3	VODAFONE GROUP PLC-UNSECURED BOND	D		1	2FE	3,320,195	104.8120	3,301,579	3,150,000	3,300,927		(5,002)			6.150	5.711	FA	66,728	193,725	08/02/2016	02/27/2037
92857W-BD-1	VODAFONE GROUP PLC-SR UNSECURED NOTE	D		1,5	2FE	2,331,795	85.0956	2,063,568	2,425,000	2,333,944		1,084			4.375	4.631	FA	38,901	89,702	10/04/2018	02/19/2043
92857W-BK-5	Vodafone Group PLC-SR UNSECURED	D		1	2FE	13,307,627	97.0201	13,000,693	13,400,000	13,311,401		3,774			4.375	4.461	MM	50,483	293,125	06/27/2018	05/30/2028
92857W-BM-1	Vodafone Group PLC-SR UNSECURED	D		1	2FE	9,387,778	93.8836	8,749,952	9,320,000	9,386,850		(928)			5.250	5.202	MM	42,134	241,500	12/17/2018	05/30/2048
92863U-AA-4	VOLCAN COMPANIA MINERA SAA SR NT	D		1	3FE	11,462,500	99.8750	11,485,625	11,500,000	11,482,175		5,013			5.375	5.428	FA	255,835	615,900	10/17/2014	02/02/2022
92936M-AB-3	WPP FINANCE 2010-SR UNSECURED NOTE	D		1,5	2FE	22,263,716	101.8392	23,324,232	22,903,000	22,674,614		68,106			4.750	5.115	MM	120,877	1,087,893	12/02/2013	11/21/2021
92936M-AC-1	WPP FINANCE 2010-SR UNSECURED NOTE	D		1	2FE	5,994,607	97.2440	5,834,640	6,000,000	5,999,909		(44)			3.625	3.624	MS	68,875	217,500	07/02/2015	09/07/2022
92936M-AD-9	WPP FINANCE 2010-SR UNSECURED NOTE	D		1	2FE	26,189,207	91.4293	23,902,362	26,143,000	26,177,219		(1,417)			5.125	5.114	MS	424,279	1,324,107	10/04/2018	09/07/2042
92936M-AE-7	WPP FINANCE 2010-SR UNSECURED BOND	D		1,5	2FE	1,883,458	98.0361	1,724,455	1,759,000	1,879,400		(2,356)			5.625	5.134	MM	98,944		03/24/2017	11/15/2043
92940Q-AA-0	WTT Investment Ltd/Hong -SR UNSECURE	D		1,5	4FE	700,000	97.2453	680,717	700,000	700,000					5.500	5.500	MM	4,278	34,222	11/14/2017	11/21/2022
947075-AE-7	WEATHERFORD INTL LTD-SR UNSECURED NO	D		1	5FE	23,634,614	51.7500	10,764,000	20,800,000	23,283,277		(69,450)			7.000	5.942	MS	428,711	1,456,000	09/08/2014	03/15/2038
94707V-AB-6	WEATHERFORD INTL LTD-SR UNSECURED NO	D		1	5FE	23,995,375	51.5000	11,589,405	22,503,000	23,831,155		(28,904)			6.750	6.246	MS	447,247	1,518,953	08/15/2012	09/15/2040
94707V-AD-2	WEATHERFORD INTL LTD-SR UNSECURED NO	D		1	5FE	5,135,800	50.8750	2,543,750	5,000,000	5,121,053		(2,534)			5.950	5.757	AO	62,806	297,500	04/23/2012	04/15/2042
94707V-AD-2	WEATHERFORD INTL LTD-SR UNSECURED NO	D		1	5FE	114,184	50.8750	58,506	115,000	114,246		14			5.950	6.002	AO	1,445	6,843	12/02/2013	04/15/2042
950399-AB-1	Welltec A/S-SECURED	D		1	4FE	3,144,076	99.0000	3,143,250	3,175,000	3,149,172		5,188			9.500	9.750	JD	25,135	301,625	11/17/2017	12/01/2022
961214-BK-8	WESTPAC BANKING CORP-SR UNSECURED	D			1FE	273,475	101.5507	253,877	250,000	255,489		(6,086)			4.875	2.346	MM	7,516	12,188	12/15/2015	11/19/2019
961214-CF-8	WESTPAC BANKING CORP-SR UNSECURED	D			1FE	201,007	99.9710	199,942	200,000	200,014		(335)			2.250	2.080	JJ	2,050	4,500	12/15/2015	01/17/2019
961214-CP-6	WESTPAC BANKING CORP-SR UNSECURED	D			1FE	199,472	98.8418	197,684	200,000	199,825		120			2.300	2.363	MM	120	4,600	12/15/2015	05/26/2020
961214-CS-0	WESTPAC BANKING CORP-SR UNSECURED	D			1FE	99,821	98.7243	98,724	100,000	99,927		36			2.600	2.639	MM	274	2,600	12/15/2015	11/23/2020
97063P-AB-0	Willis Group Holdings PL-SR UNSECURE	D		1	2FE	16,390,749	104.5805	15,462,227	14,785,000	15,378,888		(254,147)			5.750	3.829	MS	250,318	850,138	07/02/2015	03/15/2021
97342V-AJ-3	WINDMH GMBH SR SEC NT SER E	B		1	2FE	32,903,619	101.6757	34,766,627	34,193,645	34,193,645					2.125	2.124	JD	531,073	733,701	12/17/2015	12/31/2021
98105F-AG-9	Woori Bank-SUBORDINATED	D			2FE	6,975,020	101.4335	7,100,345	7,000,000	6,975,439		419			5.125	5.171	FA	144,497		07/31/2018	08/06/2028
98313R-AC-0	WYNN MACAU LTD-SR UNSECURED	D		1	4FE	500,000	89.0000	445,000	500,000	500,000					4.875	4.875	AO	6,094	21,640	09/13/2017	10/01/2024
98420E-AB-1	XLIT LTD-SR UNSECURED	D		1	1FE	20,997,172	106.8928	21,105,979	19,745,000	20,940,760		(24,345)			5.250	4.830	JD	46,072	1,036,613	01/27/2017	12/15/2043
98420E-AD-7	XLIT LTD-SUBORDINATED	D		1	2FE	5,170,792	103.4044	5,470,093	5,290,000	5,174,377		1,877			5.500	5.660	MS	73,546	290,950	01/12/2017	03/31/2045
984245-AL-4	YPF SOCIEDAD ANONIMA-SR UNSECURED	D		1	4FE	10,790,000	89.7500	8,975,000	10,000,000	10,656,557		(75,754)			8.500	7.226	JJ	361,250	850,000	03/02/2017	07/28/2025
984245-AM-2	YPF SOCIEDAD ANONIMA-SR UNSECURED	D		1	4FE	5,186,238															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
98954N-AA-7	ZIGGO SECURED FINANCE BV-FIRST LIEN	D	1		3FE	5,895,000	89.5000	5,370,000	6,000,000	5,914,719				8,136	5.500	5.723	JJ	152,167	330,000	10/13/2016	01/15/2027
A18007-AA-1	ELDORADO INTL FIN GMBH-SENIOR UNSECURED	D	1		4FE	396,500	103.6250	414,500	400,000	397,677				1,438	8.625	8.890	JD	34,500	34,500	06/26/2017	06/16/2021
A3158#-AC-3	Hofer Financial Services Senior Note Ser	D	1		1PL	90,000,000	98.2555	88,429,950	90,000,000	90,000,000					3.410	3.410	JJ	1,329,900	3,069,000	07/25/2017	07/25/2024
A35868-AD-9	SAPPI PAPIER HOLDING GMBH EURO ISSUE BOND	B	1		3FE	2,440,070	100.8488	2,656,317	2,633,960	2,633,960				(131,100)	3.375	3.375	AO	22,144	86,671	03/12/2015	04/01/2022
A35868-AH-0	SAPPI PAPIER HLDG GMBH NOTES	B	1		3FE	12,222,100	101.4940	12,785,402	12,597,200	12,597,200				(627,000)	4.000	4.000	AO	125,520	424,588	03/15/2016	04/01/2023
A8688#-AC-3	TIWAG-Tiroler Wasserkraf Senior Note	B	1		1	61,065,160	103.4533	66,227,368	64,016,680	64,016,680				(3,186,300)	2.480	2.480	JD	70,198	1,637,503	12/15/2015	12/15/2035
AU5737-92-2	DP World Ltd-SENIOR UNSECURED	B	1		2FE	27,304,228	98.5508	26,378,698	26,766,600	26,447,997		717		(856,947)	4.250	4.380	SEP	308,491		09/18/2018	09/25/2030
B0909#-AC-2	Befimmo S.A. Senior Note Ser	D	1		2	26,800,000	101.0089	27,070,385	26,800,000	26,800,000					5.050	5.048	MN	116,543	1,353,400	05/30/2012	05/30/2020
B1401#-AB-3	Brussels Airport Company Senior Secured	B	1		2FE	20,540,520	93.9331	20,331,143	21,644,280	21,644,280				(1,077,300)	1.820	1.820	MN	54,302	406,304	05/11/2017	05/11/2029
B9550#-AA-9	Unicore SA Senior Note Ser	1	2		2	53,068,500	98.5305	50,776,708	51,534,000	51,534,000				(2,565,000)	1.840	1.840	JD	62,833	978,011	12/07/2017	12/07/2027
B9550#-AB-7	Unicore SA Senior Note Ser	1	2		2	70,758,000	95.5482	65,653,079	68,712,000	68,712,000				(3,420,000)	2.050	2.050	JD	93,339	1,452,878	12/07/2017	12/07/2029
D0003*-AC-7	ADM Germany GmbH Senior Note Ser	D	1		1	40,000,000	102.9354	41,174,160	40,000,000	40,000,000					4.400	4.399	FA	713,778	1,760,000	02/05/2014	02/05/2024
D5472#-AF-7	Molkerei Alois Muller GM Gtd Senior Note	D	1		2	25,000,000	98.8020	24,700,500	25,000,000	25,000,000					3.720	3.719	JJ	423,667	930,000	07/17/2012	07/18/2022
D8286#-AD-2	Sirona Dental Services G Senior Note Ser	1	2		2	19,605,707	87.4823	18,033,251	20,613,600	20,613,600				(1,026,000)	1.500	1.500	AO	54,580	138,920	10/27/2016	10/27/2029
D8544#-AC-0	UNITYMEDIA HESSEN / NRW-SECURED BOND	B	1		3FE	397,000	109.3520	375,690	343,560	340,980		181		(16,966)	6.250	6.352	JJ	21,269	(72,340)	11/08/2013	01/15/2029
D8563#-AB-0	VTG Deutschland GmbH Senior Note Ser	B	1		2	18,722,600	118.2775	17,608,681	14,887,600	14,887,600				(741,000)	5.780	5.779	MN	130,503	887,544	05/06/2011	05/06/2023
D8563#-AC-8	VTG Deutschland GmbH Senior Note Ser	B	1		2	20,882,900	126.9322	21,077,600	16,605,400	16,605,400				(826,500)	5.834	5.833	MN	146,921	999,201	05/06/2011	05/06/2026
D8788L-AA-4	TanQuid GmbH & Co. KG Senior Secured	B	1		1FE	32,993,205	105.7681	36,337,688	34,356,000	34,223,710				(826,500)	2.340	2.396	JD	408,795	829,201	06/26/2016	06/30/2026
D8782A-AA-3	Via Solutions Nord GmbH Senior Secured	B	2		1FE	38,684,191	99.0659	38,727,384	39,092,547	38,849,350				(1,500,472)	2.957	3.012	MN	86,793	1,099,857	12/31/2018	08/31/2043
D9596A-AB-0	WEPA HYGIENEPRODUKTE GMB-FIRST LIEN	B	1		3FE	2,189,228	94.7261	2,077,398	2,193,058	2,193,058				(109,155)	3.750	3.749	MN	10,436	84,822	05/11/2016	05/15/2024
E5444#-AB-0	Futbol Club Barcelona Senior Note Series	B	2		2Z	53,531,040	99.9831	52,441,296	52,450,160	52,450,160				(1,080,880)	1.860	1.860	FA	334,020		08/28/2018	08/28/2023
E9239-AA-6	Financiera Marsyc SA-SECURED	B	2		2FE	53,945,484	103.0270	51,004,407	49,505,864	49,505,864				(4,439,620)	2.610	2.610	JD	653,433	535,272	02/01/2018	12/31/2025
E6732#-AA-1	INTERCAMBIADOR - Adj % Due 3/13/2019 MS3	B	1		2	17,357,252	98.5100	17,332,164	18,000,000	17,892,565				(890,566)	3.340	3.340	JD	312,430	621,010	06/30/2016	06/30/2038
E6732#-AA-3	INTERCAMBIADOR - Adj % Due 3/13/2019 MS31	B	1		2	43,661,223	96.7400	44,036,724	45,520,699	45,249,728				(2,252,191)	3.400	3.400	MS	804,291	1,603,401	06/28/2016	09/30/2041
E7827#-AA-9	AUTOPISTA DEL SOL CONCESIONARIA EURO SEC	B	1		2FE	38,871,493	99.8702	39,280,662	39,331,714	39,331,714				(1,947,676)	3.750	3.752	JD	763,030	1,518,714	03/17/2016	12/30/2045
E78021-AA-3	Naviera Armas SA-SECURED	B	1		3FE	2,767,464	96.7648	2,631,857	2,719,850	2,740,435				(23,938)	6.500	6.079	JAJO	30,225	41,727	11/01/2018	07/31/2023
E87529-AA-2	Sonnedix Espana Finance Senior Secured	B	2		2Z	40,729,237	100.7744	39,874,726	39,568,309	39,568,309				(1,193,197)	3.228	3.228	JD	730,292		06/11/2018	06/30/2037
E87529-AC-8	Sonnedix Espana Finance Senior Secured N	B	2		2Z	6,875,860	100.5646	6,949,270	6,910,254	6,910,254				35,503	3.216	3.217	JD	14,017		12/10/2018	06/30/2037
F1068#-AG-2	Bonduelle SCA Gtd Senior Note	B	2		2FE	57,597,040	98.1181	57,081,343	58,176,160	58,176,160				(2,895,600)	1.760	1.760	JJ	500,395	1,056,075	07/06/2017	07/06/2027
F1840#-AA-0	Chanel SAS Senior Note Ser	B	1		1	76,560,000	102.4357	82,550,792	80,622,080	80,622,080				(4,012,800)	1.839	1.839	MS	373,507	1,529,226	02/29/2016	03/30/2026
F2166#-AA-4	COSMELUX INTL EURO SEC'D BDS	B	2		5G1	11,197,105	97.2731	11,164,226	11,477,194	11,247,670				(559,305)	4.649	5.131	JAJO	806,836	1,022,123	07/14/2017	07/19/2024
F3166#-AB-0	Essilor International Senior Note Ser	D	1		1	4,500,000	99.9589	4,498,151	4,500,000	4,500,000				36,304	3.100	3.100	MS	41,075	144,000	03/15/2012	03/15/2019
F5474S-AF-5	La Financiere Atalian SA-SENIOR UNSECURE	B	1		4FE	6,302,713	81.9141	5,220,386	6,373,000	6,326,487				3,564	6.625	6.768	MN	18,632	254,979	08/17/2018	05/15/2025
F5662#-AA-6	Laurent-Perrier Group Senior Unsecure	B	1		2	13,280,890	99.0871	12,822,624	12,940,760	12,940,760				(644,100)	2.750	2.750	MS	89,651	367,045	10/04/2017	09/30/2029
F5662#-AB-4	Laurent-Perrier Group Senior Unsecured N	B	1		2Z	14,520,320	99.5801	14,597,009	14,658,560	14,658,560				138,240	2.870	2.871	MN	37,143		11/29/2018	11/29/2030
F6519#-AH-4	Neopost S.A. Senior Note Ser	D	2		2	18,342,855	99.1518	18,187,271	18,342,855	18,342,855					3.890	3.888	JD	21,803	708,087	06/20/2012	06/20/2022
F6813#-AA-2	OPALE GROUP USD TRANCHE 1 BONDS	D	1		5G1	3,623,729	97.1658	3,611,308	3,716,645	3,641,809		12,364		2,436	2.866	2.866	JAJO	105,938	82,188	07/10/2017	07/12/2024
F6813#-AB-0	OPALE GROUP EURO TRANCHE 1 BOND	B	1		5G1	1,034,443	97.1658	1,035,964	1,066,181	1,041,591		264		(51,797)	0.003	0.425	JAJO	40	25,359	07/10/2017	07/12/2024
F6857#-AC-3	Novafives SAS-FIRST LIEN	B	1		4FE	4,908,031	80.1000	4,219,604	5,267,920	4,874,814				(43,413)	5.000	6.430	JD	11,647	132,170	10/23/2018	06/15/2025
F8444#-AC-4	BISOHO SAS-SECURED	B	1		4FE	866,717	102.6103	890,897	868,233	819,570				27,406	5.875	8.235	MN	207,636	179,113	05/11/2016	05/01/2023
F8493#-AF-6	Sodexo Senior Note Ser	D	1		1	4,956,000	103.2903	5,119,067	4,956,000	4,956,000					4.950	4.950	MS	62,693	245,322	03/29/2011	03/29/2023
F8494#-AA-4	Sodiaal International S. Senior Note	B	3		3	53,125,000	94.8950	54,336,877	57,260,000	57,260,000				(2,850,000)	1.670	1.690	MN	84,450	999,748	12/02/2016	11/30/2026
F8494#-AB-2	Sodiaal International S. Senior Unsecure	B	3		3	116,580,000	93.2987	106,845,671	114,520,000	114,520,000				(2,060,000)	1.780	1.806	JJ	880,243		07/30/2018	07/30/2028
F8568#-AA-7	Sonepar S.A. Senior Note	D	1		2	45,250,000	100.5864	45,515,346	45,250,000	45,250,000					4.780	4.779	MN	276,377	2,162,950	05/15/2012	05/15/2024
F8568#-AD-1	Sonepar S.A. Senior Note Ser	D	1		2	30,000,000	94.3270	28,298,100	30,000,000	30,000,000					3.540	3.540	MN	159,300	1,062,000	05/07/2015	05/07/2025
F8568#-AE-9	Sonepar S.A. Senior Note Ser	D	1		2	28,167,500	96.8913	27,739,979	28,630,000	28,630,000				(1,425,000)	1.530	1.530	MN	65,220	451,804	05/07/2015	05/07/2025
F9731#-AF-4	Vicat SA Senior Note Ser	D	1		2	28,000,000															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest			Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
G0566*-AB-5	Arqiva PP Financing plc Gtd Senior Secu	B	1		2FE	56,268,810	104.3271	49,067,894	47,032,740	47,032,740				(2,870,820)	4.101	4.100	JD	984,748	2,020,394	06/27/2013	06/30/2025
G0566*-AC-3	Arqiva PP Financing plc Gtd Senior Secu	B	2		2FE	76,419,000	95.9060	55,008,804	57,357,000	57,357,000				(3,501,000)	3.135	3.027	JD	857,580	1,670,552	07/24/2014	06/29/2029
G0566*-AD-1	Arqiva Financing No 1 Lt Gtd Senior FI R	B	2		2FE	16,983,333	97.8425	16,994,241	17,368,977	17,368,977				(1,027,778)	2.776	2.780	JD	274,511	506,700	11/23/2016	12/31/2029
G0646*-AN-9	Associated British Foods Senior Note Ser	D	1			26,900,000	101.8007	27,384,388	26,900,000	26,900,000					3.920	3.920	MS	269,478	1,054,480	03/29/2012	03/29/2024
G0746*-AA-0	Bankers Investment Trust Senior Note	B	1			71,593,728	108.2428	64,457,843	59,549,312	59,549,312				(3,634,816)	3.680	3.680	MM	205,893	2,295,298	05/27/2015	05/27/2035
G0753*-AA-0	BBC Commercial Holdings Senior Note Ser	D	1			1,500,000	98.7359	1,481,039	1,500,000	1,500,000					2.710	2.709	JD	790	40,650	06/24/2013	06/24/2020
G0754*-AD-9	Babcock International Gr Senior Note Ser	D	1			19,000,000	102.6613	19,505,647	19,000,000	19,000,000					5.640	5.639	MS	309,573	1,071,600	03/17/2011	03/17/2021
G0892*-AA-8	Bazalgette Tunnel Limite Senior Secured	B	2		2FE	61,921,860	92.1760	54,279,239	58,886,520	58,886,520				(3,594,360)	2.860	2.860	MS	439,216	1,763,992	09/28/2017	09/28/2032
G1064F-AD-2	BESTGAIN REAL ESTATE LYR-UNSECURED	D	1			2,403,600	100.1980	2,404,752	2,400,000	2,402,223		(2,232)			3.950	3.851	JD	41,607	94,800	12/21/2017	12/23/2019
G1108F-AF-5	British Land Company PLC Senior Note Ser	D	1			9,200,000	104.2204	9,588,277	9,200,000	9,200,000					4.766	4.765	MS	146,157	438,472	09/01/2011	09/01/2023
G1108F-AG-3	British Land Company PLC Senior Note Ser	D	1			13,800,000	106.9827	14,763,613	13,800,000	13,800,000					5.003	5.002	MS	230,138	690,414	09/01/2011	09/01/2026
G1128*-AA-6	BIRMINGHAM ARPT FIN PLC-SER A SR NOTE GB	B	2			24,612,000	107.2358	20,502,413	19,119,000	19,119,000				(1,167,000)	4.472	4.471	JD	66,067	895,533	12/03/2013	12/03/2023
G1128*-AC-2	BIRMINGHAM ARPT FIN PLC SR NT	B	1		2FE	34,828,640	99.8751	30,806,794	30,845,320	30,845,320				(1,882,760)	3.800	3.800	MS	299,042	1,227,776	03/30/2016	03/30/2041
G1315R-AD-3	BRASKEM FINANCE LTD-SENIOR UNSECURED	D	1			216,054	102.7010	214,645	209,000	215,478		(575)			5.750	4.310	AO	2,537	33	10/16/2018	04/15/2021
G1418F-AM-5	Caribbean Utilities Co. Senior Note Ser	D	1			13,100,000	107.2613	14,051,230	13,100,000	13,100,000					5.100	5.099	JD	389,725	668,100	07/14/2011	06/01/2031
G1512B-AA-8	BRITISH EMPIRE TR PLC GBP SER A SR UNSEC	B	1			37,262,970	110.7086	39,651,680	35,816,260	35,816,260				(2,186,180)	4.184	4.184	JJ	700,364	1,569,591	01/15/2016	01/15/2036
G1512B-AB-6	BRITISH EMPIRE TR PLC EUR SER B SR UNSEC	B	1			30,991,330	109.7247	35,560,854	32,409,160	32,409,160				(1,613,100)	3.249	3.249	JJ	487,671	1,086,062	01/15/2016	01/15/2036
G1512B-AC-4	British Empire Securitie Senior Unsecure	B	1			23,296,000	104.7681	23,996,086	22,904,000	22,904,000				(1,140,000)	2.930	2.930	MM	111,047	692,175	11/01/2017	11/01/2037
G1591F-AE-2	Britvic PLC Gtd Senior Note	D	1			3,500,000	100.2473	3,508,656	3,500,000	3,500,000					6.000	5.996	FA	76,417	210,000	02/20/2007	02/20/2019
G1591F-AK-8	Britvic PLC Gtd Senior Note	D	1			9,750,000	100.9198	9,839,681	9,750,000	9,750,000					5.240	5.237	JD	19,868	510,900	12/17/2009	12/17/2019
G1591F-AP-7	Britvic PLC Gtd Senior Note	D	1			13,000,000	98.4656	12,800,528	13,000,000	13,000,000					4.140	4.139	JD	20,930	538,200	12/17/2010	12/17/2022
G1591F-BC-5	Britvic PLC Senior Notes Se	B	2Z			4,925,810	91.9710	4,337,371	4,716,020	4,716,020				(209,790)	2.660	2.660	JD	4,847	68,281	06/05/2018	06/17/2028
G1591F-BF-8	Britvic PLC Senior Notes Se	B	2Z			5,325,200	88.2044	4,497,013	5,098,400	5,098,400				(226,800)	2.880	2.880	JD	79,922	79,922	06/05/2018	06/17/2033
G1696F-AI-6	Bunzl Finance PLC Gtd Senior Note	D	2			9,000,000	101.2044	9,108,396	9,000,000	9,000,000					4.510	4.509	AO	275,110	405,900	04/27/2011	04/27/2021
G1696F-AX-4	Bunzl Finance PLC Gtd Senior Note	D	2			9,000,000	102.0459	9,184,131	9,000,000	9,000,000					4.610	4.609	AO	281,210	414,900	04/27/2011	04/27/2023
G1696F-BJ-4	BUNZL FIN PLC EURO SER B GTD SR NT	B	1			51,616,600	102.3685	53,926,907	52,679,200	52,679,200				(2,622,000)	1.920	1.920	MS	277,792	1,043,224	03/22/2016	03/22/2023
G1696F-BK-1	Bunzl Finance plc-GTD SENIOR NOTE SERIES	B	2			21,327,000	103.6905	19,824,587	19,119,000	19,119,000				(1,167,000)	3.560	3.560	MS	189,185	712,902	03/22/2016	03/22/2025
G1710F-AB-4	Christie Manson & Woods Gtd Senior Note	D	1			14,500,000	101.8474	14,767,873	14,500,000	14,500,000					5.220	5.220	MS	191,328	756,900	03/31/2011	03/31/2021
G1744F-AG-3	Cadogan Estates Ltd Gtd Senior Note	D	2			5,000,000	104.4950	5,224,750	5,000,000	5,000,000					6.600	6.597	FA	132,000	330,000	08/07/2008	08/07/2020
G1744F-AM-0	Cadogan Estates Ltd Gtd Senior Note	D	1			12,500,000	109.7100	13,713,750	12,500,000	12,500,000					5.250	5.250	MS	167,708	656,250	03/29/2011	03/29/2028
G1744F-AN-8	Cadogan Estates Ltd Gtd Senior Note	D	2			12,000,000	112.0025	13,440,300	12,000,000	12,000,000					5.530	5.530	MS	169,587	663,600	03/29/2011	03/29/2032
G1744F-AS-7	Cadogan Estates Ltd Gtd Senior Note	B	1			14,389,830	107.1842	12,432,145	11,598,860	11,598,860				(707,980)	3.750	3.750	MS	133,332	455,576	09/12/2013	09/12/2026
G1744F-AT-5	Cadogan Estates Ltd Gtd Senior Note	B	1			14,389,830	108.1244	12,541,198	11,598,860	11,598,860				(707,980)	4.070	4.070	MS	144,709	494,452	09/12/2013	09/12/2030
G1745*-AJ-0	Brookfield Utilities Iss Senior Note Ser	B	1		2FE	66,544,425	106.2754	59,127,690	55,636,290	55,636,290				(3,395,970)	4.480	4.480	AO	514,851	2,610,662	04/17/2013	04/17/2028
G1745*-AM-3	Brookfield Utilities Iss Senior Note Ser	B	2		2FE	25,447,500	105.1895	20,111,181	19,119,000	19,119,000				(1,167,000)	4.510	4.509	JD	38,042	903,143	06/17/2014	06/15/2029
G1819F-AA-8	Canal & River Trust Senior Note Ser	B	1			10,407,750	96.1936	9,195,627	9,559,500	9,559,500				(848,250)	2.850	2.850	JJ	124,205	146,600	01/19/2018	01/19/2043
G1819F-AB-6	Canal & River Trust Senior Note Ser	B	1			34,692,500	96.6891	30,809,982	31,865,000	31,865,000				(2,827,500)	2.830	2.830	JJ	411,111	485,231	01/19/2018	01/19/2048
G1846F-AG-2	Capita Holdings Limited Gtd Senior Note	D	3			22,286,126	99.3286	22,136,496	22,286,126	22,286,126					4.800	4.798	JD	537,839	943,261	06/30/2010	06/30/2020
G1846F-AM-9	Capita Holdings Limited Gtd Senior Note	D	1			6,611,551	98.2021	6,492,682	6,611,551	6,611,551					4.500	4.499	JJ	133,884	257,790	07/19/2011	07/19/2021
G1870*-AA-6	Cambridge Housing Societ Senior Secured	B	1Z			38,205,000	99.7037	38,124,701	38,238,000	38,238,000				33,000	3.670	3.672	MM	130,026		11/28/2018	11/28/2048
G1910F-AP-1	Cobham PLC Senior Note Ser	D	3			3,135,000	99.0425	3,104,982	3,135,000	3,135,000					3.900	3.899	AO	21,396	79,286	10/28/2014	10/28/2021
G1910F-AQ-9	Cobham PLC Senior Note Ser	D	1			23,265,000	98.4028	22,893,411	23,265,000	23,265,000					4.260	4.260	AO	173,441	642,697	10/28/2014	10/28/2024
G1969F-AD-8	Balfour Beatty plc Senior Note Ser	D	1			35,800,000	98.5198	35,270,088	35,800,000	35,800,000					5.140	5.139	MS	592,928	1,840,120	03/05/2013	03/05/2023
G1969F-AE-6	Balfour Beatty plc Senior Note Ser	D	3			21,700,000	98.3362	21,338,955	21,700,000	21,700,000					5.290	5.289	MS	369,889	1,147,930	03/05/2013	03/05/2025
G1987Z-AB-6	COBL FUNDING 1-SR UNSECURED	D	1FE			11,524,722	99.5587	11,358,652	11,409,000	11,513,291		(15,753)			4.250	4.072	JD	39,060	497,130	10/16/2018	12/02/2024
G1987Z-AD-2	COBL Funding 1-SENIOR UNSECURED	D	1FE			4,700,000	95.2423	4,762,115	5,000,000	4,707,553		7,553			3.000	4.506	AO	27,917		11/14/2018	04/24/2023
G2003F-AA-4	Campo Palomas Finance Lt Senior Secured	D	2		2FE	21,915,360	95.8764	21,011,658	21,915,360	21,915,360					5.330	5.331	MM	742,050	1,168,729	08/03/2017	11/15/2036
G2019U-AD-3	CBQ FINANCE LTD-SENI																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
G2140A-AC-1	CIFI HOLDINGS GROUP-SENIOR UNSECURED	D	2	4FE		1,762,634		1,673,824	1,657,000	1,706,561		(35,412)			7.750	5.115	JD	9,275	128,418	07/21/2017	06/05/2020
G2140A-AC-1	CIFI HOLDINGS GROUP-SENIOR UNSECURED	D	2	4FE		5,050,000		4,848,734	4,800,000	4,893,232		(60,783)			7.750	6.301	JD	26,867	376,064	04/07/2016	06/05/2020
G2140A-AJ-6	CIFI Holdings Group Co L-SENIOR UNSECURE	D	2	4FE		92,123		91,942	94,000	92,253		130			6.875	7.762	AO	4,452	2,647	10/16/2018	04/23/2021
G2140A-AL-1	CIFI Holdings Group Co L-SENIOR UNSECURE	D	2	3FE		996		995	1,000	996					6.375	6.656	MN	42		10/16/2018	05/02/2020
G2155Z-AC-8	CHINA OVERSEAS FIN KY V-SENIOR UNSECURED	D	1,5	2FE		992,500		1,029,747	1,000,000	992,807		144			5.350	5.403	MN	6,836	53,500	05/19/2016	11/15/2042
G2155Z-AF-1	CHINA OVERSEA FIN KY III-SENIOR UNSECURE	D	1	2FE		13,276,514		13,635,929	11,700,000	13,206,931		(28,375)			6.375	5.424	AO	128,456	745,875	10/13/2017	10/29/2043
G2157Z-AA-0	CHINA OVERSEAS FIN. VI-SENIOR UNSECURED	D	1	2FE		6,050,920		6,015,918	6,000,000	6,003,861		(11,397)			4.250	4.052	MN	37,542	255,000	07/29/2014	05/08/2019
G2242#-AA-1	Coats Group Finance Comp Senior Unsecure	C		2		18,000,000		17,358,390	18,000,000	18,000,000					3.880	3.880	JD	180,420	698,400	12/06/2017	12/06/2024
G2269#-AA-9	College of Corpus Christ Senior Notes	B	1	1Z		6,269,000		6,508,248	6,373,000	6,373,000					2.930	2.930	JJ	79,260	195,595	01/30/2017	01/30/2052
G24524-AH-6	COUNTRY GARDEN HLDG CO-SR UNSECURED REGS	D	2	3FE		1,002		1,000	1,000	1,001					7.250	7.068	AO	18		10/16/2018	04/04/2021
G24524-AL-7	Country Garden Holdings -SR UNSECURED	D	1	3FE		205,750		202,359	200,000	204,078		(1,672)			7.500	5.691	MS	4,667	7,500	06/26/2018	03/09/2020
G2479#-AB-3	Coventry University Senior Note Ser	B	1			54,086,600		49,377,484	47,160,200	47,160,200					3.500	3.500	AO	326,829	1,728,854	05/19/2016	04/20/2034
G2479#-AA-7	Covent Garden Group Holdings Limited Sen	B		1PL		44,054,486		106,9089	38,105,448	35,642,914					3.630	3.629	JD	53,537	1,301,597	12/16/2014	12/16/2024
G2479#-AB-5	Covent Garden Group Holdings Limited Sen	B		1PL		7,877,000		6,922,525	6,373,000	6,373,000					3.680	3.629	JD	9,704	235,954	12/16/2014	12/16/2026
G2479#-AC-3	Covent Garden Group Hold Senior Note Ser	B	1	1FE		49,992,000		38,7145	50,984,000	50,984,000					2.280	2.280	MN	151,429	1,217,540	11/14/2016	11/14/2026
G2553Z-AH-5	CPUK FINANCE LTD-UNSECURED	B	1	4FE		3,802,550		3,514,643	3,760,070	3,760,070					4.875	4.875	FA	63,560	235,067	06/01/2017	08/28/2025
G2553Z-AH-5	CPUK FINANCE LTD-UNSECURED	B	1	4FE		2,613,800		2,382,809	2,549,200	2,549,200					4.875	4.873	FA	43,091		10/22/2018	08/28/2025
G2613#-AL-8	Ds Smith plc Senior Note Ser	D	2			29,000,000		29,064,873	29,000,000	29,000,000					4.650	4.649	FA	543,146	1,348,500	08/06/2012	08/06/2022
G2615*-AC-0	DCC Treasury 2010 Limite Gtd Senior Note	D	1	2		8,500,000		8,641,993	8,500,000	8,500,000					5.710	5.710	MS	121,338	485,350	03/24/2010	03/24/2020
G2615*-AD-8	DCC Treasury 2010 Limite Gtd Senior Note	D	1	2		13,000,000		13,461,006	13,000,000	13,000,000					5.810	5.810	MS	188,825	755,300	03/24/2010	03/24/2022
G2615#-AB-0	DCC Treasury Ireland 201 Gtd Senior Note	D	1	2		12,550,000		12,296,565	12,550,000	12,550,000					4.040	4.040	AO	92,954	507,020	04/25/2013	04/25/2023
G2615#-AC-8	DCC Treasury Ireland 201 Gtd Senior Note	D	1	2		17,250,000		16,877,866	17,250,000	17,250,000					4.190	4.190	AO	132,509	722,775	04/25/2013	04/25/2025
G2616#-AF-8	DCC Treasury 2014 Limite Gtd Senior Note	D	2			29,750,000		29,695,320	29,750,000	29,750,000					4.530	4.529	MN	149,742	1,347,675	05/21/2014	05/21/2024
G2624#-AK-9	DAIRY CREST GROUP PLC GTD SER B SR NT	B	1	2		19,051,200		16,976,250	17,207,100	17,207,100					3.340	3.340	MS	158,106	601,961	03/23/2016	03/23/2026
G2685#-AF-6	Great Portland Estates Senior Unsecure	B	1	2		46,882,800		44,207,334	45,885,600	45,885,600					2.150	2.150	MN	106,457	1,033,907	05/22/2017	05/22/2024
G2685#-AG-4	Great Portland Estates Senior Note Ser	B	2	2		14,644,300		13,493,313	14,020,600	14,020,600					2.700	2.700	JD	40,850	179,826	06/05/2018	06/05/2028
G2685#-AH-2	Great Portland Estates Senior Note Ser	B	2	2		10,650,400		9,467,525	10,196,800	10,196,800					2.790	2.790	JD	30,699	135,143	06/05/2018	06/05/2030
G2686#-AB-4	Great Rolling Stock Comp Senior Secured	B	2	2		64,850,000		54,074,586	63,730,000	63,730,000					2.360	2.362	MS	1,165,529	2,584,237	09/30/2016	09/30/2034
G2854#-AA-0	Dudgeon Offshore Wind Lt Senior Secured	B	2	1Z		21,471,000		22,143,124	21,668,200	21,668,200					2.740	2.740	JD	27,844		12/14/2018	06/15/2032
G2867#-AA-5	Dunedin Income Growth In Senior Secured	B	1	1		39,233,526		111,4090	35,816,260	35,816,260					3.990	3.990	JD	90,576	1,496,813	12/08/2015	12/08/2045
G294A#-AA-7	Dyson Finance Limited Senior Note Ser	B	1	1		28,502,640		24,237,803	23,707,560	23,707,560					2.770	2.770	MN	83,694	687,830	05/27/2015	05/27/2025
G294A#-AC-3	Dyson Finance Limited Senior Note Ser	B	1	1		7,662,000		6,524,607	6,373,000	6,373,000					2.830	2.830	MN	22,986	188,906	05/27/2015	05/27/2027
G294A#-AD-1	Dyson Finance Limited Gtd Senior Note	B	1	1		21,703,744		20,137,939	21,885,829	21,885,829					0.490	0.490	MS	30,717	106,568	03/28/2017	03/15/2027
G294A#-AG-4	Dyson Finance Limited Gtd Senior Note	B	1	1		26,073,600		27,776,359	27,484,800	27,484,800					1.510	1.510	MS	122,221	428,062	03/28/2017	03/15/2027
G294A#-AH-2	Dyson Finance Limited Gtd Senior Note	B	1	1		15,209,600		15,928,026	16,032,800	16,032,800					1.720	1.720	MS	81,211	284,430	03/28/2017	03/15/2029
G2956#-AF-8	ABP Acquisitions UK Limi Gtd Senior Secu	D	2	2		70,000,000		70,178,360	70,000,000	70,000,000					4.620	4.619	FA	1,185,800	3,234,000	02/19/2014	02/19/2024
G3076*-AE-6	Envol Investments Limite Senior Secured	B	2	2FE		34,749,000		33,798,814	34,356,000	34,356,000					2.880	2.880	JD	5,492	500,420	06/28/2018	06/29/2030
G3087#-AA-7	EQUITIX SOLAR FINCO 4 LTD GBP TERM LN	B	2	2FE		18,955,301		19,776,139	19,120,312	19,120,312					4.043	4.045	JD	202,992	813,722	02/01/2017	12/31/2035
G3122#-AB-4	ESPUG Finance Limited Gtd Senior Secu	B	2	2FE		33,182,500		31,016,849	31,865,000	31,865,000					3.050	3.051	AO	247,955	1,020,988	10/05/2017	10/06/2032
G3122#-AC-2	ESPUG Finance Limited Gtd Senior Secu	B	2	2FE		33,182,500		29,956,510	31,865,000	31,865,000					3.350	3.351	AO	272,344	1,121,413	10/05/2017	10/06/2037
G31307-AA-2	EMG SUKUK LTD-SENIOR UNSECURED	D	2	2FE		5,222,500		4,891,100	5,000,000	5,182,384		(29,501)			4.564	3.818	JD	8,241	228,200	08/14/2017	06/18/2024
G3144#-AE-0	Fenner International Ltd Gtd Senior Note	D	1	3		8,200,000		8,254,284	8,200,000	8,200,000					5.270	5.269	MS	144,407	432,140	08/24/2011	09/01/2021
G3144#-AF-7	Fenner International Ltd Gtd Senior Note	D	1	3		23,600,000		24,061,970	23,600,000	23,600,000					5.420	5.419	MS	426,373	1,279,120	08/24/2011	09/01/2023
G3148#-AC-9	PROVEN HONOUR CAP-SERIES 2015-2A CLASS A	D	1	2		7,672,965		7,064,110	7,750,000	7,696,873		7,066			4.125	4.248	MN	37,297	319,688	05/12/2015	05/19/2025
G3148#-AD-7	PROVEN HONOUR CAPITAL-SENIOR UNSECURED	D	1	2		313,688		269,586	300,000	310,700		(1,254)			4.125	3.568	MN	1,891	7,333	07/19/2016	05/06/2026
G315B9-AA-1	DME AIRPORT LTD-SENIOR UNSECURED	D	1	3FE		18,600,000		18,440,970	18,600,000	18,600,000					5.875	5.875	MN	151,771	1,032,695	11/03/2016	11/11/2021
G3165U-AB-7	C&W Senior Financing DAC-SENIOR UNSECURE	D	1	3FE		211,613		200,901	209,000	211,490		(122)			7.500	7.197	AO	3,483	218	10/16/2018	10/15/2026
G3330K-AE-3	Franshion Brilliant Ltd-SENIOR UNSECURED	D	2	2FE		4,810,040		4,833,715	5,000,000	4,832,663		22,623			3.600	4.747	MS	59,000	90,000	07/13/2018	03/03/2022
G3426#-AB-5	GIP III Jupiter Ltd Senior Secured Notes	B	1	2FE		74,248,674		73,925,400	73,911,505	73,911,505					3.201	3.203	MS	251,785		11/30/2018	03/31/2036
G3461#-AA-5	First Wessex Senior Secured	B	2	2		28,555,200		24,363,602	22,942,800	22,9											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
G3R230-AB-6	GALAXY BIDCO LTD-SECURED NOTE	B	1		4FE	510,161	.98	260,000	382,380	383,656		(674)		(23,349)	6.375	5.944	MN	3,107	35,535	03/04/2014	11/15/2020
G3R230-AB-6	GALAXY BIDCO LTD-SECURED NOTE	B	1		4FE	11,125,707	.98	260,000	9,177,120	9,177,162	25,022			(556,807)	6.375	6.684	MN	74,567	602,782	05/12/2016	11/15/2020
G4035E-AA-1	GOLD FIELDS OROGEN HOLD BVI-NT REGS	D	1		3FE	1,177,000	.98	880,000	1,186,560	1,200,000	1,189,022	3,749		4.875	5.418	AO	13,650	23,842	11/13/2018	10/07/2020	
G41205-AA-6	PCCW-HKT CAPITAL N05 LTD-SENIOR UNSECURE	D	1		2FE	4,925,150	.99	000,000	4,950,410	5,000,000	4,960,299	8,511		3.750	3.957	MS	58,854	187,500	08/26/2014	03/08/2023	
G41338-AA-1	Grosvenor Limited Senior Note Ser	B	2			41,595,000	122	9295	39,171,485	31,865,000	31,865,000			(1,945,000)	5.570	5.570	AO	311,411	1,859,018	04/28/2011	04/28/2031
G41338-AE-3	Grosvenor Limited Senior Notes Series A	B	2		1Z	11,121,400	.99	1459	10,741,566	10,834,100	10,834,100			(287,300)	2.750	2.750	MN	44,717		11/07/2018	11/07/2028
G4146*-AC-4	G4S PLC Senior Note Ser	D	1		2	4,150,000	100	2827	4,161,732	4,150,000	4,150,000			5.960	5.957	MS	82,447	247,340	03/01/2007	03/01/2019	
G4273*-AF-2	Hammerson PLC Senior Note Ser	B	2			76,342,500	108	2398	62,083,102	57,357,000	57,357,000			(3,501,000)	4.560	4.559	JD	101,065	2,739,465	06/17/2014	06/17/2024
G4410*-AB-5	Heriot Watt University Senior Unsecure	B	2			38,043,000	100	5942	38,465,210	38,238,000	38,238,000			(2,334,000)	3.220	3.220	JD	57,694	1,289,631	12/14/2016	12/14/2036
G4445*-AB-4	High Speed Rail Finance Gtd Senior Secu	D	1		1FE	51,700,000	100	0172	51,708,892	51,700,000	51,700,000			3.790	3.790	MS	495,300	1,959,430	10/29/2012	03/30/2028	
G4487E-AA-4	Hikma Pharmaceuticals PL-SENIOR UNSECURE	D	5		3FE	1,874,397	.99	2660	1,852,304	1,866,000	1,870,856	(3,541)		4.250	4.034	AO	17,844	79,305	01/16/2018	04/10/2020	
G4589#-BB-6	Intermediate Capital Gro Senior Note Ser	D	1		2	16,200,000	106	3930	17,235,666	16,200,000	16,200,000			6.250	6.249	MN	149,062	1,012,500	05/08/2013	05/08/2023	
G4589#-BL-4	Intermediate Capital Gro Senior Note Ser	D	2			500,000	100	8723	504,362	500,000	500,000			4.960	4.960	MS	6,338	24,800	09/29/2016	09/29/2026	
G4622#-AB-5	Howard De Walden Estates Gtd Senior Note	D	1			27,000,000	108	1057	29,188,539	27,000,000	27,000,000			5.230	5.230	JJ	847,212	1,412,100	08/25/2010	07/16/2025	
G4622#-AL-3	Howard De Walden Estates Gtd Senior Note	B	1			11,872,800	92	7817	10,643,360	11,471,400	11,471,400			(700,200)	2.540	2.540	MS	66,876	305,186	09/14/2016	09/14/2031
G4622#-AM-1	Howard De Walden Estates Gtd Senior Note	B	1			22,426,400	91	9267	19,918,861	21,668,200	21,668,200			(1,322,600)	2.740	2.740	MS	136,268	621,854	09/14/2016	09/14/2036
G463PC-AC-3	HUARONG FINANCE II CO LT-SENIOR UNSECURE	D	2		2FE	546,240	100	2144	501,072	500,000	539,655	(5,696)		5.500	4.008	JJ	12,604	27,500	10/31/2017	01/16/2025	
G4691#-AC-9	IMI Group Limited Gtd Senior Note	D	1			20,400,000	102	0969	20,827,768	20,400,000	20,400,000			7.610	7.604	JJ	659,787	1,552,315	07/28/2009	07/28/2019	
G4691#-AD-7	IMI PLC Senior Note	B	1		2	32,380,920	98	7668	34,610,968	35,043,120	35,043,120			(1,744,200)	1.390	1.390	AO	105,000	502,406	04/13/2015	04/13/2025
G4691#-AJ-4	IMI PLC Senior Unsecure	D	2			12,100,000	97	6640	11,817,344	12,100,000	12,100,000			3.920	3.920	AO	173,427	178,360	04/04/2018	04/05/2027	
G4706N-AH-4	IDH FINANCE PLC-SECURED	B	2		4FE	13,304,620	82	0500	10,614,964	12,937,190	12,937,190			(789,670)	6.250	6.246	FA	309,085	846,917	07/22/2016	08/15/2022
G47661-AA-4	INDUSTRIAL SENIOR TRUST GTD SR NT	D	5		3FE	183,500	97	2500	194,500	200,000	189,763	2,124		5.500	6.974	MN	1,833	11,000	11/04/2015	11/01/2022	
G4803#-AE-0	Informa Group Holdings L Senior Note Ser	D	2			45,000,000	100	5942	45,267,390	45,000,000	45,000,000			4.680	4.678	JD	1,146,600	2,106,000	12/15/2010	12/15/2020	
G4948#-AC-0	Iron Mountain UK PLC-SENIOR UNSECURED	D	1		3FE	9,758,418	87	9960	8,972,776	10,196,800	9,713,100	20,545		3.875	4.690	MN	50,361	200,252	09/04/2018	11/15/2025	
G4986*-AB-9	JIB Group Limited Senior Note Ser	D	1		2	5,300,000	102	0544	5,408,883	5,300,000	5,300,000			5.590	5.590	MS	74,890	296,270	09/30/2010	09/30/2020	
G4986*-AE-3	JIB Group Limited Senior Note Ser	D	1		2	16,100,000	97	1310	15,638,091	16,100,000	16,100,000			3.780	3.779	JJ	875,679	608,580	01/23/2013	01/23/2023	
G4986*-AF-0	JIB Group Limited Senior Note Ser	D	1		2	15,200,000	96	6084	14,684,477	15,200,000	15,200,000			3.930	3.929	JJ	859,535	597,360	01/23/2013	01/23/2025	
G4R1JX-AY-7	Heathrow Funding Limited Senior Secured	B	1		1Z	72,055,500	94	3433	66,137,484	70,103,000	70,103,000			(1,952,500)	2.926	2.928	MS	538,910		09/28/2018	09/28/2043
G5084T-AG-2	Jerrold Finco Plc-FIRST LIEN	B	1		3FE	2,633,142	96	0070	2,447,410	2,549,200	2,567,252	(815)		6.125	5.866	JJ	72,850	182,126	10/22/2018	01/15/2024	
G5084T-AG-2	Jerrold Finco Plc-FIRST LIEN	B	1		3FE	6,346,412	96	0070	6,118,526	6,337,163	6,337,163	2,423		6.125	6.256	JJ	182,126	72,850	08/24/2018	01/15/2024	
G5147*-AD-8	Johnson Matthey PLC Senior Note Ser	D	1		1	67,400,000	95	5831	64,423,009	67,400,000	67,400,000			3.390	3.390	JD	165,018	2,284,860	06/05/2013	06/05/2028	
G5213Z-AU-4	KALSA GROUP HOLDINGS LTD-SENIOR UNSECURE	D	1		5G1	304,875	68	1484	204,445	300,000	304,204	(568)		9.375	9.046	JD	14,141	28,125	08/31/2017	06/30/2024	
G5222#-AD-2	Keller Group plc Gtd Senior Note	D	1		2	9,700,000	98	8145	9,585,007	9,700,000	9,700,000			3.810	3.810	AO	84,180	369,570	10/09/2014	10/12/2021	
G5222#-AE-0	Keller Group plc Gtd Senior Note	D	1		2	18,200,000	97	8945	17,816,799	18,200,000	18,200,000			4.170	4.169	JD	31,623	758,940	12/16/2014	12/16/2024	
G5241#-AE-7	Kerry Group Financial Se Senior Note Ser	D	1		2	5,300,000	100	5828	5,330,888	5,300,000	5,300,000			4.830	4.828	JJ	114,484	255,990	01/20/2010	01/20/2020	
G5241#-AF-4	Kerry Group Financial Se Senior Note Ser	D	1		2	13,400,000	100	9427	13,526,322	13,400,000	13,400,000			4.930	4.928	JJ	295,444	660,620	01/20/2010	01/20/2022	
G5258#-AB-3	King's College, London Senior Note Ser	B	1		1	73,354,320	98	6236	58,830,240	59,651,280	59,651,280			(3,641,040)	3.030	3.030	MN	200,074	1,893,115	05/21/2015	05/21/2040
G5264#-AA-9	Kingspan Securities No 2 Gtd Senior Note	D	1		2	18,200,000	103	2007	18,782,527	18,200,000	18,200,000			5.250	5.248	FA	374,238	955,500	08/10/2011	08/10/2021	
G5265*-AC-6	Kingspan Group PLC Gtd Senior Note	B	1		2	48,132,000	98	1266	50,568,562	51,534,000	51,534,000			(2,565,000)	1.640	1.640	MN	104,929	871,716	11/16/2016	11/16/2026
G5265#-AB-6	Kingspan Securities 2017 Gtd Senior Note	B	2			18,609,000	98	1164	16,854,435	17,178,000	17,178,000			(1,431,000)	1.510	1.510	JJ	109,108	136,205	01/31/2018	01/31/2026
G5265#-AC-4	Kingspan Securities 2017 Gtd Senior Note	B	2			12,406,000	98	0282	11,226,189	11,452,000	11,452,000			(954,000)	1.800	1.800	JJ	86,708	108,242	01/31/2018	01/31/2028
G5284F-AA-3	KKR Wolverine I Ltd Class A Senior	D	1		1FE	77,879,089	73	0189	73,018,900	100,000,000	81,313,993	1,846,058		0.000	2.818	MAT			12/16/2016	01/15/2027	
G5284G-AB-9	KKR Wolverine I Ltd Class S-2 Subor	D	1		6*			73,0189	14,604	20,000			0.000	0.000	MAT			12/16/2016	01/15/2027		
G5304*-AA-3	Knowsley Housing Trust Senior Secured	B	1		1	29,134,600	98	7428	23,912,939	24,217,400	24,217,400			(1,478,200)	3.570	3.570	AO	146,878	905,611	04/30/2015	04/30/2030
G5304*-AB-1	Knowsley Housing Trust Senior Secured	B	1		1	29,134,600	100	0342	24,225,682	24,217,400	24,217,400			(1,478,200)	3.810	3.810	AO	156,752	966,493	04/30/2015	04/30/2035
G5304*-AC-9	Knowsley Housing Trust Senior Secured	B	1		1	36,188,240	101	2910	30,468,900	30,080,560	30,080,560			(1,836,080)	3.980	3.980	AO	203,390	1,254,050	04/30/2015	04/30/2040
G5560*-AB-0	London School Of Economi Senior Note Ser	B	1		1	48,816,000	121	0421	46,284,078	38,238,000	38,238,000			(2,334,000)	4.140	4.140	MN	148,735	1,658,998	11/27/2013	11/27/2043
G5635P-AF-6	Longfor Properties Co Lt-SENIOR UNSECURE	D	1		2FE	3,640,000	87	2832	3,491,328	4,000,000	3,653,771	13,771		4.500	5.740	JJ	82,500	99,200	07/0		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
G6043#-AD-7	Metropolitan Housing Tru Senior Note Ser	B	1	1	1	35,822,600	131.9697	37,005,888	28,041,200	28,041,200				(1,711,600)	6.040	6.039	FA	709,212	1,773,978	08/02/2011	08/02/2041
G6164#-AC-2	Mitie Treasury Managemen Gtd Senior Note	D	1	3	1	18,000,000	88.8202	15,987,636	18,000,000	18,000,000					3.850	3.849	JD	28,875	711,000	12/13/2012	12/16/2022
G6177#-AB-9	Inchcape PLC Senior Note Ser	D	1	2	1	11,000,000	100.8530	11,093,830	11,000,000	11,000,000					6.040	6.036	MN	70,131	664,400	05/23/2007	05/23/2019
G6177#-AC-7	Inchcape PLC Senior Unsecure	B	1	2	1	51,760,000	99.8058	50,884,989	50,984,000	50,984,000				(3,112,000)	2.850	2.850	MN	173,030	1,521,925	05/18/2017	05/18/2024
G632A7-AB-2	MOTO FINANCE PLC-MOTOIN 4 1/2 10/01/22	B	1	4FE	1	1,175,485	94.7500	1,105,030	1,166,259	1,147,293		863		(29,055)	4.500	4.978	JAUJ	2,316	18,873	10/22/2018	10/01/2022
G632A7-AB-2	MOTO FINANCE PLC-MOTOIN 4 1/2 10/01/22	B	1	4FE	1	9,298,600	94.7500	9,178,395	9,686,960	9,686,960				(591,280)	4.500	4.500	JAUJ	19,236	453,347	03/14/2017	10/01/2022
G6462#-AA-9	Newlon Housing Trust Senior Secured	B	1	1	1	49,710,450	103.6755	40,634,524	39,193,950	39,193,950				(2,392,350)	4.080	4.079	JD	83,740	1,674,919	12/12/2012	12/12/2027
G6463B-AA-3	NEW METRO GLOBAL LTD-SENIOR UNSECURED	D	1	3FE	1	791,304	88.0650	704,520	800,000	793,469		1,596			5.000	5.250	FA	15,889	40,000	08/01/2017	08/08/2022
G6463B-AB-1	New Metro Global Ltd-SENIOR UNSECURED	D	1	5G1	1	12,929,000	99.6580	12,929,000	12,929,000	12,929,000					4.750	4.750	FA	237,121	312,890	02/01/2018	02/11/2019
G6515#-AB-0	John Wood Group plc Senior Note Ser	D	1	2	1	39,000,000	96.1069	37,481,691	39,000,000	39,000,000					3.770	3.769	FA	563,615	1,470,300	08/13/2014	08/13/2024
G6515#-AE-4	John Wood Group plc Senior Note Ser	D	1	2	1	24,000,000	96.4259	23,142,216	24,000,000	24,000,000					3.870	3.870	MN	123,840	928,800	11/13/2014	11/13/2024
G6710E-AK-6	OEBRECHT FINANCE LTD-SENIOR UNSECURED	D	1,5	6FE	1	66,500	15.4486	30,897	200,000	30,897	(68,042)	15,209			5.125	29.169	JD	5,267	10,250	05/19/2016	06/26/2022
G6710E-AL-4	OEBRECHT FINANCE LTD GTD NT	D	1,5	6FE	1	193,000	14.0000	28,000	200,000	28,000	(165,453)	101			7.125	7.421	JD	198	14,250	03/17/2014	06/26/2042
G6711K-AA-3	OEBRECHT OFFSHRE DRILL FIN SR SEC'D NT	D	1	6FE	1	141,963	39.7500	165,908	417,379	165,908	(2,087)				6.750	12.693	JAUJ	30,527	26,391	06/22/2015	10/01/2022
G6711K-AC-9	Odebrecht Offshore Drill-FIRST LIEN	D	1	5FE	1	60,406	92.8750	81,139	87,363	69,746		9,106			6.720	22.803	MJSD	10,779		12/22/2017	12/01/2022
G6718S-QN-4	OCADO GROUP PLC-SECURED	B	1	3FE	1	12,506,132	96.5540	11,981,874	12,409,506	12,393,341		1,241		(646,016)	4.000	4.027	JD	21,905	458,656	10/22/2018	06/15/2024
G6750*-AB-8	1887 Company Ltd Senior Secured	D	1	2	1	38,000,000	102.2071	38,838,698	38,000,000	38,000,000					5.010	5.010	AO	460,085	1,903,782	04/04/2011	04/04/2021
G6750*-AC-6	1887 CO LTD GBP SER C SR SEC'D NT	B	1	2	1	35,860,240	99.6237	29,459,445	29,570,720	29,570,720				(1,804,960)	2.840	2.840	AO	145,000	879,645	04/29/2015	04/29/2025
G6753Y-AA-2	Ooredoo International Fi-SENIOR UNSECURE	D	1	1FE	1	395,821	95.7500	400,235	418,000	396,342		521			3.750	4.576	JD	8,229	4,964	10/16/2018	06/22/2026
G6774*-AB-0	Origin Finance 2 plc Senior Secured	B	1	1	1	14,753,700	108.2146	12,413,730	11,471,400	11,471,400				(700,200)	4.660	4.659	JD	29,452	559,908	12/11/2013	12/11/2028
G6774*-AC-8	Origin Finance 2 plc Senior Secured	B	1	1	1	40,982,500	112.6813	35,905,896	31,865,000	31,865,000				(1,945,000)	4.910	4.909	JD	86,199	1,638,740	12/11/2013	12/11/2033
G6774*-AD-6	Origin Housing Limited Senior Secured	B	1	1	1	19,407,000	92.9750	17,775,890	19,119,000	19,119,000				(1,167,000)	3.074	3.074	JD	35,620	615,579	06/09/2017	06/09/2032
G6853B-AB-2	Oxford Brookes Universit Senior Note Ser	B	1	1	1	18,515,680	107.9064	19,667,862	18,226,780	18,226,780				(1,112,540)	3.070	3.760	JD	54,859	717,815	12/02/2015	12/02/2035
G6853B-AC-0	Oxford Brookes Universit Senior Note Ser	B	1	1	1	21,352,760	110.7167	20,180,089	18,226,780	18,226,780				(1,112,540)	3.910	3.910	JD	57,047	746,451	12/02/2015	12/02/2040
G6853B-AE-6	Oxford Brookes Universit Senior Note Ser	B	2	1Z	1	49,192,500	98.5483	47,103,624	47,797,500	47,797,500				(1,395,000)	3.080	3.080	FA	616,451		08/02/2018	08/02/2043
G6892#-AA-5	Paradigm Homes Charitabl Senior Secured	D	1	1Z	1	80,928,830	91.1949	67,301,234	73,799,340	73,799,340				(7,127,490)	3.250	3.252	AO	1,691,191		04/25/2018	04/27/2048
G6970*-AB-2	Peel Ports PP Finance Lt Gtd Senior Secu	D	1	2PL	1	43,500,000	102.3572	44,525,382	43,500,000	43,500,000					5.250	5.249	JD	1,141,875	2,283,750	12/10/2012	12/10/2022
G6970*-AJ-5	Peel Ports PP Finance Lt Senior Secured	B	1	2PL	1	32,374,300	99.1098	31,581,338	31,865,000	31,865,000				(1,945,000)	3.450	3.450	JJ	466,634	1,151,540	06/27/2016	01/31/2027
G7028A-AB-9	PETRA DIAMONDS US TREAS-2ND LIEN	D	1	4FE	1	816,500	92.5000	740,000	800,000	810,582		(4,111)			7.250	6.622	MN	9,667	87,483	09/20/2017	05/01/2022
G7028A-AB-9	PETRA DIAMONDS US TREAS-2ND LIEN	D	1	4FE	1	1,100,080	92.5000	1,058,200	1,144,000	1,101,243		1,093			7.250	8.547	MN	13,823	34,220	12/21/2018	05/01/2022
G7059#-AA-2	Phoenix Natural Gas PP F Senior Unsecure	D	1	2	1	38,781,000	93.8458	35,884,757	38,238,000	38,238,000				(2,334,000)	2.120	2.120	FA	402,247	849,074	07/05/2017	08/05/2024
G70709-AB-9	Phosagro OAO Via Phosagr-SENIOR UNSECURE	B	1	2FE	1	752,000	93.5800	748,640	800,000	754,027		2,027			3.949	5.461	AO	5,880	15,796	10/10/2018	04/24/2023
G7137#-AC-6	Plymouth Community Homes Senior Secured	B	1	1Z	1	24,160,799	93.6603	22,542,416	24,068,272	24,068,272				(1,469,097)	3.380	3.380	JD	35,891	852,072	06/15/2017	06/15/2037
G7137#-AC-4	Plymouth Community Homes Senior Secured	B	1	1Z	1	24,160,799	94.0851	22,644,658	24,068,272	24,068,272				(1,469,097)	3.470	3.470	JD	36,847	874,760	06/15/2017	06/15/2042
G7161D-AD-6	Poly Real Estate Finance-SENIOR UNSECURE	D	1	2FE	1	395,000	95.7490	382,996	400,000	395,705		705			3.950	4.238	FA	5,408	7,900	04/02/2018	02/05/2023
G7178*-AB-0	Porterbrook Rail Finance Senior Secured	B	1	2FE	1	48,264,420	96.2771	44,913,614	46,650,360	46,650,360				(2,847,480)	3.180	3.180	JJ	293,737	1,553,805	07/20/2016	07/20/2028
G7178*-AD-6	Porterbrook Rail Finance Senior Secured	B	1	2FE	1	21,099,200	94.2022	19,211,220	20,393,600	20,393,600				(1,244,800)	3.330	3.330	JJ	134,467	675,163	07/20/2016	07/20/2031
G7228#-AA-8	PRES & SCHOLARS ST MARY MAGDALEN SR NT S	B	1	1	1	15,446,000	102.4464	13,057,818	12,746,000	12,746,000				(778,000)	3.220	3.220	AO	69,725	429,909	10/30/2015	10/30/2035
G7228#-AB-6	PRES & SCHOLARS ST MARY MAGDALEN SR NT S	B	1	1	1	15,446,000	103.8332	13,234,580	12,746,000	12,746,000				(778,000)	3.350	3.350	AO	72,540	447,265	10/30/2015	10/30/2040
G7228#-AC-4	PRES & SCHOLARS ST MARY MAGDALEN SR NT S	B	1	1	1	15,446,000	106.2388	13,541,197	12,746,000	12,746,000				(778,000)	3.380	3.380	AO	73,190	451,270	10/30/2015	10/30/2045
G7302V-DK-7	QNB Finance Ltd-SENIOR UNSECURED	D	1	1FE	1	806,800	100.4295	803,436	800,000	806,452		(348)			4.015	3.735	JAUJ	6,691		11/09/2018	07/18/2021
G7302V-HA-5	QNB Finance Ltd-SENIOR UNSECURED	D	1	1FE	1	20,412,240	100.0600	20,412,240	20,400,000	20,412,632		392			4.059	4.098	MJSD	59,801		11/26/2018	12/06/2021
G7304#-AD-9	Quadgas Midco Limited Fixed Rate Guar	B	1	2FE	1	155,625,625	92.6793	147,661,295	159,325,000	159,025,310		12,000		(9,706,389)	3.604	3.618	MS	174,450	6,020,385	03/31/2017	03/31/2037
G7332#-AD-5	RPPF Engine Leasing Ltd Senior Secured	C	1	1FE	1	60,000,000	95.7222	57,433,320	60,000,000	60,000,000					3.647	3.699	AO	864,343	2,003,392	10/30/2013	10/30/2023
G7332#-AG-8	RPPF Engine Leasing Ltd Senior Secured	C	1	1FE	1	23,000,000	89.7209	20,635,807	23,000,000	23,000,000					3.337	3.387	AO	821,995	695,463	04/13/2015	04/13/2027
G7332#-AH-6	RPPF Engine Leasing Ltd Senior Secured	C	1	1FE	1	13,000,000	86.2846	11,216,998	13,000,000	13,000,000					3.387	3.438	AO	663,868	399,433	04/13/2015	04/13/2030
G7333#-AD-4	RPC Group plc Senior Note Ser	D																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest			Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
G7770#-AG-7	Sage Treasury Company Lt Senior Note Ser	D			2	35,000,000	.98 0682	34,323,870	35,000,000	35,000,000					3.730	3.729	JJ	562,090	1,305,500	01/26/2015	01/26/2025
G7801R-AB-5	Sands China Ltd-SENIOR UNSECURED	D	1,5		2FE	1,586,464	.99 0250	1,584,400	1,600,000	1,586,858		394			5.125	5.273	FA	32,344		10/10/2018	08/08/2025
G7895*-AE-6	Scottish Mortgage Invest Senior Note Ser	B			1L	40,044,000	.97 0239	37,099,999	38,238,000	38,238,000				(1,806,000)	2.910	2.910	JD	82,891	569,017	06/04/2018	06/04/2038
G7996#-AA-8	Segro Plc Senior Unsecured	B			1PL	73,137,500	100.8612	72,212,876	71,575,000	71,575,000					1.770	1.770	FA	472,778	1,306,688	08/17/2017	08/17/2027
G7996#-AE-0	Segro plc Senior Note Series B	B	1		1Z	21,413,750	.99 0576	20,986,541	21,186,200	21,186,200				(227,550)	2.370	2.370	AO	109,649		10/12/2018	10/12/2033
G8030*-AE-0	SENIOR PLC USD SR NT SER C	D			2	6,700,000	104.2770	6,986,559	6,700,000	6,700,000					6.940	6.939	AO	107,204	464,980	10/08/2008	10/08/2020
G8038#-AF-5	Serco Group plc Senior Note Ser	D	1		4	7,757,767	103.5061	8,029,762	7,757,767	7,757,767					5.940	5.938	MN	66,562	460,811	05/09/2011	05/09/2021
G8038#-AH-1	Serco Group plc Senior Note Ser	D	1		4	5,424,129	102.3053	5,549,172	5,424,129	5,424,129					5.170	5.169	AO	55,307	280,427	10/20/2011	10/20/2021
G8038#-AJ-7	Serco Group plc Senior Note Ser	D	1		4	8,010,052	104.2040	8,346,794	8,010,052	8,010,052					5.570	5.569	AO	87,993	446,160	10/20/2011	10/20/2023
G8038#-AM-0	Serco Group plc Senior Note Ser	D	1		4	13,718,002	102.3579	14,041,459	13,718,002	13,718,002					5.080	5.079	MN	90,981	696,875	05/14/2013	05/14/2024
G8056*-AB-5	Severn Trent Water Limit Senior Note Ser	B			2	101,553,920	101.9292	93,281,812	91,516,280	91,516,280				(5,586,040)	3.340	3.340	MS	1,014,499	3,201,543	03/03/2016	03/03/2027
G8081B-AA-1	SF Holding Investment Lt-SENIOR UNSECURE	D	1		1FE	9,989,060	100.2045	10,020,450	10,000,000	9,989,661		601			4.125	4.149	JJ	177,604		07/23/2018	07/26/2023
G8228*-AG-7	Smith & Nephew plc Senior Note Ser	D	1		1	28,250,000	.98 4032	27,798,904	28,250,000	28,250,000					2.970	2.970	MN	97,866	839,025	11/19/2014	11/19/2021
G8228*-AK-8	Smith & Nephew plc Senior Note Ser	D	1		1	500,000	.97 8645	489,323	500,000	500,000					3.360	3.360	MN	1,960	16,800	11/19/2014	11/19/2024
G8313-AC-7	SPARC EM SPC PANAMA METR-SECURED	B	2		2FE	34,614,415	.90 6260	35,468,977	39,137,749	36,185,306		1,532,546		0.000	4.303	N/A			06/05/2018	12/05/2022	
G8356*-AA-4	Spirax-Sarco Engineering Senior Unsecure	B			2	32,138,100	.99 7865	30,854,385	30,920,400	30,920,400				(1,539,000)	1.050	1.050	MS	103,837	334,866	09/06/2017	09/06/2023
G8401*-AJ-0	SSP Financing Limited Gtd Senior Note Se	B			2PL	13,157,000	.95 0351	12,113,174	12,746,000	12,746,000				(411,000)	3.060	3.060	AO	82,803		10/15/2018	10/15/2028
G8408#-AA-8	St. James's Oncology Sr Note	B	1		1FE	119,015,243	.96 7487	117,647,061	121,600,664	121,600,664				(7,006,414)	2.804	2.804	MS	869,907	3,347,979	03/31/2017	03/31/2027
G8420V-CC-1	ICBC Standard Bank PLC-SUBORDINATED	D			2FE	905,500	103.1710	825,368	800,000	822,688		(23,606)			8.125	4.925	JD	5,236	65,000	03/31/2015	12/02/2019
G8450L-AD-6	STATE GRID OVERSEAS INV-SENIOR UNSECURED	B	1,5		1FE	13,578,747	101.3380	13,926,273	13,742,400	13,640,257		15,338		(678,661)	1.750	1.874	MAY	149,878	97,985	05/11/2016	05/19/2025
G84640-AA-2	Novolipetsk Steel Via St-SENIOR UNSECURE	D			2FE	460,625	.92 7640	463,820	500,000	461,798		1,173			4.000	5.577	MS	5,556		10/11/2018	09/21/2024
G85381-AA-2	STUDIO CITY FINANCE LTD-SR UNSECURED	D	1		4FE	913,500	100.0000	900,000	900,000	905,457		641			8.500	8.145	JD	6,375	76,500	03/03/2016	12/01/2020
G857AA-AB-8	SUN HUNG KAI PROP (CAP)-SR UNSECURED	D			1FE	4,080,440	100.0418	4,001,672	4,000,000	4,043,647		(9,939)			3.625	3.334	JJ	66,458	145,000	02/11/2015	01/16/2023
G857AB-AA-8	SUN HUNG KAI PROP (CAP)-SR UNSECURED	D	2		1FE	459,855	.99 9887	449,949	450,000	451,043		(3,044)			3.375	1.810	FA	5,316	15,188	04/13/2015	02/25/2024
G8586D-AA-7	Sunny Optical Technology-SENIOR UNSECURE	D	1		2FE	9,956,393	.95 3391	9,712,194	10,187,000	9,966,073		9,680			3.750	4.334	JJ	167,661	97,256	11/14/2018	01/23/2023
G87602-AA-9	TENGIZCHEVROIL FIN CO IN-SECURED	D			2FE	196,476	.92 2280	192,757	209,000	196,763		288			4.000	4.957	FA	3,158	1,417	10/16/2018	08/15/2026
G8781#-AA-5	Thames Water Utilities C Gtd Senior Secu	D			2	8,531,360	.99 3413	7,947,304	8,000,000	8,199,735		(59,513)			3.870	3.033	FA	106,640	309,600	01/01/2013	02/27/2022
G8781#-AB-3	Thames Water Utilities C Gtd Senior Secu	D	1		2	50,634,650	.99 7582	49,879,100	50,000,000	50,324,101		(56,425)			4.020	3.879	FA	692,333	2,013,750	01/01/2013	02/27/2024
G8781#-AC-1	Thames Water Utilities C Gtd Senior Secu	D	1		2	55,000,000	.99 7246	54,848,530	55,000,000	55,000,000					4.220	4.220	FA	799,456	2,321,000	02/27/2012	02/27/2027
G8883U-AA-9	Tianqi Finco Co Ltd-SENIOR UNSECURED	D			2FE	184,400	.86 5557	173,111	200,000	186,001		1,601			3.750	5.775	MN	688	3,750	06/26/2018	11/28/2022
G8967#-AG-8	Triton Container Interna Senior Secured	D	1		2FE	6,400,000	104.4503	6,684,819	6,400,000	6,400,000					8.110	8.110	MS	131,202	453,439	09/17/2008	09/30/2020
G8967#-AJ-2	Triton Container Interna Senior Secured	D	1		2	14,100,000	101.9126	14,369,677	14,100,000	14,100,000					5.150	5.148	JD	726,150	217,668	06/27/2011	06/30/2023
G8967#-AO-6	Triton Container Interna Senior Secured	D	2		2FE	47,500,000	.98 5327	46,803,033	47,500,000	47,500,000					4.260	4.259	JD	16,271	2,023,500	06/12/2014	06/30/2026
G8T472-JL-0	Thomas Cook Group PLC-SENIOR UNSECURED	B	1		4FE	1,295,750	.76 5000	946,164	1,236,816	1,284,388		(4,355)		(7,007)	6.250	4.486	JD	3,418	50,320	10/05/2018	06/15/2022
G8T472-JL-0	Thomas Cook Group PLC-SENIOR UNSECURED	B	1		4FE	3,869,482	.76 5000	2,820,971	3,687,544	3,826,214		(12,468)		(30,801)	6.250	4.598	JD	10,191	43,547	10/04/2018	06/15/2022
G9006#-AD-8	Transmission Finance DAC Senior Secured	B			2FE	75,299,640	.98 6351	79,521,669	80,622,080	80,622,080				(4,012,800)	2.739	2.739	FA	879,142	2,277,630	02/05/2016	02/08/2034
G90155-AE-5	TRAVELER FINANCING PLC-SECURED	B	1		4FE	9,462,120	.84 9960	8,468,355	9,963,240	9,963,240				(495,900)	8.000	7.999	MN	101,148	822,089	04/27/2017	05/15/2022
G9113*-AA-6	Sevenoaks School Foundat Senior Note	B	1		6*	24,573,670	.96 8426	23,082,453	23,835,020	23,082,453		(752,567)		(1,454,860)	3.180	3.180	FA	257,966	793,942	08/31/2016	08/31/2041
G9137M-AA-9	TVL FINNACE PLC-SECURED	B	1		4FE	2,549,895	102.4660	2,546,762	2,485,470	2,485,473		5,046		(150,021)	8.500	8.800	MN	27,017	217,668	07/01/2016	05/15/2023
G9137M-AA-9	TVL FINNACE PLC-SECURED	B	1		4FE	8,345,921	102.4660	7,684,168	7,499,237	7,758,542		(102,547)		(475,036)	8.500	6.887	MN	81,515	634,841	09/09/2016	05/15/2023
G9160#-AA-6	UK Power Networks Servc Senior Note	D	1		2	34,700,000	103.0284	35,750,855	34,700,000	34,700,000					5.000	4.998	JD	81,931	1,735,000	12/14/2011	12/14/2021
G9224*-AE-4	United Drug Finance Ltd Gtd Senior Note	D			2	10,000,000	101.4631	10,146,310	10,000,000	10,000,000					5.250	5.249	MS	166,250	525,000	09/07/2010	09/07/2020
G9224*-AF-1	United Drug Finance Ltd Gtd Senior Note	D	1		2	28,250,000	.99 6564	28,152,933	28,250,000	28,250,000					4.480	4.480	MS	337,493	1,265,600	09/25/2013	09/25/2023
G9284#-AY-3	VITOL FIN LTD USD SER K SR UNSEC NT	D	1		2	45,970,000	103.4044	47,462,620	45,900,000	45,930,710		(11,040)			5.740	5.709	JJ	1,119,731	2,634,660	02/26/2015	07/28/2021
G9284#-BD-8	Vitol Finance Limited Senior Note Ser	D	1		2	72,868,000	.99 3421	72,370,720	72,850,000	72,863,734		(2,763)			4.400	4.395	JD	35,616	3,205,400	08/16/2016	06/27/2023
G9288#-AA-1	University of Brighton Senior Secured	B	2		1	51,345,082	107.0100	40,940,078	38,258,179	38,258,179				(2,879,193)	4.250	4.249	JJ	750,544	1,665,407	07/17/2014	07/17/2039
G9288#-AA-3	University of East Angli Senior Secured	B	1		2	48,697,900	111.9306	44,226,690	39,512,600	39,512,600				(2,411,800)	3.910	3.910	JD	89,348	1,618,180	12/10/2014	12/10/2044
G9288#-AB-1	University of East Angli Senior Unsecure	B																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
G93026-AC-1	University of Edinburgh Senior Note Ser	B		1	1	14,052,220	107.7130	13,454,517	12,491,080	12,491,080				(762,440)	3.460	3.460	FA	161,614	452,679	02/18/2016	02/18/2046
G9303#-AB-0	University of Glasgow Senior Note Ser	B		1	1	24,659,690	100.9367	24,058,283	23,835,020	23,835,020				(1,454,860)	3.010	3.010	JJ	325,039	751,444	07/20/2016	07/20/2051
G9303#-AC-8	University of Glasgow Senior Note Ser	B		1	1	60,612,750	90.3662	53,559,053	59,268,900	59,268,900				(3,617,700)	2.490	2.490	JJ	668,620	1,545,755	07/20/2017	07/20/2042
G9304#-AA-5	University of Birmingham Senior Unsecure	B		1	1	36,591,700	92.8420	32,779,186	35,306,420	35,306,420				(2,155,060)	2.640	2.640	FA	390,301	976,275	08/02/2017	08/02/2042
G9306#-AA-9	University of Keele Senior Note Ser	B		1	1	27,535,600	101.0503	26,403,736	26,129,300	26,129,300				(1,594,900)	3.270	3.270	MS	225,269	894,932	09/27/2017	09/27/2037
G9306#-AB-7	University of Keele Senior Note Ser	B		1	1	27,535,600	103.0455	26,925,068	26,129,300	26,129,300				(1,594,900)	3.370	3.370	MS	232,158	922,300	09/27/2017	09/27/2042
G9308#-AA-1	University of Lancaster Senior Note Ser	B		1	1	45,425,250	94.1472	39,000,007	41,424,500	41,424,500				(4,000,750)	2.700	2.700	AO	205,620	578,158	04/25/2018	04/27/2048
G9309#-AA-6	University of Durham Senior Unsecured No	D		1Z	1Z	18,051,600	93.6753	16,715,795	17,844,400	17,844,400				(207,200)	2.660	2.660	FA	164,224		08/28/2018	08/28/2048
G9328D-AM-2	VEDANTA RESOURCES PLC-SENIOR UNSECURED	D		4FE	4FE	1,122,850	89.4000	983,400	1,100,000	1,100,000		(4,193)			6.375	5.885	JJ	29,414	70,125	08/11/2017	07/30/2022
G9365L-AA-4	Viridian Group FinanceCo-FIRST LIEN	B		1	4FE	6,083,045	91.7500	5,878,803	6,407,414	6,108,873				10,184	4.750	5.717	MS	90,699	152,230	08/20/2018	09/15/2024
G9370P-AA-8	Virgin Media Receivables-FIRST LIEN	B		1	4FE	13,212,864	99.0750	12,628,100	12,746,000	13,043,268				(144,793)	5.750	4.821	AO	550,147		10/22/2018	04/15/2023
G9388B-AB-4	Vue International BidCo-SECURED NOTE	B		2	4FE	3,428,408	98.3750	2,989,268	3,038,646	3,071,208		8.637		(186,198)	7.875	7.124	JJ	100,887	(124,031)	07/05/2016	07/15/2020
G9500#-AA-7	Waypoint Asset Co 8 Limi Senior Secured	D		2	6*	8,658,855	81.4669	9,405,468	11,545,141	8,658,855			2,886,285		4.410	4.410	AO	370,324	510,937	09/25/2015	10/15/2022
G9500#-AC-3	WAYPOINT ASSET CO 8 LTD USD SER C SR NT	D		2	6*	14,431,426	81.7375	15,727,849	19,241,901	14,431,426			4,810,475		4.510	4.510	AO	631,203	870,002	11/24/2015	10/15/2022
G9523#-AE-8	Weir Group plc (The) Senior Note Ser	D		1	2	36,645,920	99.9354	36,226,583	36,250,000	36,258,494		(69,765)			3.690	3.491	FA	501,609	1,337,625	01/01/2013	02/16/2019
G9523#-AF-5	Weir Group plc (The) Senior Note Ser	D		1	2	8,800,000	99.0981	8,720,633	8,800,000	8,800,000					4.270	4.269	FA	140,910	375,760	02/16/2012	02/16/2022
G9523#-AG-3	Weir Group plc (The) Senior Note Ser	D		1	2	35,050,000	99.1492	34,751,795	35,050,000	35,050,000					4.340	4.339	FA	570,439	1,521,170	02/16/2012	02/16/2023
G9605#-AB-5	Whitbread Group PLC Senior Note Ser	D		1	2	11,400,000	101.3864	11,558,050	11,400,000	11,400,000					5.230	5.228	FA	228,551	596,220	08/13/2010	08/13/2020
G9605#-AF-6	Whitbread Group PLC Senior Note Ser	D		1	2	18,100,000	100.7540	18,236,474	18,100,000	18,100,000					4.860	4.859	JJ	378,743	879,660	01/26/2012	01/26/2022
G9605#-AH-2	Whitbread Group PLC Senior Notes Se	B		2	2	28,397,600	92.2936	25,880,233	28,041,200	28,041,200				(1,711,600)	2.540	2.539	FA	270,285	745,963	05/16/2017	08/16/2027
G9605#-AJ-8	Whitbread Group PLC Senior Notes Se	B		2	2	25,732,000	92.9542	23,695,885	25,492,000	25,492,000				(1,556,000)	2.630	2.630	FA	254,420	702,200	08/16/2017	08/16/2027
G9720#-AA-7	Wireless Infrastructure Senior Secured N	B		2Z	2Z	60,386,750	95.9844	58,112,315	60,543,500	60,543,500				156,750	3.700	3.702	FA	862,513		08/15/2018	08/16/2030
G9766#-AE-4	Workspace Group plc Senior Note Ser	B		2	2	36,410,780	97.0514	35,007,585	36,071,180	36,071,180				(2,201,740)	3.190	3.190	FA	436,660	1,205,218	08/16/2017	08/16/2027
G9847C-AA-2	Yankuang Group Cayman Lt-SENIOR UNSECURE	D		5G1	5G1	490,000	96.9804	484,902	500,000	492,650		2.650			4.750	5.568	MN	2,045	23,750	04/02/2018	11/30/2020
G9850#-AB-9	Yorkshire Water Services Gtd Senior Secu	D		1	1	27,300,000	100.5920	27,461,616	27,300,000	27,300,000					3.770	3.770	JD	371,659	1,036,017	12/13/2011	12/13/2021
G9850#-AC-7	YORKSHIRE WTR SERV BRADFORD-GTD SR SEC C	D		1	1	22,500,000	100.5320	22,619,700	22,500,000	22,500,000					3.870	3.870	JD	314,438	876,357	12/13/2011	12/13/2023
G9884T-AC-5	YUZHOU PROPERTIES CO LTD-SENIOR UNSECURE	D		1	4FE	710,430	85.4009	597,806	700,000	707,943		(1,832)			6.000	5.662	AO	7,700	42,000	08/15/2017	10/25/2023
G9884T-AC-5	YUZHOU PROPERTIES CO LTD-SENIOR UNSECURE	D		1	4FE	3,831,750	85.4009	3,330,635	3,900,000	3,848,470		8.823			6.000	6.320	AO	42,900	234,000	01/18/2017	10/25/2023
G9884T-AD-3	Yuzhou Properties Co Ltd-FIRST LIEN	D		2	4FE	193,523	92.2871	192,880	209,000	194,401		878			6.000	8.639	JJ	5,434	2,822	10/16/2018	01/25/2022
G9884T-AG-6	Yuzhou Properties Co Ltd-FIRST LIEN	D		1	4FE	333,337	99.3905	332,958	335,000	333,436		99			7.900	8.114	MN	99	24,627	10/16/2018	05/11/2021
H4172T-TT-7	In'Tech Medical S.A.S. Acquisition Fac	B		5G1	5G1	2,502,356	97.1658	2,468,064	2,540,054	2,518,738		2,377		(125,255)	0.000	0.152	JAJJ			07/10/2017	07/12/2024
J0835#-AH-0	Costco Wholesale Japan L Gtd Senior Note	D		1	1	58,800,000	97.0370	53,093,380	54,714,572	54,714,572					0.920	0.920	JAJJ	236,491	500,217	07/08/2014	07/08/2024
K2162#-AA-4	Danish Crown A/S Senior Gtd Note	D		2	2	8,000,000	101.1052	8,088,416	8,000,000	8,000,000					4.940	4.939	JD	217,360	385,200	06/13/2012	06/13/2022
K2162#-AB-2	Danish Crown A/S Gtd Senior Note	D		2	2	16,000,000	102.4263	16,388,208	16,000,000	16,000,000					5.090	5.089	JD	40,720	814,400	06/13/2012	06/13/2024
K2162#-AG-1	Danish Crown A/S Senior Unsecured Note	B		1	2	56,987,400	97.2748	56,813,541	58,405,200	58,405,200				(2,907,000)	1.920	1.920	JD	92,841	1,156,618	06/01/2016	06/01/2026
K3752#-AE-8	Copenhagen Airports A/S Senior Note Ser	D		1	2	8,550,000	102.3791	8,753,413	8,550,000	8,550,000					6.000	5.997	JD	2,850	513,000	06/29/2010	06/29/2020
K3752#-AG-3	Copenhagen Airports A/S Senior Note Ser	D		1	2	16,000,000	97.7411	15,638,576	16,000,000	16,000,000					4.010	4.009	FA	229,907	641,600	08/22/2013	08/22/2023
K3752#-AH-1	Copenhagen Airports A/S-SENIOR NOTE	B		1	2	49,665,000	102.1838	51,721,174	50,615,826	50,615,826				(2,677,026)	2.350	2.350	FA	410,934	1,229,022	08/27/2015	08/27/2025
K7784#-AA-3	P/F Eystur-og Sandoyartu Senior Secured	B		1Z	1Z	78,097,500	108.6066	93,282,209	85,890,000	85,890,000				(4,275,000)	2.730	2.731	JJ	986,304	2,418,474	12/15/2016	01/31/2040
K8553#-AA-0	Scandlines ApS Senior Secured	B		1	2FE	74,927,471	102.2962	76,856,000	75,130,846	75,130,846				(3,739,485)	2.550	2.551	MS	5,322	1,976,035	07/13/2017	09/30/2028
K880#-AA-3	SIKUKI NUUK HARBOUR A/S SR SEC ND	B		1	3FE	41,225,533	108.9215	46,136,736	42,357,786	42,350,909		777		1,124,599	2.590	2.591	MJSD	861,118	1,655,295	12/31/2016	12/30/2036
K9454#-CE-6	TDC A/S-SENIOR UNSECURED	B		1,5	3FE	22,640,427	110.0120	21,926,404	19,930,920	22,011,491		(87,162)		(541,774)	5.625	2.915	FEB	971,961		10/23/2018	02/23/2023
L0178#-AF-9	Alltice Financing SA-FIRST LIEN	D		1	4FE	751,118	96.0000	722,880	753,000	751,127		9			6.625	6.693	FA	12,472	2,078	10/16/2018	02/15/2023
L0269#-AH-2	Aroundtown SA Senior Unsecured Notes	D		2Z	2Z	88,292,250	102.7022	88,210,920	85,890,000	85,890,000				(2,402,250)	2.970	2.970	SEP	676,208		09/26/2018	09/26/2033
L1369#-AG-4	Cabot Financial Luxembourg-FIRST LIEN	B		1	4FE	6,451,949	90.8600	5,892,421	6,416,300	6,416,300		3.765		(39,414)	7.500	7.767	AO	122,609	235,200	10/25/2018	10/01/2023
L1369#-AG-4	Cabot Financial Luxembourg-FIRST LIEN	B		1	4FE	2,433,604	90.8600	2,156,385	2,373,305	2,380,174		(661)		(52,769)	7.500	7.375	AO	44,870	312,947	10/24/2018	10/01/2023
L19570-AD-2	Consolidated Energy Fina-SENIOR UNSECURE	D		1	3FE	217,099	95.2500	199,073	209,000	216,796		(303)									

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
L6095J-AA-6	LSF9 BALTA ISSUER SA-SECURED	B	1		4FE	4,006,949		92,4304	4,174,254	4,174,254				(207,765)	7.750	7.748	MS	95,268	333,497	07/23/2015	09/15/2022
L6095J-AA-8	LSF9 BALTA ISSUER SA-SECURED	B	1		4FE	130,912		92,4304	120,590	124,859	(2,467)			(6,252)	7.750	5.286	MS	2,752	9,806	05/11/2016	09/15/2022
L6486C-AA-8	Monitchem HoldCo 3 SA-SECURED NOTE	B	1		4FE	8,766,941		97,2500	7,545,365	7,758,730	(7,765,069)	(14,227)		(386,736)	5.250	5.061	JD	18,012	420,125	06/14/2016	06/15/2021
L72728-AC-5	Oriflame Cosmetics SA Senior Note Ser	D	1		2PL	5,944,120		102,6962	6,104,385	5,944,120				5,460	5.458	JJ	151,456	324,549	07/13/2011	07/13/2021	
L8030B-AA-7	Samsonite Finco Sarl-SENIOR UNSECURED	B	1		3FE	3,961,830		90,2000	3,615,396	4,008,200	3,938,168	2,983		(26,645)	3.500	3.773	MM	17,803	78,499	08/23/2018	05/15/2026
L8084D-AM-2	SB CAPITAL SA LUX EURO ISSUE MED TERM NT	D	2		3FE	798,466		100,0000	1,000,000	1,000,000	841,163	1,181			5.500	9.461	FA	19,097	55,000	09/01/2015	02/26/2024
L8084D-AM-2	SB CAPITAL SA LUX EURO ISSUE MED TERM NT	D	2		3FE	813,200		100,0000	800,000	801,663				(7,996)	5.500	4.097	FA	15,278	44,000	07/21/2017	02/26/2024
L8367-AA-1	Shurgard Luxembourg Sarl Gtd Senior Note	B	2		2	33,675,000		103,5128	29,635,715	28,630,000				(1,425,000)	2.670	2.670	JJ	2,123	788,440	07/24/2014	07/24/2021
L8367-AB-9	SHURGARD LUXEMBOURG EURO SER B SR NT	B	2		2	41,757,000		105,9228	37,603,865	35,501,200				(1,767,000)	3.110	3.110	JJ	3,067	1,138,779	07/24/2014	07/24/2024
L8367-AD-5	Shurgard Luxembourg Sarl Gtd Senior Note	B	2		2	14,567,800		103,3212	15,382,047	14,887,600				(741,000)	2.620	2.620	JD	6,483	402,312	06/25/2015	06/25/2025
L8367-AE-3	Shurgard Luxembourg Sarl Gtd Senior Note	B	2		2	14,567,800		102,4777	15,256,470	14,887,600				(741,000)	2.770	2.770	JD	6,854	425,345	06/25/2015	06/25/2027
L8800M-AF-0	SEVERSTAL (STEEL CAP)-SENIOR UNSECURED	D	1		2FE	1,144,921		102,3714	1,135,299	1,109,000			(3,788)		5.900	5.110	AO	19,615	55,771	10/16/2018	10/17/2022
L9031-AA-9	Terminal Investment Limi Gtd Secd Sr USD	D	2		2FE	11,509,000		101,4607	11,677,112	11,509,000					4.970	4.970	AO	303,483	96,915	04/19/2018	04/19/2025
L9031-AB-7	Terminal Investment Limi Gtd Secd Sr USD	D	2		2FE	34,196,000		102,0350	34,891,889	34,196,000					5.100	5.100	AO	891,847	328,950	04/19/2018	04/19/2028
L9630C-AC-2	VELA ENERGY FINANCE SA-SECURED	B	1		2FE	27,317,555		97,4040	27,115,083	27,837,751				(1,331,789)	3.195	3.195	JD	491,725	949,804	06/15/2016	06/30/2036
M0208J-AF-1	African Export-Import Ba-SENIOR UNSECURE	D	2		2FE	605,025		100,1040	600,624	602,544			(2,481)		4.750	3.995	JJ	12,033	14,250	05/31/2018	07/29/2019
M0399Z-AA-5	AL AHLI BANK OF KUWAIT-SENIOR UNSECURED	D	1		1FE	10,952,590		97,9660	10,776,260	11,000,000				9,054	3.500	3.595	AO	91,972	385,000	03/29/2017	04/05/2022
M0908Q-AA-9	African Export-Import Ba-SENIOR UNSECURE	D	2		2FE	1,646,875		93,9350	1,596,895	1,700,000					4.125	4.735	JD	2,143	35,062	07/11/2018	06/20/2024
M25354-AC-1	CBO Finance Ltd-SUBORDINATED	D	2		2FE	430,358		102,1138	426,836	418,000			(2,328)		7.500	4.677	MM	3,745	28,563	10/16/2018	11/18/2019
M2851H-AA-2	DP WORLD LTD-SENIOR UNSECURED	D	2		2FE	921,442		111,2890	912,570	820,000			(1,605)		6.850	5.781	JJ	27,929	50,016	10/16/2018	07/02/2037
M4029Z-HH-3	Emirates NBD PJSC-SENIOR UNSECURED NOTE	D	1		1FE	10,010,650		99,3513	9,935,130	10,000,000			(2,229)		3.250	3.227	MM	37,917	325,000	11/26/2014	11/19/2019
M4029Z-HX-8	Emirates NBD PJSC-SENIOR UNSECURED	D	1		1FE	5,285,681		102,0560	5,843,727	5,726,000					1.442	1.776	MAR	79,044	102,896	03/16/2015	03/23/2022
M4040L-AC-7	Emirates Telecommunicati-SENIOR UNSECURE	D	1		1FE	2,691,657		99,4380	2,684,826	2,700,000					1.731	2.316	JD	2,316	64,125	06/11/2014	06/18/2019
M4587R-AD-1	QNB Finansbank AS-SENIOR UNSECURED	D	2		3FE	185,150		93,4566	186,913	200,000					4.875	7.238	MM	1,138	4,875	10/02/2018	05/19/2022
M4752S-DU-7	Turkiye Garanti Bankasi -SR UNSECURED	D	1		3FE	399,365		98,6400	403,438	409,000					4.750	7.172	AO	13,707	4,936	10/16/2018	10/17/2019
M4752S-EV-4	Turkiye Garanti Bankasi -SENIOR UNSECURE	B	1		4FE	142,974		99,7500	142,792	143,150					4.81			2,345	1,338	10/16/2018	07/08/2019
M4936C-AZ-3	FINANSBANK AS EURO MED TERM NT USD 1.0	D	2		3FE	209,000		100,0828	200,166	200,892			(2,664)		6.250	4.847	AO	2,118	10,382	10/15/2015	04/30/2019
M529AE-AQ-5	ICICI BANK LTD/DUBAI-SENIOR UNSECURED	D	1		2FE	1,515,900		96,7174	1,450,761	1,500,000			(3,015)		3.250	3.020	MS	15,167	48,750	08/31/2017	09/09/2022
M5307Z-AF-7	ICICI BANK LTD/BAHRAIN-SENIOR UNSECURED	D	1		2FE	1,844,799		100,5694	1,416,621	1,408,600					6.125	6.197	APR	67,308	91,561	03/27/2014	04/03/2019
M7080Z-LV-6	NATIONAL BK OF ABU DHABI-SENIOR UNSECURE	D	1		1FE	10,218,750		99,6080	9,960,800	10,028,176			(45,049)		3.000	2.534	FA	115,000	300,000	09/25/2014	08/13/2019
M7871F-AA-1	Petkim Petrokimya Holdin-SENIOR UNSECURE	D	2		4FE	198,277		90,7468	196,013	216,000					5.875	8.183	JJ	5,464	2,820	10/16/2018	01/26/2023
M8933F-DJ-3	Turkiye Is Bankasi-SR UNSECURED	D	1		4FE	388,740		97,0000	405,460	418,000					5.000	10.018	AO	13,991	9,630	10/16/2018	04/30/2020
M89345-AA-3	Turkiye Sise ve Cam Fabr-SENIOR UNSECURE	D	1		3FE	242,694		96,8770	243,161	251,000					4.250	6.507	MM	1,541	9,986	10/16/2018	05/09/2020
M8937B-BW-8	Turkiye Vakiflar Bankasi-SENIOR UNSECURE	D	1		4FE	941,829		99,6608	798,921	801,640				(39,852)	3.500	3.646	JUN	15,281	12,210	06/10/2014	06/17/2019
M8937B-KF-5	TURKIYE VAKIFLAR BANKASI-SECURED	D	1		3FE	5,452,260		95,5496	5,332,202	5,580,560					2.375	2.578	MAY	88,299	130,863	04/26/2016	05/04/2021
M8969G-AK-7	YAPI VE KREDI BANKASI AS EURO SHORT TERM	D	1		4FE	591,000		97,1160	582,696	600,000					4.000	4.329	JJ	10,600	24,000	12/09/2014	01/22/2020
N14928-AE-6	Boskalis Finance BV Senior Note	D	1		2	22,200,000		96,3648	21,392,986	22,200,000					3.660	3.659	JJ	358,863	812,520	07/22/2013	07/22/2023
N2887F-CD-3	EDP FINANCE BV-SR UNSECURED	B	1		3FE	1,346,392		101,5414	1,534,965	1,511,664					2.000	2.733	APR	21,274	31,262	12/07/2015	04/22/2025
N2962F-AC-7	Eneco Holding N.V. Gtd Senior Note	B	1		1	15,167,425		101,1071	13,170,868	13,026,650					4.817	4.817	MS	161,619	647,212	03/28/2007	03/28/2019
N30420-AA-6	Equate Petrochemical BV-SENIOR UNSECURED	D	1		2FE	286,071		96,7090	283,357	293,000					4.250	4.605	MM	2,006	11,865	10/16/2018	11/03/2026
N3783A-AA-7	GTH FINANCE BV-SENIOR UNSECURED	D	1		3FE	609,925		102,4704	590,230	576,000			(3,558)		7.250	5.891	AO	14,790	45,925	10/16/2018	04/26/2023
N42818-BG-9	Koninklijke Vopak N.V. Senior Note Ser	D	1		2	2,000,000		101,4097	2,028,194	2,000,000					5.320	5.317	JD	3,547	106,400	12/18/2009	06/19/2020
N42818-BJ-3	Koninklijke Vopak N.V. Senior Note Ser	D	1		2	11,800,000		103,1554	12,172,337	11,800,000					5.420	5.418	JD	21,319	639,560	12/18/2009	12/19/2021
N42818-BW-4	Koninklijke Vopak N.V. Senior Note Ser	D	1		2	29,000,000		95,2775	27,630,475	29,000,000					4.140	4.139	JD	40,020	1,200,600	12/19/2012	06/19/2027
N4282*-AB-2	Koninklijke FrieslandCam Senior Note Ser	D	1		2	26,400,000		102,1559	26,969,158	26,400,000					5.670	5.669	AO	569,835	1,496,880	04/16/2010	04/16/2020
N44153-AA-7	IHS Netherlands Holdco B-SENIOR UNSECURE	D	1,5		4FE	2,166,250		100,5564	2,111,684	2,100,000			(17,227)		9.500	8.117	AO	35,467	150,522	05/01/2018	10/27/2021
N4445*-AR-7	Intech Capital BV Gtd Senior Note	D	1		6*	1,779,592		4,0000	711,837	17,795,922					7.250	7.250	JJ			12/15/2011	07/15/2037
N50848-AA-9	Koole Terminals Subholdi Senior Secured	B	1		2PL	58,084,400		99,2167	53,743,662	54,167,960				(3,916,440)	2.920	2.963	MS	817,480	459,182	03/22/2018	03/23/2028
N54468-AF-5	MARFRIG HOLDINGS EUROPE -SENIOR UNSECURE	D	2		3FE	1,031,703		100,2500	1,020,545	1,018,000			(1,273)		8.000	7.439	JD	5,203	62,351	10/16/2018	06/08/2023
N5527G-AB-8	MAXEDA DIY HOLDING BV-SECURED	B	1		4FE	7,518,060															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
N7334#-AF-0	Werdhaves N.V. Senior Note	D		1	2	46,300,000	101.0469	46,784,715	46,300,000	46,300,000					4.300	4.299	JJ	873,784	1,990,900	07/23/2014	07/23/2024
N7334#-AT-0	Werdhaves N.V. Senior Note Ser	D		1	2	19,000,000	102.8781	19,546,839	19,000,000	19,000,000					4.610	4.609	JD	41,362	875,900	12/14/2015	12/14/2025
N7660#-AP-2	SHV Nederland BV Gtd Senior Note	D		1	2	15,150,000	102.2711	15,494,072	15,150,000	15,150,000					4.570	4.570	MS	178,858	692,355	03/28/2012	03/28/2024
N7660#-AO-0	SHV Nederland BV Gtd Senior Note	D		1	2	29,400,000	103.4222	30,406,127	29,400,000	29,400,000					4.770	4.770	MS	362,282	1,402,380	03/28/2012	03/28/2027
N7891#-AD-4	AVR Afvalverwerking B.V. Gtd Senior Secu	B		1	2FE	40,266,720	106.3724	39,468,926	37,104,480	37,104,480				(1,846,800)	2.690	2.690	JD	2,773	1,029,472	12/10/2014	12/10/2024
N8084#-AD-9	Sligro Food Group Nederl Gtd Senior Note	D		1	2	12,000,000	99.6345	11,956,140	12,000,000	12,000,000					4.150	4.149	JD	282,200	498,000	12/07/2010	12/07/2020
N8502#-AB-3	Teledyne Netherlands B.V Senior Note Ser	B		1	2	34,092,800	97.9613	35,899,290	36,646,400	36,646,400				(1,824,000)	1.090	1.090	AO	80,503	411,998	04/18/2017	04/18/2024
N8539#-AA-6	TEVA PHARM FNC II BV-EURO ISSUE ST NTS	B		1	3FE	4,867,759	90.2942	4,653,221	5,153,400	5,126,993		6,171		(255,075)	1.250	1.375	MAR	49,325	66,467	03/24/2015	03/31/2023
N8539#-AH-7	Teva Pharmaceutical Fina-SENIOR UNSECURE	B		1	3FE	768,579	100.9600	724,934	718,040	758,916		(1,292)		(8,372)	4.500	3.429	MS	10,776	8,288	10/16/2018	03/01/2025
N9061#-AA-8	VITI B.V. Senior Note	D		1	2	10,000,000	99.8413	9,984,130	10,000,000	10,000,000					4.530	4.529	JD	20,133	442,867	12/15/2015	12/15/2022
N9061#-AG-5	VITI B.V. Senior Unsecure	D		1	2	10,000,000	94.3361	9,433,610	10,000,000	10,000,000					4.050	4.050	JD	84,825	405,000	12/13/2017	12/15/2027
N9146#-AB-3	Van Oord Finance BV Gtd Senior Note	D		1	2	5,948,650	103.1076	5,155,380	5,000,000	5,285,489		(118,433)			5.410	2.829	AO	53,349	270,500	01/01/2013	04/20/2021
N9146#-AC-1	Van Oord Finance BV Gtd Senior Note	D		1	2	26,700,000	105.5450	28,180,515	26,700,000	26,700,000					5.530	5.529	AO	291,201	1,476,510	04/20/2011	04/20/2023
N9353#-AJ-9	VEON Holdings BV-SENIOR UNSECURED	D		1	3FE	239,173	95.7500	240,333	251,000	239,555		382			4.950	5.940	JD	518	10,353	10/16/2018	06/16/2024
N9417#-AB-7	VTR Finance BV-FIRST LIEN	D		1	4FE	8,432,775	100.0000	8,649,000	8,649,000	8,460,020		27,245			6.875	7.401	JJ	574,875		02/06/2018	01/15/2024
N9417#-AB-7	VTR Finance BV-FIRST LIEN	D		1	4FE	64,015	100.0000	62,000	62,000	63,584		(421)			6.875	5.937	JJ	4,120	554,694	02/06/2018	01/15/2024
P0091#-AA-7	Aeris Holding Costa Rica Senior Secured	D		2	3FE	17,600,000	94.5035	16,632,616	17,600,000	17,600,000					7.250	7.248	MN	163,044	1,276,000	12/02/2015	11/15/2025
P0925#-AM-2	BANCO DE BOGOTA SA-SENIOR UNSECURED	D		1	3FE	281,098	91.8760	289,197	293,000	281,332		234			4.375	4.949	FA	5,270	2,599	10/16/2018	08/03/2027
P1499#-AG-0	BANCO PAN SA-SUBORDINATED NOTE	D		5	5FE	311,820	102.7500	308,250	300,000	305,150		(3,660)			8.500	7.092	AO	4,817	25,500	02/15/2017	04/23/2020
P2604#-AA-7	FIBRA Macquarie Mexico Senior Note	D		1	2FE	46,000,000	96.3850	44,337,100	46,000,000	46,000,000					5.550	5.548	JD	7,092	2,545,908	06/30/2016	06/30/2023
P3596#-AA-3	EVIM ENERGIA DEL VALLE DE MEXICO USD SR S	D		1	2FE	32,523,532	96.6800	31,443,751	32,523,532	32,523,532					6.020	6.022	JD	532,988		09/24/2018	12/31/2040
P3713#-AA-6	Elementia SAB de CV-SENIOR UNSECURED	D		1	3FE	200,849	92.1250	192,541	209,000	201,088		239			5.500	6.262	JJ	5,300	2,906	10/16/2018	01/15/2025
P3714#-AR-5	EMPRESAS ICA SAB DE CV SR NT	D		2	6*	155,000	17.1250	171,250	1,000,000		(18,174)		19,374	8.875	61.752	MN		5,292		10/23/2015	05/29/2024
P3919#-AA-7	Fermaca Enterprises S de-FIRST LIEN	D		1	2FE	525,086	99.8760	509,778	510,411	524,830		(256)			6.375	5.998	MS	8,225	1,446	10/16/2018	03/30/2038
P4182#-AE-7	FONTO ECONOMICO MEX-SENIOR UNSECURED	B		1	1FE	5,515,730	102.0000	5,840,520	5,726,000	5,726,000		4,021		(284,063)	1.750	1.825	MAR	80,361	103,329	03/14/2016	03/20/2023
P4675#-AH-8	Genneia SA-SENIOR UNSECURED	D		1	4FE	421,200	90.2500	406,125	450,000	422,692		1,492			8.750	11.144	JJ	17,609		11/16/2018	01/20/2022
P4909#-AA-8	GNL Quintero SA-SENIOR UNSECURED	D		1	2FE	206,388	96.5000	201,685	209,000	206,463		76			4.634	4.855	JJ	4,062	2,045	10/16/2018	07/31/2029
P4954#-AA-8	Grupo Ilesa SA de CV-SENIOR UNSECURED	D		1	4FE	399,921	89.8700	323,521	463,000	405,220		5,300			7.875	15.479	JD	1,317	30,181	10/16/2018	12/18/2020
P6629#-AD-4	Mexico City Airport Trus-SECURED	D		1	2FE	176,378	87.8760	175,752	200,000	176,448		70			5.500	6.403	JJ	4,614	2,322	10/16/2018	07/31/2047
P6784#-AA-2	Nexa Resources Peru SAA-SENIOR UNSECURED	D		1	3FE	598,431	97.2510	598,722	606,000	598,722		291			4.625	4.940	MS	7,240	1,402	10/16/2018	03/28/2023
P7077#-AF-1	Nassau Airport Developme Senior Note	D		1	2PL	17,978,000	110.4675	19,859,847	17,978,000	17,978,000					7.000	7.000	FMAN	320,762	1,250,389	11/30/2010	11/30/2033
P7077#-AH-7	Nassau Airport Developme Senior Note Ser	D		1	2PL	12,845,875	106.8332	13,723,659	12,845,875	12,845,875					6.340	6.340	MJSD	207,516	809,971	05/31/2012	03/31/2035
P7077#-AK-0	Nassau Airport Developme Senior Note Ser	D		1	2PL	5,656,750	107.5648	6,084,672	5,656,750	5,656,750					6.440	6.440	MJSD	92,816	362,564	08/30/2012	06/30/2035
P7862#-AY-3	Petroleos Mexicanos-SENIOR UNSECURED	B		1	2FE	13,976,393	109.9250	14,011,041	12,746,000	14,047,683		(4,763)		76,054	8.250	4.918	JUN	606,284		12/21/2018	06/02/2022
P7873#-AE-6	Pampa Energia SA-SENIOR UNSECURED	D		1	4FE	270,351	89.8200	263,173	293,000	271,183		832			7.375	9.421	JJ	9,604	5,102	10/16/2018	07/21/2023
P8405#-AA-4	SAMARCO MINERACAO SA NT REG S	D		1	6FE	165,000	75.5000	226,500	300,000	209,485		16,355			4.125	14.575	MN	48,263	30,800	11/09/2015	11/01/2022
P8405#-AC-0	SAMARCO MINERACAO SA-SR UNSECURED	D		1	6FE	180,000	78.2510	234,753	300,000	208,003		10,216			5.375	13.149	MS			11/12/2015	09/26/2024
P8674#-AB-5	SIGMA ALIMENTOS SA-SENIOR UNSECURED NOTE	D		1,5	2FE	745,313	103.1500	644,688	625,000	643,440		(18,577)			6.875	3.710	JD	1,790	42,969	01/01/2013	12/16/2019
P8512#-AA-3	Rio Energy SA / UGEN SA -SECURED	D		1	4FE	142,500	74.0000	144,300	200,000	144,300		1,800			6.875	13.780	FA	5,729	9,348	09/06/2018	02/01/2025
P9308#-AZ-6	Transportadora de Gas de-SENIOR UNSECURE	D		1	4FE	238,078	90.8760	228,099	251,000	239,351		273			6.750	7.686	MN	2,777	16,189	10/16/2018	05/02/2025
P9891#-AY-7	YPF SA-SENIOR UNSECURED	D		1	4FE	1,786,500	94.0000	1,692,000	1,800,000	1,787,449		949			8.750	8.941	AO	38,063	78,750	07/24/2018	04/04/2024
P9891#-BG-5	YPF SA-SENIOR UNSECURED	D		1	4FE	506,869	98.7500	495,725	502,000	506,427		(442)			8.500	8.049	MS	11,616	2,726	10/16/2018	03/23/2021
Q0102#-AA-3	Adani Abbot Point Termin Secured	D		1	2	48,550,000	91.0894	44,223,904	48,550,000	48,550,000					4.430	4.430	MS	591,460	2,636,265	09/22/2014	09/22/2021
Q0458#-AB-5	AquaSure Finance Pty Ltd Gtd Senior Secu	D		1	2FE	68,050,000	101.8432	69,304,298	68,050,000	68,050,000					4.480	4.480	FA	1,431,167	3,048,640	02/27/2014	02/27/2024
Q0695#-AA-0	Aurizon Network Sr Unsecd Term Note	D		2	1FE	15,666,181	105.1800	15,000,850	14,262,075	14,334,349				(1,565,116)	5.750	5.750	AO	577,625	870,338	03/31/2016	10/28/2020
Q0832#-AD-8	Australia Pacific Airpor Gtd Senior Note	D		1	1FE	64,200,000	105.5051	67,734,274	64,200,000	64,200,000					4.770	4.770	MS	901,689	3,062,340	09/15/2011	09/15/2026
Q0950#-AA-1	AUST & NZ BANKING GROUP-SUBORDINATED NOT	D		2	1	21,465,000	66.9356	27,108,918	40,500,000	21,465,000					2.963	2.963	JJ	206,634	995,098	10/31/2007	01/01/9999
Q1297#-AJ-7	CSL Finance Pty Ltd-GTD SENIOR NOTE SERI	B		1	1	51,715,000	102.0826	51,929,419	50,870,000	50,870,000				(485,000							

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
Q2308*-AA-5	Charter Hall Retail REIT Gtd Senior Note	D		1	2FE	37,900,000		35,984,458	37,900,000	37,900,000					3.550	3.550	JJ	594,240	1,345,450	07/22/2015	07/22/2027
Q2308*-AB-3	Charter Hall Retail REIT Gtd Senior Note	D		2		18,400,000		17,853,023	18,400,000	18,400,000					3.760	3.760	MN	94,167	691,840	05/12/2016	05/12/2026
Q2887*-AA-0	Goodman Property Trust Senior Secured	D		1	2FE	20,600,000		19,859,492	20,600,000	20,600,000					3.460	3.460	AD	31,678	712,760	06/15/2015	06/15/2025
Q3079*-AA-6	DBCT Finance Pty Limited Gtd Senior Note	D		1	2	11,900,000		12,041,277	11,900,000	11,900,000					5.230	5.229	AO	108,915	622,370	04/28/2011	04/28/2020
Q3079*-AB-4	DBCT Finance Pty Limited Gtd Senior Note	D		1	2	11,850,000		12,287,585	11,850,000	11,850,000					5.570	5.569	MS	194,347	660,045	03/15/2011	03/15/2023
Q3079*-AC-2	DBCT Finance Pty Limited Gtd Senior Secu	D		2		2,100,000		2,024,205	2,100,000	2,100,000					3.840	3.840	MS	24,416	80,640	09/12/2012	09/12/2024
Q3189*-AC-3	DEXUS Funds Management L Senior Note Ser	D		1	1	40,850,000		40,199,668	40,850,000	40,850,000					3.760	3.760	JJ	733,848	1,535,960	07/09/2013	07/09/2028
Q3189*-AK-5	DEXUS Diversified Trust Gtd Senior Note	C		1	1	25,000,000		23,612,350	25,000,000	25,000,000					3.640	3.640	MN	78,361	910,040	11/30/2017	11/30/2029
Q3189*-AL-3	DEXUS Diversified Trust Gtd Senior Note	C		1	1	25,000,000		23,680,025	25,000,000	25,000,000					3.790	3.790	MN	81,590	947,500	11/30/2017	11/30/2032
Q3261*-AP-1	Downer Group Finance Pty Gtd Senior Note	D		2	2FE	35,000,000		34,943,405	35,000,000	35,000,000					4.570	4.569	JJ	768,649	1,599,500	07/08/2015	07/08/2025
Q3300*-AA-1	Dulux Australia Gtd Senior Note	D		2		9,000,000		8,864,595	9,000,000	9,000,000					3.680	3.680	MS	94,760	331,200	09/18/2014	09/18/2021
Q3300*-AB-9	Dulux Australia Gtd Senior Note	D		2		11,000,000		10,758,616	11,000,000	11,000,000					4.130	4.130	MS	129,980	454,300	09/18/2014	09/18/2024
Q3534*-AB-5	Australian Gas Networks Senior Note Ser	D		1	2	32,861,190		33,743,530	33,100,000	32,940,666		14,835			4.550	4.618	JJ	707,007	1,506,050	01/01/2013	07/12/2027
Q3535*-AD-8	Envestra Victoria Pty Lt Senior Secured	D		1	1FE	43,650,000		50,399,207	43,650,000	43,650,000					6.520	6.518	JJ	1,422,990	2,845,980	07/01/2010	07/01/2027
Q3629*-AE-3	ETSA Utilities Finance P Gtd Senior Secu	D		1	1	26,150,000		26,654,407	26,150,000	26,150,000					6.310	6.309	MS	481,269	1,650,065	09/16/2009	09/16/2019
Q3629*-AG-8	ETSA Utilities Finance P Gtd Senior Note	D		1	1	36,000,000		35,477,604	36,000,000	36,000,000					3.340	3.340	MS	370,740	1,202,400	09/10/2014	09/10/2022
Q3915*-AB-2	Fletcher Building Intern Gtd Senior Note	D		1	2	23,500,000		23,863,334	23,500,000	23,500,000					6.430	6.429	MS	423,933	1,652,296	09/20/2007	09/20/2019
Q3915*-AC-4	Fletcher Building Limite Senior Note Ser	D		1	2	18,200,000		16,946,366	18,200,000	18,200,000					3.700	3.700	JJ	643,909	725,354	07/20/2016	07/20/2026
Q3915*-AD-2	Fletcher Building Limite Senior Note Ser	D		1	2	14,100,000		12,980,784	14,100,000	14,100,000					3.800	3.800	JJ	507,522	571,050	07/20/2016	07/20/2028
Q3917*-AA-2	Flinders Port Holdings P Senior Secured	D		2	2PL	7,000,000		6,860,126	7,000,000	7,000,000					4.170	4.170	MS	83,516	291,900	09/18/2014	09/18/2024
Q3917*-AB-0	Flinders Port Holdings P Senior Secured	D		2	2PL	23,000,000		22,207,466	23,000,000	23,000,000					4.270	4.270	MS	280,990	982,100	09/18/2014	09/18/2026
Q3920*-AG-4	Fonterra Co-operative Gr Senior Note	D		1	1FE	42,400,000		40,957,340	42,400,000	42,400,000					3.400	3.400	MS	384,427	1,441,600	09/25/2014	09/25/2026
Q3920*-AL-3	Fonterra Co-operative Gr Senior Unsecure	D		1	1FE	30,000,000		30,615,930	30,000,000	30,000,000					4.090	4.090	JD	44,308		12/18/2018	12/18/2028
Q3946*-AC-7	Foxtel Management Pty Lt Gtd Senior Secu	D		1	2FE	8,950,000		9,076,088	8,950,000	8,950,000					6.200	6.199	MS	149,515	554,900	09/24/2009	09/24/2019
Q3946*-AE-3	Foxtel Management Pty Lt Gtd Senior Note	D		1	2FE	21,000,000		20,791,008	21,000,000	21,000,000					4.270	4.269	JJ	388,570	896,700	07/25/2012	07/25/2022
Q3946*-AF-0	Foxtel Management Pty Lt Gtd Senior Note	D		1	2FE	27,000,000		26,800,848	27,000,000	27,000,000					4.420	4.419	JJ	517,140	1,193,400	07/25/2012	07/25/2024
Q3958*-AA-4	GAIF Bond Issuer Pty Ltd Gtd Senior Note	D		1	2	4,400,000		4,564,102	4,400,000	4,400,000					5.260	5.258	JD	10,929	231,440	12/14/2011	12/14/2021
Q3958*-AC-0	GAIF Bond Issuer Pty Ltd Gtd Senior Note	D		1	2	21,500,000		22,753,558	21,500,000	21,500,000					5.410	5.409	JD	54,927	1,163,150	12/14/2011	12/14/2023
Q3958*-AJ-5	GAIF Bond Issuer Pty Ltd Gtd Senior Note	D		1	2FE	35,000,000		35,460,670	35,000,000	35,000,000					4.350	4.349	JD	71,896	1,522,500	12/15/2014	12/14/2024
Q4217*-AA-9	Goodman Fielder Treasury Gtd Senior Note	D		1	4	40,000,000		39,677,640	40,000,000	40,000,000					4.810	4.809	MS	593,233	1,924,000	09/10/2010	09/10/2020
Q4352*-AA-2	Growthpoint Properties A Senior Secured	D		1	2Z	33,000,000		31,644,855	33,000,000	33,000,000					4.230	4.230	JD	62,040	1,395,900	06/15/2017	06/15/2027
Q4557*-AB-7	Healthscope Finance Pty Gtd Senior Note	D		1	2FE	27,100,000		25,849,687	27,100,000	27,100,000					4.050	4.049	MN	115,853	1,097,550	05/23/2016	05/23/2026
Q5995*-AA-6	Meridian Finco Pty Ltd. Gtd Senior Note	D		1	2FE	16,000,000		15,777,744	16,000,000	16,000,000					3.360	3.360	MS	155,307	537,600	09/17/2014	09/17/2021
Q5995*-AB-4	Meridian Finco Pty Ltd. Gtd Senior Note	D		1	2FE	14,000,000		13,703,452	14,000,000	14,000,000					3.920	3.920	MS	426,082	548,800	09/17/2014	09/17/2026
Q6077*-AC-7	Mighty River Power Ltd. Gtd Senior Note	D		1	2	25,000,000		25,704,200	25,000,000	25,000,000					4.600	4.599	JD	73,472	1,150,000	12/08/2010	12/08/2025
Q6235*-AF-9	Mirvac Group Finance Ltd Gtd Senior Note	D		1	2FE	25,000,000		26,242,700	25,000,000	25,000,000					4.730	4.729	JD	42,701	1,182,500	12/18/2013	12/18/2024
Q6235*-AN-2	Mirvac Group Finance Ltd Senior Note	D		1	2	42,100,000		40,970,710	42,100,000	42,100,000					3.630	3.630	MS	437,244	1,528,230	09/20/2016	09/18/2028
Q6460*-AA-0	Mundra Port Holdings Tru Floating Rate N	B		4	4	43,925,000		33,540,844	35,215,000	35,215,000					7.915	7.924	MN	295,828	2,869,847	11/25/2015	11/25/2020
Q6518*-AA-8	NSW Ports Finance Co. Pt Gtd Senior Secu	D		1	2	2,900,000		2,704,769	2,900,000	2,900,000					3.340	3.340	AO	16,881	96,860	04/29/2015	04/29/2025
Q6518*-AA-0	NSW Electricity Networks Senior Secured	D		1	2	2,300,000		2,047,982	2,300,000	2,300,000					3.080	3.080	MS	20,662	70,840	09/16/2016	09/16/2026
Q6568*-AA-9	Network Finance Company Gtd Senior Secu	D		1	2Z	42,000,000		39,564,420	42,000,000	42,000,000					3.500	3.501	FA	359,333	935,084	02/14/2018	02/14/2028
Q6634*-AH-4	Newcastle Coal Infrastru Gtd Senior Secu	D		1	2	22,900,000		23,741,209	22,900,000	22,900,000					5.430	5.429	MN	162,342	1,243,470	11/14/2013	11/14/2023
Q7134*-AD-4	Onesteel Finance Pty Ltd Gtd Senior Note	D		1	6	471,891		0.0000	634,582						5.610	0.000	JD			06/28/2011	06/28/2021
Q7134*-AE-2	Onesteel Finance Pty Ltd Gtd Senior Note	D		1	6	310,592		0.0000	417,649						5.710	0.000	JD			06/28/2011	06/28/2023
Q7160*-AE-9	Orica Finance Ltd. Gtd Senior Note	D		1	2	8,800,000		8,828,582	8,800,000	8,800,000					4.530	4.529	AO	73,084	398,640	10/25/2010	10/25/2020
Q7160*-AF-6	Orica Finance Ltd. Gtd Senior Note	D		1	2	4,400,000		4,407,911	4,400,000	4,400,000					4.630	4.629	AO	37,349	203,720	10/25/2010	10/25/2022
Q7160*-AG-4	Orica Finance Ltd. Gtd Senior Note	D		1	2	6,500,000		6,600,542	6,500,000	6,500,000					4.880	4.880	AO	58,153	317,200	10/25/2010	10/25/2025
Q7160*-AH-2	Orica Finance Ltd. Gtd Senior Note	D		1	2	4,700,000		5,040,501	4,700,000	4,700,000					5.900	5.899	AO	50,838	277,300	10/25/2010	10/25/2030
Q7160*-AJ-8	Orica Finance Ltd. Gtd Senior Note	D		1	2FE	20,000,000		20,021,980	20,000,000	20,000,000					4.590	4.590	MS	262,650	918,000	09/18/2013	09/18/2023
Q7160*-AL-3	Orica Limited Gtd Senior Note	D		1	2FE	19,000,000		18,359,992	19												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
Q7794#-AF-0	OPH Finance Co. Pty. Ltd Gtd Senior Secu	B			2FE	27,007,700	108.3995	22,140,273	20,424,700	20,424,700				(2,230,100)	6.280	6.279	FA	498,606	1,361,700	08/14/2014	08/14/2029
Q7795#-AA-0	QIC Finance (Shopping Ce Gtd Senior Note	C				23,950,000	99.4300	23,813,485	23,950,000	23,950,000					3.860	3.860	JJ	436,555	924,470	07/11/2017	07/12/2027
Q7795#-AB-8	QIC Finance (Shopping Ce Gtd Senior Note	C				24,200,000	97.2746	23,540,453	24,200,000	24,200,000					3.960	3.960	JJ	452,540	958,320	07/11/2017	07/11/2029
Q8277#-AL-5	Santos Finance Ltd. Gtd Senior Note	D				8,700,000	101.2098	8,805,253	8,700,000	8,700,000					6.300	6.296	FA	226,853	548,100	08/02/2007	08/02/2019
Q8277#-AM-3	Santos Finance Ltd. Gtd Senior Note	D				6,650,000	105.9530	7,045,875	6,650,000	6,650,000					6.450	6.448	FA	177,527	428,925	08/02/2007	08/02/2022
Q9194#-AC-1	Transpower New Zealand L Senior Note Ser	D				17,500,000	101.2489	17,718,558	17,500,000	17,500,000					3.800	3.830	AO	145,221	670,250	10/13/2011	10/13/2026
Q9194#-AF-4	Transpower New Zealand L Gtd Senior Note	D				28,000,000	100.1986	28,055,608	28,000,000	28,000,000					3.600	3.599	JD	44,800	1,008,000	12/15/2010	12/15/2022
Q9326#-AD-8	University of Melbourne Senior Note Ser	D				15,600,000	108.3678	16,905,377	15,600,000	15,600,000					4.360	4.360	FA	253,171	680,160	02/17/2016	02/17/2046
Q9328#-AA-6	Unison Networks Ltd Senior Note Ser	D				16,894,770	99.6921	16,947,657	17,000,000	16,961,878		12.285			3.780	3.863	AO	108,885	642,600	01/01/2013	10/30/2021
Q9328#-AB-4	Unison Networks Ltd Senior Note Ser	D				14,600,000	99.6084	14,542,826	14,600,000	14,600,000					3.980	3.980	AO	98,461	581,080	10/31/2011	10/30/2023
Q9396#-AK-7	Victoria Power Networks Gtd Senior Note	D				47,000,000	92.3434	43,401,398	47,000,000	47,000,000					2.760	2.760	AO	284,663	1,297,200	10/12/2016	10/12/2026
Q9582#-AA-7	Wellington Electricity D Senior Note Ser	D				7,000,000	98.9792	6,928,544	7,000,000	7,000,000					3.730	3.730	AO	54,396	261,100	09/16/2013	10/16/2020
Q9582#-AB-5	Wellington Electricity D Senior Note Ser	D				8,000,000	98.6867	7,894,936	8,000,000	8,000,000					4.190	4.190	AO	69,833	335,200	09/16/2013	10/16/2022
Q9749#-AF-2	Westrac Pty Ltd Senior Note Ser	D			2PL	775,000	102.4191	793,748	775,000	775,000					5.190	5.189	JD	40,223	60,077	06/07/2011	06/07/2023
Q9749#-AG-0	Westrac Pty Ltd Senior Note Ser	D			2PL	2,325,000	102.4651	2,382,314	2,325,000	2,325,000					5.190	5.189	JD	58,323	120,668	07/07/2011	07/07/2023
Q9749#-AH-8	Westrac Pty Ltd Senior Note Ser	D			2PL	6,200,000	103.7886	6,434,893	6,200,000	6,200,000					5.440	5.439	JD	191,125	337,280	06/07/2011	06/07/2026
Q9749#-AJ-4	Westrac Pty Ltd Senior Note Ser	D			2PL	9,300,000	103.8093	9,654,265	9,300,000	9,300,000					5.440	5.439	JJ	244,528	505,920	07/07/2011	07/07/2026
Q9883#-AA-9	Z Energy Limited Senior Secured	D				20,000,000	94.3589	18,871,780	20,000,000	20,000,000					3.830	3.830	JJ	376,617	383,000	01/04/2018	01/04/2026
Q9883#-AB-7	Z Energy Limited Senior Secured	D				12,000,000	94.2268	11,307,216	12,000,000	12,000,000					4.040	4.040	JJ	238,360	242,400	01/04/2018	01/04/2028
R2284#-AC-4	Statnett SF Senior Note Ser	D				39,100,000	91.7761	35,884,455	39,100,000	39,100,000					3.510	3.510	JJ	606,148	1,372,410	01/22/2013	01/22/2033
R2284#-AG-5	Statnett SF Senior Note Ser	D				50,900,000	90.9658	46,301,592	50,900,000	50,900,000					3.400	3.400	JD	523,987	1,730,600	06/12/2013	06/12/2032
R8047#-AA-3	Solveig Gas Norway A.S. Gtd Senior Secu	D			2FE	90,000,000	97.2676	87,540,840	90,000,000	90,000,000					4.000	3.999	JD	1,810,000	3,600,000	06/27/2012	12/30/2027
S01038-AF-5	African Bank Ltd-SENIOR UNSECURED	D			4FE	1,475,000	92.6411	1,389,617	1,500,000	1,485,191		10.191			6.000	6.937	FA	35,750	54,000	04/11/2018	02/08/2020
S01038-AH-1	African Bank Ltd-SENIOR UNSECURED	D			4FE	409,350	95.6250	382,500	400,000	406,364		(2,986)			8.125	7.157	AO	6,500	32,500	02/08/2018	10/19/2020
S29371-GF-2	FirstRand Bank Ltd-SR UNSECURED	D			3FE	205,000	99.4588	198,918	200,000	202,467		(1,790)			4.250	3.292	AO	1,440	8,500	07/26/2017	04/30/2020
S29371-GG-0	FirstRand Bank Ltd-SUBORDINATED	D			3FE	1,100,613	98.1300	1,092,187	1,113,000	1,100,837		224			6.250	6.405	AO	13,140	43,581	10/16/2018	04/23/2028
T92777-AM-2	Telecom Italia SpA/Milan-SENIOR UNSECURE	B			3FE	14,487,365	99.7498	13,708,017	13,742,400	14,431,288		(28,437)		(27,639)	3.625	2.860	MAY	299,807	1,002,200	10/02/2018	05/25/2026
T9820G-AB-8	Wind Tre SpA-FIRST LIEN	B			3FE	3,723,841	88.9162	3,563,939	4,008,200	3,765,325		12,679		28,805	3.125	4.271	JJ	56,056	88,170	08/17/2018	01/20/2025
V0000J-AC-8	EASTERN & SOUTHERN AFRIC-SENIOR UNSECURE	D			3FE	2,497,069	99.0698	2,485,661	2,509,000	2,500,914		2.285			5.375	5.483	MS	40,083	127,962	10/16/2018	03/14/2022
V0055B-AG-0	Africa Finance Corp-SENIOR UNSECURED	D			1FE	772,000	95.1810	761,448	800,000	774,009		2.009			3.875	4.573	AO	6,717	15,500	07/11/2018	04/13/2024
V6143X-AA-6	MTN MAURITIUS INVTs LTD GTD NT	D			3FE	272,250	90.6910	272,073	300,000	280,292		2.719			4.755	6.104	MN	1,981	14,265	11/02/2015	11/11/2024
V6143X-AB-4	MTN MAURITIUS INVESTMENTS-SENIOR UNSECURE	D			3FE	865,000	97.2876	875,588	900,000	870,474		2.753			6.500	7.053	AO	12,675	58,500	12/02/2016	10/13/2026
V6179#-AB-0	Mestamo Marine Ltd Senior Secured	D				45,000,000	102.2946	46,032,570	45,000,000	45,000,000					5.060	5.059	JD	1,176,450	2,277,000	06/25/2014	06/25/2024
V6277K-AA-2	Neerg Energy Ltd-FIRST LIEN	D			4FE	707,000	93.9068	657,348	700,000	705,530		(1,470)			6.000	5.717	FA	16,100	42,000	02/08/2018	02/13/2022
V6560A-AD-4	OCP SA-SENIOR UNSECURED	D			2FE	219,097	103.8000	216,942	209,000	219,043		(54)			6.875	6.485	AO	9,819	11,350	10/16/2018	04/25/2044
V93278-AA-3	UNITED BANK FOR AFRICA P-SENIOR UNSECURE	D			4FE	197,000	98.7460	197,492	200,000	197,318		318			7.750	8.203	JD	990	5,770	07/09/2018	06/08/2022
W1004#-AC-1	Akelius Residential Prop Senior Note Ser	D			2FE	5,000,000	102.5501	5,127,505	5,000,000	5,000,000					5.210	5.210	JD	20,261	12,032	12/03/2018	12/03/2028
W1004#-AD-9	Akelius Residential Prop Senior Note Ser	D			2FE	18,000,000	102.1966	18,395,388	18,000,000	18,000,000					5.310	5.310	JD	74,340	12,033	12/03/2018	12/03/2030
W2469#-AC-9	Elekta AB Senior Note Ser	D			2PL	4,300,000	101.7049	4,373,311	4,300,000	4,300,000					5.110	5.109	MN	34,791	219,730	05/04/2011	05/04/2021
W2469#-AD-7	Elekta AB Senior Note Ser	D			2PL	10,100,000	102.4438	10,346,824	10,100,000	10,100,000					5.210	5.209	MN	83,317	526,210	05/04/2011	05/04/2023
X0032#-AA-4	Airport Hungary Krt. Tranche 2 Orig	B				31,638,629	103.3626	32,645,497	31,583,471	31,583,471				(1,572,003)	2.820	2.823	JJ	455,368	926,328	07/18/2017	07/19/2027
X0827#-AA-3	Budapest Airport Zrt. Tranche 2 Orig	B				20,673,691	103.3626	21,331,611	20,637,649	20,637,649				(1,027,197)	2.820	2.823	JJ	297,552	603,544	07/18/2017	07/19/2027
X2145#-AC-0	Elenia Finance Oyj-SENIOR SECURED NOTE	B			2FE	82,935,000	97.9211	84,104,433	85,890,000	85,890,000				(4,275,000)	2.684	2.684	FA	847,537	2,377,729	08/19/2015	08/19/2030
X2145#-AD-8	Elenia Finance Oyj Gtd Senior Note	B			2FE	28,257,500	92.7766	26,561,941	28,630,000	28,630,000					2.243	2.243	JD	15,998	662,350	06/22/2016	06/22/2031
X3204#-AB-4	Gibraltar Capital Assets Senior Secured	B			2FE	65,862,600	109.7970	65,075,474	59,268,900	59,268,900				(3,617,700)	3.980	3.982	AO	573,476	2,470,096	04/05/2016	04/05/2046
X4771#-AC-3	Landsnet hf. Senior Notes Se	D				8,000,000	99.1360	4,956,800	5,000,000	5,000,000					4.360	4.360	JD	110,817	110,817	12/28/2016	12/28/2023
X4771#-AD-1	Landsnet hf. Senior Notes Se	D				8,000,000	99.0841	7,926,728	8,000,000	8,000,000					4.360	4.360	MS	110,453	348,830	03/07/2017	03/07/2024
X4771#-AE-9	Landsnet hf. Senior Notes Se	D				11,000,000	98.6031	10,846,341	11,000,000	11,000,000					4.610	4.610	JD	257,776	507,100	12/28/2016	12/28/2026

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
Y27187-AE-6	GLOBAL LOGISTIC PROP-SR UNSECURED EMTN	D			2FE	1,055,456	.88,0450	1,056,540	1,200,000	1,056,486		1,030			3.875	6.156	JD	3,488		12/06/2018	06/04/2025
Y2R40T-AA-6	DELHI INTERNATIONAL AIRP-FIRST LIEN	D	5		3FE	317,500	101.1832	303,550	300,000	312,247	(3,608)				6.125	4.688	FA	7,554	13,339	07/10/2017	02/03/2022
Y3004W-AA-0	GMR HYDERABAD INTERMTO-FIRST LIEN	D			3FE	792,000	82.1191	656,953	800,000	792,730		658			4.250	4.375	AO	23,044	34,000	10/24/2017	10/27/2027
Y3175H-AD-4	Henland Finance Ltd Gtd Senior Note	D	1		1	15,800,000	101.3610	16,015,038	15,800,000	15,800,000					6.280	6.276	JJ	429,971	992,240	07/25/2007	07/25/2019
Y3744K-AA-4	IOI INVESTMENT L BHD-SENIOR UNSECURED NO	D			2FE	6,563,440	100.4528	6,529,432	6,500,000	6,530,950	(8,087)				4.375	4.227	JD	3,160	284,375	09/25/2014	06/27/2022
Y38203-AB-4	HYSAN (MTN) LIMITED-SENIOR UNSECURED NOT	D			1FE	2,972,400	99.5139	2,985,417	3,000,000	2,985,696		3,222			3.500	3.628	JJ	48,125	105,000	08/13/2014	01/16/2023
Y39656-AC-0	Industrial & Commercial -SUBORDINATED	D			2FE	210,515	102.7467	214,741	209,000	210,468	(47)				4.875	4.750	MS	2,830	708	10/16/2018	09/21/2025
Y39694-AA-5	Indika Energy Capital II-FIRST LIEN	D	2		3FE	277,350	86.9465	260,840	300,000	278,001		651			5.875	7.440	MN	2,546	8,812	10/10/2018	11/09/2024
Y44680-CF-4	JSW STEEL LTD SR UNSECURED	D			3FE	3,367,715	99.5040	3,402,042	3,419,000	3,403,375	(16,997)				4.750	5.291	MN	22,105	152,195	10/27/2016	11/12/2019
Y44709-AA-4	KazMunayGas National Co -SR UNSECURED	D			3FE	251,917	98.3790	245,948	250,000	251,382	(287)				4.400	4.258	AO	1,864	11,625	02/06/2017	04/30/2023
Y48585-DU-7	KEB Hana Bank-SUBORDINATED NOTE	D			2FE	7,667,416	99.4632	7,378,180	7,418,000	7,581,150	(25,865)				4.250	3.820	AO	67,432	301,998	10/16/2018	10/14/2024
Y62014-AA-6	Nakilat Inc-FIRST LIEN	D	1,5		1FE	460,929	108.5780	453,856	418,000	460,207	(721)				6.067	4.708	JD	12,750	7,468	10/16/2018	12/31/2033
Y6862H-AB-5	Perusahaan Listrik Negar-SENIOR UNSECURE	B			2FE	8,821,541	99.2450	8,808,291	8,875,300	8,807,219	(1,051)			(15,372)	2.875	2.998	OCT	47,203		10/18/2018	10/25/2025
Y7082R-GP-8	Power Finance Corp Ltd-SENIOR UNSECURED	D			2FE	9,925,607	82.2517	9,129,939	11,100,000	9,974,561		48,954			3.750	5.182	JD	28,906	208,125	07/11/2018	12/06/2027
Y7133M-AC-3	PT PELABUHAN INDO II-SENIOR UNSECURED	D			2FE	244,625	94.2500	235,625	250,000	245,693		572			4.250	4.565	MN	6,965	10,625	02/06/2017	05/05/2025
Y7136Y-AA-8	PERUSAHAAN GAS NEGARA-SENIOR UNSECURED	D			2FE	901,710	99.9169	899,252	900,000	901,641	(69)				5.125	5.085	MN	5,766	23,062	10/10/2018	05/16/2024
Y7139H-BL-7	Bank Rakyat Indonesia Pe-SENIOR UNSECURE	D			2FE	7,975,680	99.0178	7,921,424	8,000,000	7,977,430		1,750			4.625	4.694	JJ	165,472		07/16/2018	07/20/2023
Y7766C-AB-1	China Construction Bank -SUBORDINATED	D	2		2FE	8,555,361	100.1053	8,559,003	8,550,000	8,554,669	(632)				4.250	4.155	FA	132,228		11/21/2018	08/20/2024
Y78650-KG-3	REC Ltd-SENIOR UNSECURED	D			2FE	10,212,187	90.9863	10,283,255	11,280,000	10,217,771		5,584			3.875	5.261	JJ	211,265		12/10/2018	07/07/2027
Y7747W-HN-4	SHINHAN BANK-SUBORDINATED	D	2		2FE	993,000	99.0574	990,574	1,000,000	993,684		83			3.875	3.968	JD	2,583	38,750	12/02/2016	12/07/2026
Y8564*-AB-0	Teekay Shuttle Tanker Fi Senior Secured	D	2		2FE	17,779,155	99.2123	17,651,741	17,791,887	17,785,933		2,116			4.960	4.972	JD	469,202	857,912	11/15/2013	12/31/2023
Y876JUP-AA-4	Southern Gas Corridor CJ-SENIOR UNSECURE	D			3FE	274,309	108.0040	271,090	251,000	273,757		(552)			6.875	5.345	MS	4,650	1,054	10/16/2018	03/24/2026
Y93541-AA-1	Vanke Real Estate Hong K-SENIOR UNSECURE	D			2FE	8,346,900	88.9514	8,005,626	9,000,000	8,376,890		29,990			3.975	4.949	MN	51,675	247,046	07/23/2018	11/09/2027
Y93541-AB-9	Vanke Real Estate Hong K-SENIOR UNSECURE	D			2FE	4,929,600	96.7390	4,836,950	5,000,000	4,937,204		7,604			4.150	4.473	AO	42,076	103,750	05/24/2018	04/18/2023
Y93541-AC-7	Vanke Real Estate Hong K-SENIOR UNSECURE	D			2FE	300,060	96.8410	290,523	300,000	300,034		(26)			4.239	4.292	FMAN	1,272	5,967	07/25/2018	05/25/2023
Y93751-AB-9	YANLORD LAND HK CO LTD-SENIOR UNSECURED	D	1		3FE	416,800	97.9860	391,944	400,000	411,913		(3,535)			5.875	4.816	JJ	10,314	23,500	08/07/2017	01/23/2022
Y9T10P-N8-4	United Overseas Bank Ltd-SUBORDINATED NO	D	2		2FE	3,015,000	99.9390	2,998,170	3,000,000	3,003,653		(1,615)			3.750	3.571	MS	31,875	112,500	08/12/2014	09/19/2024
Y9T10P-X2-6	UNITED OVERSEAS BANK LTD-SUBORDINATED	D	2		2FE	9,957,400	99.0190	9,901,900	10,000,000	9,983,396		168			3.500	3.554	MS	102,983	350,000	03/09/2016	09/16/2026
3299999. Subtotal - Bonds - Industrial and Miscellaneous (Unaffiliated) - Issuer Obligations						56,301,282,114	XXX	55,134,608,541	54,994,957,958	55,671,621,415	(8,639,316)	(44,591,479)	33,645,958	(414,539,054)	XXX	XXX	XXX	700,184,649	2,157,379,938	XXX	XXX
00252F-AJ-0	AAMES MORTGAGE INVESTMEN-SERIES 2004-1 C		4,5		1FML	195,709	99.7868	204,312	204,748	204,748		9,040			4.231	2.710	MON	4,336	3,955	03/06/2014	01/25/2035
004375-BD-2	ACCREDITED MORTGAGE LOAN-SERIES 2004-3 C		4,5		1FML	74,336	101.9465	78,695	77,193	75,250		1,064			5.500	7.941	MON	354	3,972	01/01/2013	10/01/2034
004375-CB-5	ACCREDITED MORTGAGE LOAN-SERIES 2004-4 C		4,5		1FML	1,776,115	99.7432	1,788,883	1,793,490	1,813,474		6,303			3.286	3.485	MON	982	50,006	07/26/2007	01/25/2035
004375-CE-9	ACCREDITED MORTGAGE LOAN-SERIES 2004-4 C		4,5		1FML	2,416,420	100.5201	2,556,828	2,543,600	2,543,600					3.506	4.211	MON	1,486	76,630	11/29/2007	01/25/2035
004375-CF-6	ACCREDITED MORTGAGE LOAN-SERIES 2004-4 C		4,5		1FML	282,480	99.2041	280,047	284,003	284,003		557			3.206	3.810	MON	151	7,647	07/16/2007	01/25/2035
004375-CS-8	ACCREDITED MORTGAGE LOAN-SERIES 2005-1 C		4,5		1FML	25,833	99.9998	25,881	25,881	25,885		(40)			3.206	3.264	MON	14	576	07/26/2007	04/25/2035
004375-CT-6	ACCREDITED MORTGAGE LOAN-SERIES 2005-1 C		4,5		1FML	3,111,501	100.0412	3,708,168	3,706,641	3,680,927		42,867			3.211	4.235	MON	1,984	100,738	10/24/2007	04/25/2035
004427-BK-5	ACE SECURITIES CORP.-SERIES 2003-0P1 CLA		4,5		1FML	68,165	96.9848	65,754	67,798	68,973		390			3.226	3.699	MON	36	1,853	07/16/2007	12/25/2033
00442F-AB-8	ACE SECS CORP HOME EQUITY LN TR 2007-SL1		4,5		1FML	84,166	8.0519	199,086	2,472,551	125,045		29,352			2.926	33.738	MON	17,440	(12,612)	01/11/2008	03/25/2037
007036-BB-6	ADJUSTABLE RATE MORTGAGE-SERIES 2005-1 C		4,5		1FML	101,296	59.3921	1,428,607	2,405,384	(2,729)					4.264	4.264	MON	114,822	121,462	01/11/2008	05/01/2035
00764M-GG-6	AEGIS ASSET BACKED SECUR-SERIES 2005-4 C		4,5		1FML	4,734,385	100.0873	6,321,142	6,315,629	6,123,241		239,670			2.956	5.856	MON	17,750	155,174	01/01/2013	10/25/2035
01853G-AB-6	ALLIANCE BANCORP TRUST-SERIES 2007-S1 CL		4,5		1FML	183,147	5.0812	241,455	4,751,944	114,493		20,404			7.520	37.037	MON	209,178	(31,059)	10/31/2008	05/01/2037
02639M-AK-2	AMERICAN GENERAL MORTGAG-SERIES 2006-1 C		4,5		1FML	12,214,509	102.5355	15,147,984	14,773,412	13,432,454		315,098			5.745	8.205	MON	288,908	804,527	06/19/2006	12/01/2035
02639M-AM-8	AMERICAN GENERAL MORTGAG-SERIES 2006-1 C		4,5		1FML	286,140	102.2431	1,863,871	1,822,980	775,568		209,120			5.745	38.205	MON	35,993	96,621	01/11/2008	12/01/2035
02660C-AH-3	AMERICAN HOME MORTGAGE I-SERIES 2007-2 C		4,5		1FML	229,227	6.1412	172,623	2,810,909	87,025		(9,668)			3.306	44.220	MON	35,848	44,496	01/11/2008	03/25/2047
02660T-BF-9	AMERICAN HOME MORTGAGE I-SERIES 2004-2 C		4,5		1FML	145,602	82.9916	3,394,304	4,089,938	385,960		105,302			3.406	63.557	MON	119,242	107,008	10/07/2008	02/25/2044
02660T-CZ-4	AMERICAN HOME MORTGAGE I-SERIES 2005-1 C		4,5		1FML	4,420,715	100.3514	4,436,250	4,420,715	4,420,715					2.755	2.844	MON	98,767	112,860	03/18/2005	06/25/2045
02660T-HL-0	AMERICAN HOME MORTGAGE I-SERIES 2005-SD1		4,5		1FML	468,933	95.3229	717,182	752,372	556,910		28,627			2.956	9.632	MON	13,853			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
040104-EW-7	ARGENT SECURITIES INC.-SERIES 2004-W1 CL			4	1FIM	3,255	.88	1858	2,870	3,255					3.146	3.902	MON	6	86	01/21/2004	03/25/2034
040104-JJ-1	ARGENT SECURITIES INC.-SERIES 2004-W8 CL			4	1FIM	21,290	100	1732	24,804	24,804			312		3.466	4.294	MON	14	734	08/29/2011	05/25/2034
040104-QN-4	ARGENT SECURITIES INC.-SERIES 2005-W5 CL			4	1FIM	1,120,123	91	9870	1,616,560	1,757,378		1,321,104			2.736	13.225	MON	801	39,262	06/03/2008	01/25/2036
040104-RV-5	ARGENT SECURITIES INC.-SERIES 2006-W2 CL			4	1FIM	1,176,000	58	4096	1,793,690	3,070,884		1,532,425			2.696	16.965	MON	171,599	69,012	10/24/2008	03/25/2036
040104-TF-8	ARGENT SECURITIES INC.-SERIES 2006-W4 CL			4	1FIM	58,180	34	0082	56,695	166,711		56,745			2.616	15.896	MON	1,367	2,689	01/18/2008	05/25/2036
040104-TG-6	ARGENT SECURITIES INC.-SERIES 2006-W4 CL			4	1FIM	676,200	34	3095	740,309	2,157,738		722,956			2.666	16.493	MON	23,236	36,654	10/07/2008	05/25/2036
04012X-AC-9	ARGENT SECURITIES INC.-SERIES 2006-W5CLA			4	1FIM	170,559	34	6614	160,806	463,933		174,451			2.606	14.708	MON	4,417	10,018	08/29/2011	06/25/2036
04542B-CJ-9	ASSET BACKED FUNDING CER-SERIES 2003-AHL			4,5	1FIM	103,673	99	4659	131,781	132,489		119,424			4.184	7.218	MON	462	5,314	12/05/2007	03/01/2033
04544T-AB-7	ASSET BACKED SECURITIES-SERIES 2007-HE2			4	1FIM	10,271	68	8169	37,818	54,955		25,913			2.586	23.243	MON	120	1,111	09/06/2007	05/25/2037
055294-AA-0	BCAP LLC TRUST-SERIES 2006-AA1 CLASS A1			4	1FIM	579,927	88	4191	918,842	1,039,190		853,189			2.696	9.552	MON	7,492	21,939	01/09/2008	10/25/2036
05535D-AN-4	BLACKROCK CAPITAL FINANC-SERIES 1997-R1C			4,5	1FIM	1,569,103	89	8240	2,198,802	2,447,899		2,109,070			7.750	12.195	MON	121,033	295,042	02/15/2000	03/01/2037
05535D-OF-9	BLACKROCK CAPITAL FINANC-SERIES 1997-R3			4,5	1FIM	3,002,671	62	4297	2,901,875	4,648,227		3,063,382		299,841	4.704	14.399	MON	285,826	237,476	02/28/2000	11/01/2028
05946X-YP-2	BANC OF AMERICA FUNDING-SERIES 2005-F C			4	1FIM	348,465	73	5392	373,136	507,398		392,910			2.780	11.798	MON	11,294	19,503	09/10/2007	09/20/2035
05948J-AA-0	BANC OF AMERICA MORTGAGE-SERIES 2002-L C			4	1FIM	157,459	86	2327	178,639	178,639		173,732			3.136	5.598	MON	5,780	5,780	10/07/2008	12/01/2032
05948X-XW-6	BANC OF AMERICA MORTGAGE-SERIES 2003-J C			4	1FIM	17,546	100	8188	17,792	17,647		17,389			4.748	5.320	MON	191	669	04/06/2005	11/01/2033
05949A-GR-5	BANC OF AMERICA MORTGAGE-SERIES 2004-E C			4	1FIM	107,521	99	7754	105,873	106,111		108,807			4.436	4.260	MON	1,574	4,359	04/18/2005	06/01/2034
05949A-LH-1	BANC OF AMERICA MORTGAGE-SERIES 2004-G C			4	1FIM	307,470	101	5763	358,415	352,853		325,969			4.640	6.812	MON	5,626	14,502	11/17/2008	08/01/2034
05949A-ZG-8	BANC OF AMERICA MORTGAGE-SERIES 2004-L C			4	1FIM	104,256	99	7866	114,376	111,869		111,869			4.212	6.256	MON	1,037	4,128	03/23/2006	01/01/2035
05949C-CB-0	BANC OF AMERICA MORTGAGE-SERIES 2005-F C			4,5	1FIM	108,394	93	7722	129,462	138,060		123,734			4.239	8.102	MON	4,391	5,959	08/29/2011	07/01/2035
06050H-KX-5	BANC OF AMERICA MORTGAGE-SERIES 2002-G C			4	1FIM	125,726	95	8686	389,034	405,799		255,566			4.817	21.169	MON	4,576	18,532	10/07/2008	07/01/2032
06050H-KY-3	BANC OF AMERICA MORTGAGE-SERIES 2002-G C			4	1FIM		95	6144	152,647	166,596		166,596			4.817	40.328	MON	1,721	6,970	07/18/2003	07/01/2032
06051G-BD-0	BANC OF AMERICA FUNDING-SERIES 2004-A C			4	1FIM	527,417	101	2815	551,835	544,853		533,459			4.375	5.751	MON	11,442	22,184	10/07/2008	06/01/2032
06051G-BR-9	BANC OF AMERICA FUNDING-SERIES 2004-2 C			4	1FIM	3,596	103	6434	3,920	3,782		3,720			6.500	6.883	MON	20	244	08/29/2011	07/01/2032
06652D-AA-7	BANKUNITED TRUST-SERIES 2005-1 CLASS 1A1			4	1FIM	1,804,315	98	0652	2,501,713	2,551,072		2,139,556			2.806	9.598	MON	1,193	58,585	08/15/2006	09/25/2045
07325V-AG-9	BAYVIEW FINANCIAL ACQUIS-SERIES 2007-A C			4	1FIM	738,334	93	6373	1,220,424	1,303,353		906,668			2.856	13.364	MON	1,647	30,874	01/11/2008	05/28/2037
07384M-2X-9	BEAR STEARNS ADJUSTABLE-SERIES 2004-9 C			4	1FIM	201,205	99	4304	221,695	222,965		209,709			4.439	7.830	MON	4,976	9,017	07/28/2006	11/01/2034
07384M-4M-1	BEAR STEARNS ADJUSTABLE-SERIES 2004-10			4	1FIM	742,878	91	8775	772,982	841,318		780,568			4.043	7.436	MON	23,038	33,348	05/26/2006	01/01/2035
07384M-S6-0	BEAR STEARNS ADJUSTABLE-SERIES 2004-5 C			4	1FIM	480,270	94	7748	542,086	571,973		512,569			4.334	7.002	MON	10,163	24,027	10/07/2008	07/01/2034
07384M-W4-0	BEAR STEARNS ADJUSTABLE-SERIES 2004-6 C			4	1FIM	35,173	95	7668	41,115	42,932		38,415			4.372	8.532	MON	589	1,627	08/17/2006	09/01/2034
07384M-WF-5	BEAR STEARNS ADJUSTABLE-SERIES 2003-5 C			4	1FIM	537,994	98	7431	557,900	565,002		561,583			4.589	5.291	MON	15,000	21,643	10/07/2008	08/01/2033
07384Y-CD-6	BEAR STEARNS ASSET BACKE-SERIES 2002-AC1			4	1FIM	2,011,472	104	1682	2,161,288	2,074,805		2,037,984			7.000	7.441	MON	25,682	142,201	04/01/2002	01/01/2032
07384Y-GY-6	BEAR STEARNS ASSET BACKE-SERIES 2003-1 C			4	1FIM	78,050	101	7849	87,847	86,306		83,729			4.006	5.349	MON	58	2,970	01/11/2013	11/25/2042
07384Y-JO-0	BEAR STEARNS ASSET BACKE-SERIES 2003-2CL			4	1FIM	3,078,622	99	9343	3,184,194	3,186,287		3,167,260			4.006	4.804	MON	12,257	101,934	01/01/2013	03/25/2043
07384Y-NJ-1	BEAR STEARNS ASSET BACKE-SERIES 2003-AC6			4,5	1FIM	186,796	93	6782	223,122	238,179		146,953			5.885	19.328	MON	1,168	13,991	02/03/2004	11/01/2033
07384Y-PP-5	BEAR STEARNS ASSET BACKE-SERIES 2003-AC7			4	1FIM	115,578	14	7891	114,675	775,402		165,492		162,966	5.106	79.161	MON	14,758	35,195	01/11/2008	01/25/2034
073860-AB-4	BEAR STEARNS ASSET BACKE-SERIES 2007-1 C			4	1FIM	1,418,324	99	6361	2,858,430	2,868,868		2,616,643			2.786	8.424	MON	20,849	71,877	07/16/2007	01/25/2037
07386H-CM-1	BEAR STEARNS ALT-A TRUST-SERIES 2003-3 C			4	1FIM	110,202	90	4613	403,184	445,698		224,678			4.399	29.610	MON	9,991	18,651	10/07/2008	10/01/2033
07386H-GG-0	BEAR STEARNS ALT-A TRUST-SERIES 2004-3 C			4	1FIM	313,446	99	3071	335,452	337,793		331,746			3.146	4.333	MON	1,177	8,921	10/31/2008	04/25/2034
07386H-HW-4	BEAR STEARNS ALT-A TRUST-SERIES 2004-4 C			4	1FIM	15,219	15	8218	128,576	812,656		2,811			5.431	1,216.496	MON	51,017	19,187	11/09/2006	06/25/2034
07386H-KS-9	BEAR STEARNS ALT-A TRUST-SERIES 2004-8 C			4	1FIM	44,305	99	3007	44,507	44,821		45,165		(523)	3.206	2.914	MON	24	1,203	07/16/2007	09/25/2034
07386H-LU-3	BEAR STEARNS ALT-A TRUST-SERIES 2004-8 C			4	1FIM	1,922	4	3064	17,215	(27,606)				(8,575)	5.356	5.356	MON	1,506	(485)	09/18/2006	09/25/2034
07386H-MP-3	BEAR STEARNS ALT-A TRUST-SERIES 2004-11			4	1FIM	57,701	99	2916	57,972	58,385		58,565		(290)	3.186	2.783	MON	31	1,521	07/16/2007	11/25/2034
07386H-NQ-0	BEAR STEARNS ALT-A TRUST-SERIES 2004-12C			4	1FIM	128,279	99	6626	175,200	176,214		170,665			3.206	6.015	MON	94	4,732	03/18/2008	01/25/2035
07386H-SP-7	BEAR STEARNS ALT-A TRUST-SERIES 2005-4 C			4	1FIM	1,144,970	99	0462	1,251,282	1,263,332		1,259,148			2.946	3.718	MON	6,800	26,461	04/04/2005	04/25/2035
073879-PA-0	BEAR STEARNS ASSET BACKE-SERIES 2004-HE1			4	1FIM	865,740	95	9758	2,126,698	2,215,869		603,071			4.381	32.420	MON	9,805	86,508	01/11/2008	12/25/2034
073879-OF-8	BEAR STEARNS ASSET BACKE-SERIES 2005-AC1			4	1FIM	154,430	65	2126	249,665	382,847		174,335			3.256	30.467	MON	13,512	(27,730)	06/08/2007	02/25/2035
07387A-FX-8	BEAR STEARNS ADJUSTABLE-SERIES 2005-12			4	1FIM	118,095	92	9735	181,626	195,352		150,730			4.236	13.488	MON	4,881	7,885	08/29/2011	02/01/2036
073882-AC-6	BEAR STEARNS ADJUSTABLE-SERIES 2006-4 C			4	1FIM	148,891	93	3897	274,875	294,331		209,032			4.105	14.837	MON	9,290	11,674	08/29/2011	10/01/20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
12489W-OE-7	CREDIT-BASED ASSET SERVI-SERIES 2005-CB8			4,5	1.FM	1,193,052	99.4722	1,853,825	1,863,662	1,602,998			141,567		3.691	12.454	MON	42,516	19,877	01/11/2008	12/01/2035
12489W-OH-0	CREDIT-BASED ASSET SERVI-SERIES 2005-CB8			4	1.FM	95,981	90.1361	4,506,804	5,000,000	215,987			35,592		2.926	85.009	MON	25,840	98,060	10/19/2007	12/25/2035
1248MA-AD-9	CREDIT-BASED ASSET SERVI-SERIES 2007-SP1			4,5	1.FM	531,160	101.5735	1,060,038	1,043,616	965,624			107,780		5.582	14.138	MON	89,356	57,240	01/11/2008	12/01/2037
1248ME-AA-7	CREDIT-BASED ASSET SERVI-SERIES 2007-CB4			4	1.FM	2,134,789	96.9715	2,277,721	2,348,856	2,337,894			24,876		2.596	3.867	MON	36,836	35,790	05/08/2008	04/25/2037
1248ME-AE-9	CREDIT-BASED ASSET SERVI-SERIES 2007-CB4			4,5	1.FM	654,470	100.5818	1,114,058	1,107,614	1,033,757			48,438		4.186	8.802	MON	77,004	24,256	04/23/2007	04/01/2037
1248ME-AG-4	CREDIT-BASED ASSET SERVI-SERIES 2007-CB4			4,5	1.FM	147,121	98.6940	260,074	263,515	243,315			13,651		4.186	9.163	MON	19,562	(3,674)	01/11/2008	04/01/2037
1248MG-AJ-3	CREDIT-BASED ASSET SERVI-SERIES 2007-CB1			4	1.FM	41,789	42.8033	61,744	144,250	52,367			6,486		2.576	15.526	MON	2,445	312	09/06/2007	01/25/2037
1248RH-AD-9	CREDIT-BASED ASSET SERVI-SERIES 2007-CB6			4	1.FM	2,418,702	65.0168	3,101,850	4,770,844	2,847,273			128,037		2.846	12.550	MON	48,518	125,043	07/10/2007	07/25/2037
12498N-AB-9	CREDIT-BASED ASSET SERVI-SERIES 2006-CB2			4,5	1.FM	489,963	89.4714	731,867	817,990	463,510			25,915		3.459	21.614	MON	36,466	(17,381)	10/02/2008	12/01/2036
125435-AA-5	COUNTRYWIDE HOME LOANS-SERIES 2006-R2 CL			4	1.FM	2,561,514	95.7400	2,581,383	2,696,244	2,561,514					2.926	2.926	MON	1,315	64,368	09/10/2007	07/25/2036
12558M-BK-7	CIT GROUP HOME EQUITY LO-SERIES 2003-1 C			4,5	1.FM	3,711,349	100.9980	4,330,772	4,287,979	4,205,359			21,654		5.480	7.111	MON	16,847	223,708	08/30/2007	07/01/2034
126670-JD-1	COUNTRYWIDE ASSET-BACKED-SERIES 2005-1M3			4	1.FM	223,564	90.3863	306,237	338,809	307,980			29,599		3.006	9.005	MON	170	8,466	07/16/2007	03/25/2036
126670-KN-7	COUNTRYWIDE ASSET-BACKED-SERIES 2005-AB4			4	1.FM	754,206	90.1301	1,295,012	1,436,825	1,074,844			61,582		2.856	9.478	MON	671	38,915	07/16/2007	03/25/2036
126670-LP-1	COUNTRYWIDE ASSET-BACKED-SERIES 2005-1P4			4	1.FM	2,865,699	99.7211	5,431,870	5,447,061	5,174,673			555,147		2.956	10.127	MON	15,424	133,294	11/01/2007	04/25/2036
126670-QZ-4	COUNTRYWIDE ASSET-BACKED-SERIES 2005-17C			4	1.FM	51,329	99.4909	70,119	70,477	68,937			3,658		2.846	6.452	MON	466	1,645	02/12/2008	05/25/2036
126671-3Y-0	COUNTRYWIDE ASSET-BACKED-SERIES 2004-2 C			4	1.FM	98,287	94.1581	92,545	98,287	98,287			98,287		3.006	2.988	MON	49	2,467	03/11/2004	07/25/2034
126671-4Q-6	COUNTRYWIDE ASSET-BACKED-SERIES 2004-3 C			4	1.FM	359,287	100.6709	399,666	397,002	397,002					3.266	3.987	MON	216	10,987	01/29/2008	08/25/2034
126671-B4-7	COUNTRYWIDE ASSET-BACKED-SERIES 2003-BC3			4	1.FM	225,613	97.5514	221,269	226,823	226,823					3.126	3.785	MON	118	5,963	07/16/2007	09/25/2033
126671-H4-1	COUNTRYWIDE ASSET-BACKED-SERIES 2003-4			4	1.FM	224,323	95.4923	260,439	272,733	258,161			4,638		3.166	4.884	MON	144	7,288	04/30/2008	11/25/2033
126671-UJ-3	COUNTRYWIDE ASSET-BACKED-SERIES 2002-6 C			4	1.FM	39,982	98.6393	39,459	40,003	40,003					3.366	3.924	MON	120	1,145	07/16/2007	05/25/2033
126671-UJ-8	COUNTRYWIDE ASSET-BACKED-SERIES 2003-BC1			4	1.FM	15,827	98.6583	16,100	16,319	16,194			157		3.306	4.178	MON	9	458	07/16/2007	03/25/2033
126671-Y8-3	COUNTRYWIDE ASSET-BACKED-SERIES 2004-1 C			4	1.FM	162,254	93.4131	179,368	192,016	189,221			1,696		2.986	3.864	MON	96	4,781	02/21/2008	04/25/2034
126671-ZE-9	COUNTRYWIDE ASSET-BACKED-SERIES 2003-SD2			4	1.FM	446,865	97.4455	514,845	528,342	507,633			7,096		3.946	5.418	MON	347	18,296	01/01/2013	09/25/2032
126673-ML-3	COUNTRYWIDE PARTNERSHIP -SERIES 2004-EC1			4	1.FM	548,212	99.2943	544,343	548,212	548,212					3.406	3.398	MON	311	15,983	11/10/2004	02/25/2035
12667F-2A-2	COUNTRYWIDE ALTERNATIVE -SERIES 2005-2 C			4	1.FM	14,0429		130,443	928,885	207,884			136,147		3.897	58.410	MON	58,458	45,858	10/07/2008	03/01/2035
12667F-U2-9	COUNTRYWIDE ALTERNATIVE -SERIES 2005-1JC			4	1.FM	5,063	101.7328	5,883	5,783	5,172			223		6.500	11.388	MON	31	358	08/29/2011	08/01/2032
12667F-UL-7	COUNTRYWIDE ALTERNATIVE -SERIES 2004-J9			4	1.FM	141,584	97.4754	2,565,227	2,631,667	287,059			99,313		4.156	80.175	MON	1,823	96,738	01/11/2008	10/25/2034
12667F-VN-2	COUNTRYWIDE ALTERNATIVE -SERIES 2004-24C			4	1.FM	136,413	100.0732	169,352	169,228	142,807			4,785		6.000	10.268	MON	9,986	9,986	08/29/2011	11/01/2034
12667F-YL-3	COUNTRYWIDE ALTERNATIVE -SERIES 2004-28C			4	1.FM	363,623	97.1202	435,694	448,613	375,793			13,017		5.750	10.117	MON	2,150	25,434	08/29/2011	01/01/2035
12667F-YS-8	COUNTRYWIDE ALTERNATIVE -SERIES 2004-28C			4	1.FM	133,011	98.4929	171,331	173,953	139,622			5,816		6.000	11.745	MON	870	10,325	08/29/2011	01/01/2035
12667G-CB-7	COUNTRYWIDE ALTERNATIVE -SERIES 2005-14			4	1.FM	412,987	93.8694	566,994	604,025	456,803			25,962		2.716	9.067	MON	1,512	14,624	10/07/2008	05/25/2035
12667G-EC-3	COUNTRYWIDE ALTERNATIVE -SERIES 2005-13C			4	1.FM	913	97.0744	1,328	1,368	1,181			162		6.500	20.035	MON	7	85	08/29/2011	09/01/2034
12667G-KG-7	COUNTRYWIDE ALTERNATIVE -SERIES 2005-21C			4	1.FM	86,893	92.1414	116,604	126,549	107,463			4,697		5.500	9.902	MON	580	6,814	08/29/2011	06/01/2035
12667G-YX-5	COUNTRYWIDE ALTERNATIVE -SERIES 2005-31			4	1.FM	292,933	93.6092	679,690	726,094	395,765			54,256		3.066	18.870	MON	3,581	17,500	10/07/2008	08/25/2035
12667N-AC-2	COUNTRYWIDE ASSET-BACKED-SERIES 2006-BC4			4	1.FM	7,527	99.8958	9,760	9,771	9,764			270		2.666	3.361	MON	4	205	01/09/2008	11/25/2036
12668A-BP-9	COUNTRYWIDE ALTERNATIVE -SERIES 2005-1J0			4	1.FM	352,191	89.1916	434,393	487,033	382,844			15,685		5.500	10.265	MON	2,232	26,403	08/29/2011	10/01/2035
12668A-CY-9	COUNTRYWIDE ALTERNATIVE -SERIES 2005-51C			4	1.FM	237,641	96.0771	426,721	444,144	303,833			34,992		3.447	14.587	MON	874	12,789	03/28/2008	11/01/2035
12668A-CZ-6	COUNTRYWIDE ALTERNATIVE -SERIES 2005-51			4	1.FM	1,073,496	92.9198	1,383,865	1,489,312	1,158,260			81,950		2.790	10.051	MON	10,396	35,428	08/25/2005	11/20/2035
12668A-GI-9	COUNTRYWIDE ALTERNATIVE -SERIES 2005-56			4	1.FM	504,314	64.4095	722,026	757,568	757,568			146,015		2.796	21.251	MON	522	25,674	10/07/2008	11/25/2035
12668A-VP-7	COUNTRYWIDE ALTERNATIVE -SERIES 2005-61			4	1.FM	2,571,288	95.9510	2,692,840	2,806,473	2,772,408			37,742		2.786	4.039	MON	1,303	55,254	10/27/2005	12/25/2035
12668B-DC-4	COUNTRYWIDE ALTERNATIVE -SERIES 2005-76			4	1.FM	1,511,691	100.3237	1,943,648	1,937,377	1,748,381			76,222		3.637	7.464	MON	40,017	62,151	02/12/2008	01/01/2036
126694-YM-4	COUNTRYWIDE HOME LOANS-SERIES 2006-3 CL			4	1.FM	1,071,324	94.4069	1,224,459	1,297,002	1,164,629			1,368		2.756	6.423	MON	3,368	28,676	02/09/2006	03/25/2036
12669B-3B-6	COUNTRYWIDE HOME LOANS-SERIES 2001-HYB1			4,5	1.FM	9,611	96.2347	17,718	18,411	14,568			905		3.828	10.424	MON	242	616	10/31/2008	07/01/2031
12669E-6K-7	COUNTRYWIDE HOME LOANS-SERIES 2003-58 CL			4	1.FM	206,500	98.8178	809,088	818,768	320,765			62,743		4.650	39.571	MON	29,013	33,155	10/07/2008	02/01/2034
12669E-H3-3	COUNTRYWIDE HOME LOANS-SERIES 2003-42 CL			4	1.FM	29,985	90.9968	36,945	40,600	39,240			3,832		3.991	13.164	MON	501	1,358	11/17/2008	09/01/2033
12669F-KR-3	COUNTRYWIDE HOME LOANS-SERIES 2004-2 CL			4	1.FM	110,718	98.3439	144,490	146,923	118,865			(2,322)		3.714	9.755	MON	2,748	12,239	11/17/2008	02/01/2034
12669F-VD-2	COUNTRYWIDE HOME LOANS-SERIES 2004-6 CL			4	1.FM	201,060	99.3789	245,643	247,178	227,956			5,714		4.158	7.167	MON	2,448	9,826	10/07/2008	05/01/2034

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
144531-CL-2	CARRINGTON MORTGAGE LOAN-SERIES 2005-OPT			4	1FIM	304,239	100.2046	388,925	388,131	388,131		486			3.436	3.897	MON	222	11,193	01/11/2008	05/25/2035
144531-EE-6	CARRINGTON MORTGAGE LOAN-SERIES 2005-FR1			4	1FIM	150,995	99.9085	150,438	150,576	150,576					2.886	3.127	MON	72	3,454	07/16/2007	12/25/2035
144531-FL-9	CARRINGTON MORTGAGE LOAN-SERIES 2006-OPT			4	1FIM	276,448	99.8465	282,972	283,407	283,407					2.686	2.955	MON	127	6,067	01/07/2008	02/25/2036
144544-AB-5	CARRINGTON MORTGAGE LOAN-SERIES 2006-FRE			4	1FIM	880,420	73.1883	1,140,558	1,558,388	1,073,626		118,176			2.626	13.501	MON	127	29,770	11/14/2008	10/25/2036
152314-IJ-6	CENTEX HOME EQUITY-SERIES 2005-A CLASS M			4	1FIM	178,237	96.9313	232,924	240,298	106,749		12,683			3.256	18.415	MON	130	6,640	01/05/2005	01/25/2035
161542-DN-2	CHASE FUNDING LOAN ACQUI-SERIES 2004-AQ1			4	1FIM	716,680	100.3289	786,931	784,352	783,824		5,782			3.306	3.967	MON	432	22,009	01/01/2013	05/25/2034
161546-DB-9	CHASE FUNDING MORTGAGE L-SERIES 2002-3 C			4	1FIM	8,016	97.8963	7,846	8,015	8,015					3.146	3.817	MON	4	213	07/16/2007	08/25/2032
161546-DQ-6	CHASE FUNDING MORTGAGE L-SERIES 2002-4 C			4	1FIM	51,119	99.2624	50,734	51,111	51,111					3.246	3.909	MON	28	1,407	07/16/2007	10/25/2032
161546-EW-2	CHASE FUNDING MORTGAGE L-SERIES 2003-2 C			4	1FIM	11,193	96.1138	11,145	11,583	11,583		89			3.066	3.784	MON	63	269	08/29/2011	02/25/2033
161546-FM-3	CHASE FUNDING MORTGAGE L-SERIES 2003-3 C			4	1FIM	9,659	94.0407	9,083	9,659	9,659					3.046	2.998	MON	5	246	07/16/2007	04/25/2033
161546-GR-1	CHASE FUNDING MORTGAGE L-SERIES 2003-5 C			4	1FIM	35,007	96.7069	33,812	34,963	35,592		200			3.106	3.554	MON	308	568	07/16/2007	07/25/2033
17025R-AA-3	COUNTRYWIDE HOME LOANS-SERIES 2007-HY4 C			4	1FIM	368,084	92.7548	682,586	735,904	542,709		65,788			4.058	14.150	MON	66,787	66,480	08/29/2011	09/01/2047
17307G-H7-6	CITIGROUP MORTGAGE LOAN -SERIES 2005-8 C			4	1FIM	38,622	94.5594	128,693	372,383	31		(10,522)			5.500	5.500	MON	1,805	24,207	01/11/2008	09/01/2035
17307G-K0-0	CITIGROUP MORTGAGE LOAN -SERIES 2004-UST			4	1FIM	32,362	96.0897	31,460	32,740	32,851					3.410	4.092	MON	225	987	12/02/2005	08/01/2034
17307G-PE-2	CITIGROUP MORTGAGE LOAN -SERIES 2005-WF1			4,5	1FIM	4,894,828	101.4797	7,567,782	7,457,434	6,665,329		439,423			5.672	12.355	MON	298,044	401,255	04/20/2005	11/01/2034
17307G-RU-4	CITIGROUP MORTGAGE LOAN -SERIES 2005-2 C			4,5	1FIM	61,664	88.7115	335,007	487,556	181,643		96,142			5.761	58.409	MON	10,455	28,502	01/11/2008	05/01/2035
17309F-AE-8	CITIGROUP MORTGAGE LOAN -SERIES 2006-ARS			4,5	1FIM	146,087	79.2901	201,875	254,603	202,326		19,244	1,417		4.618	11.161	MON	8,067	10,805	08/29/2011	07/01/2036
17309M-AB-9	CITIGROUP MORTGAGE LOAN -SERIES 2006-WFH			4	1FIM	39,995	99.9676	53,008	53,025	53,025		1,173			2.656	2.656	MON	2,067	873	12/02/2013	08/25/2036
17309M-AF-0	CITIGROUP MORTGAGE LOAN -SERIES 2006-WFH			4	1FIM	14,269	95.2311	4,216,834	4,428,000	(1,371)		(244)			2.786	2.786	MON	2,056	101,264	10/03/2007	08/25/2036
17309M-AH-4	CITICORP RESIDENTIAL MOR-SERIES 2006-1 C			4,5	1FIM	204,120	98.6899	3,947,595	4,000,000	109,983		(114)			5.225	188.524	MON	124,928	181,934	01/11/2008	07/01/2036
17311Y-AC-7	CREDIT-BASED ASSET SERVI-SERIES 2007-CB3			4,5	1FIM	1,699,871	56.3758	2,275,511	4,036,329	1,657,583		201,539			5.731	17.801	MON	97,344	245,967	01/11/2008	03/01/2037
18974B-AA-7	CITIMORTGAGE ALTERNATIVE-SERIES 2006-A5			4	1FIM	257,072	79.8856	294,986	369,261	295,291		16,655	11,137		2.906	8.412	MON	2,459	9,026	08/29/2011	10/25/2036
18974B-AN-9	CITIMORTGAGE ALTERNATIVE-SERIES 2006-A5			4	1FIM	127,676	80.8956	156,908	193,963	154,693		9,128			2.956	8.304	MON	2,917	4,784	08/29/2011	10/25/2036
194196-CD-1	COLL MORTGAGE SEC CORP SER N CL N-2			4	6*	1	0.0000		7,346,073					0.000	0.000	MON			12/31/1994	10/25/2027	
204012-AE-8	COMMUNITY PROGRAM LOAN T-SERIES 1987-A C			4	1FIM	2,707,008	98.6615	4,526,216	4,587,622	4,343,849		28,723			4.500	7.635	AO	51,611	184,305	04/26/2002	04/01/2029
21075J-DE-2	CONTIMORTGAGE HOME EQUIT-SERIES 1996-3 C			4	1FIM	14,986	92.8715	23,839	25,669	21,665		1,284			3.095	8.635	MON	33	678	01/01/2013	09/15/2027
22540V-3F-7	CREDIT SUISSE FIRST BOST-SERIES 2002-18			4	1FIM	165,388	27.8958	223,817	802,332	240,830		9,428			7.500	33.438	MON	115,919	60,532	05/29/2007	06/01/2032
22540V-FZ-0	CREDIT SUISSE FIRST BOST-SERIES 2001-26			4,5	1FIM	792,273	99.8547	843,639	844,866	790,150		11,935			7.601	9.671	MON	16,206	63,882	11/14/2001	11/01/2031
22540V-G7-1	CREDIT SUISSE FIRST BOST-SERIES 2002-9 C			4	1FIM	70,663	110.2857	77,745	70,494	68,891		220			7.500	8.014	MON	2,198	4,787	10/07/2008	03/01/2032
22540V-Q7-0	CREDIT SUISSE FIRST BOST-SERIES 2002-10			4,5	1FIM	77,960	99.9166	84,932	85,003	84,952		769			5.937	6.362	MON	5,877	2,206	01/13/2004	05/01/2032
22540V-S9-4	CREDIT SUISSE FIRST BOST-SERIES 2002-AR1			4	1FIM	70,574	99.6713	71,030	71,264	71,264		55			3.975	5.068	MON	1,069	2,409	10/07/2008	12/01/2039
22541N-SE-5	CREDIT SUISSE FIRST BOST-SERIES 2003-AR1			4	1FIM	48,824	70.5694	372,842	528,334	207,497		110,146			3.966	46.599	MON	17,610	19,838	10/07/2008	04/01/2033
22541N-FL-8	CREDIT SUISSE FIRST BOST-SERIES 2002-24			4	1FIM	2,420,288	96.9763	2,655,401	2,738,196	2,427,003		59,397			6.500	9.998	MON	29,664	174,387	01/11/2008	08/01/2032
22541N-HE-2	HOME EQUITY ASSET TRUST-SERIES 2002-3 CL			4	1FIM	705	94.2739	664	705	705					3.426	3.406	MON	21	21	07/16/2007	02/25/2033
22541N-LR-8	CREDIT SUISSE FIRST BOST-SERIES 2002-26			4,5	1FIM	101,287	99.4499	100,478	101,034	101,034		71			6.269	6.708	MON	2,612	7,346	11/02/2006	10/01/2032
22541N-R6-8	CREDIT SUISSE FIRST BOST-SERIES 2003-AR9			4	1FIM		85.8108	126,037	146,878	36,133		20,055			4.224	80.882	MON	2,419	5,701	10/25/2007	03/01/2033
22541N-T5-8	CREDIT SUISSE FIRST BOST-SERIES 2003-8 C			4	1FIM	49,905	101.2078	50,256	49,848		(71)				5.750	5.543	MON	238	2,726	04/27/2004	04/01/2033
22541N-TH-2	CREDIT SUISSE FIRST BOST-SERIES 2002-AR3			4	1FIM	3,053	88.0058	67,920	77,177	35,350		7,345			4.553	39.204	MON	931	3,006	09/28/2006	11/01/2032
22541N-LB-3	CREDIT SUISSE FIRST BOST-SERIES 2002-30			4,5	1FIM	235,338	35.4417	228,781	645,514	300,779		7,213			7.400	22.692	MON	44,421	62,587	01/11/2008	11/01/2032
22541Q-4M-1	CREDIT SUISSE FIRST BOST-SERIES 2003-29			4,5	1FIM	44,291	21.9628	110,179	501,661	57,470		(3,779)			6.050	(21.813)	MON	12,566	20,298	05/14/2007	12/01/2033
22541Q-AA-4	CREDIT SUISSE FIRST BOST-SERIES 2003-AR2			4	1FIM	350,495	66.2849	1,100,305	1,659,964	285,900		123,716			4.422	64.744	MON	65,517	65,329	10/07/2008	11/01/2033
22541Q-DA-7	CREDIT SUISSE FIRST BOST-SERIES 2003-AR1			4	1FIM	122,923	89.5352	311,354	347,745	232,181		51,405			4.118	22.703	MON	10,134	14,240	10/07/2008	06/01/2033
22541Q-DB-5	CREDIT SUISSE FIRST BOST-SERIES 2003-AR1			4	1FIM	23,585	85.8533	174,561	203,325	105,130		36,427			4.118	38.294	MON	5,925	8,326	10/07/2008	06/01/2033
22541Q-JR-4	CREDIT SUISSE FIRST BOST-SERIES 2003-17			4,5	1FIM	(1,046)	0.0010	1	58,375	(4,319)		(7,020)			5.500	5.500	MON	2,905	(484)	04/15/2004	06/01/2033
22541Q-NH-1	HOME EQUITY ASSET TRUST-SERIES 2003-5 CL			4	1FIM	33,037	98.3206	32,460	33,015	33,015					3.206	3.826	MON	18	895	07/16/2007	12/25/2033
22541Q-OR-6	CREDIT SUISSE FIRST BOST-SERIES 2003-21			4,5	1FIM	(72,512)	0.0010	1	130,351	(3,304)		(25,347)	38,446		6.206	55.812	MON	8,487	(895)	05/14/2007	08/01/2033
22541S-CC-0	CREDIT SUISSE FIRST BOST-SERIES 2004-CLA			4,5	1FIM	79,218	87.6327	89,081	101,652	89,917		2,495			3.435	5.845	MON	3,181	3,629	10/07/2008	12/01/2033
22541S-RC-4	FIRST FRANKLIN MTG LOAN -SERIES 2004-FFB			4,5	1FIM	8,698	99.6489	9,989	10,025	10,025		398			4.668	8.155					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
23323C-AF-2	FIRST NATIONAL DE TRUST-SERIES 2000-2 CLA			4	1.FM	5,827	95.2526	7,177	7,535	3,338			567		7.500	34.617	MON	47	561	03/26/2012	12/01/2030
23332U-AC-8	DSL A MORTGAGE LOAN TRUST-SERIES 2004-AR1			4	1.FM	1,303,102	99.7839	1,889,570	1,893,662	1,609,214			84,199		3.290	8.564	MON	2,250	52,807	10/07/2008	09/19/2044
23332U-BW-3	DSL A MORTGAGE LOAN TRUST-SERIES 2004-AR4			4	5.FM	41,129	35.8137	61,717	172,329	70,031			25,404		2.900	41.733	MON	1,594	4,498	01/11/2008	01/19/2045
23332U-OM-4	DSL A MORTGAGE LOAN TRUST-SERIES 2005-AR1			4	1.FM	140,802	97.3913	166,742	171,209	160,883			5,616		2.720	6.695	MON	445	3,845	03/28/2006	02/19/2045
23332U-DU-5	DSL A MORTGAGE LOAN TRUST-SERIES 2005-AR3			4	1.FM	4,652,087	96.3266	5,577,096	5,789,779	5,321,478			185,857		2.710	6.374	MON	15,647	131,111	04/27/2005	07/19/2045
23332U-FV-1	DSL A MORTGAGE LOAN TRUST-SERIES 2005-AR6			4	1.FM	435,680	98.7770	510,743	517,067	491,666			11,077		2.760	5.004	MON	1,363	11,934	06/15/2006	10/19/2045
24763L-FY-1	DELTA FUNDING HOME EQUIT-SERIES 1999-3 C			4,5	1.FM	126,894	76.3158	241,135	315,970	182,012			17,443		8.100	15.909	MON	49,851	(615,613)	01/01/2013	01/01/2030
251508-AB-3	DEUTSCHE ALT-A SECURITIE-SERIES 2006-AR2			4	1.FM	1,963,157	83.6129	2,650,421	3,169,871	2,574,690			225,664		2.686	9.873	MON	32,540	74,207	07/12/2006	05/25/2036
251510-CY-7	DEUTSCHE ALT-A SECURITIE-SERIES 2005-1 C			4,5	1.FM	217,026	65.1559	1,473,601	2,261,654	392,671			156,233		5.532	66.485	MON	62,843	122,327	05/30/2007	02/01/2035
251510-FB-4	DEUTSCHE ALT-A SECURITIE-SERIES 2005-AR1			4	1.FM	1,788,953	87.7146	2,645,902	3,016,492	2,238,375			194,861		2.816	9.825	MON	20,205	73,201	10/07/2008	08/25/2035
251510-HS-5	DEUTSCHE ALT-A SECURITIE-SERIES 2005-5 C			4,5	1.FM	3,049,321	109.6946	4,296,125	3,916,441	3,570,342			142,542		5.469	9.405	MON	218,914	226,138	05/17/2006	11/01/2035
251510-NC-3	DEUTSCHE ALT-A SECURITIE-SERIES 2006-AF1			4	1.FM	5,856,977	93.8321	8,918,885	9,505,154	8,266,789			575,231		2.806	7.358	MON	171,363	223,592	03/22/2006	04/25/2036
251513-AQ-0	DEUTSCHE ALT-A SECURITIE-SERIES 2006-AB4			4,5	1.FM	57,597	92.0515	95,546	103,796	84,044			4,431		6.005	10.543	MON	7,653	(10,576)	08/29/2011	10/01/2036
251563-FB-3	DEUTSCHE MORTGAGE SECURI-SERIES 2004-4 C			4	1.FM	29,097	100.9252	43,146	42,751	35,904			2,184		4.376	9.784	MON	1,130	1,604	08/28/2012	06/01/2034
294751-DE-9	EQUITY ONE ABS INC-SERIES 2003-4CLASS AV			4	1.FM	36,077	89.3295	32,144	35,983	36,230			(43)		3.226	(0.257)	MON	19	983	07/16/2007	10/25/2034
30247D-AD-3	FIRST FRANKLIN MTG LOAN -SERIES 2006-FF1			4	1.FM	448,884	75.4874	978,952	1,296,842	716,584			118,600		2.666	18.516	MON	576	27,789	07/27/2007	10/25/2036
30251Y-AB-4	FINBA MORTGAGE PASS THRU-SERIES 2004-AR1			4	1.FM	885,229	98.9109	932,239	942,565	949,754			(4,459)		2.870	3.360	MON	836	20,551	10/07/2008	08/19/2034
30711X-DK-7	Fannie Mae Connecticut A-CAS 2016-C05 2M			4	1	223,984	109.1124	218,225	200,000	223,324			(660)		6.956	4.999	MON	232	2,806	10/04/2018	01/25/2029
317350-BT-2	FINANCE AMERICA MORTGAGE-SERIES 2004-3 C			4	1.FM	4,008,443	99.3226	4,752,753	4,785,167	4,785,167					3.376	4.028	MON	14,928	131,497	01/01/2013	11/25/2034
318340-AB-2	FIRST FRANKLIN MTG LOAN -SERIES 2006-FFA			4	1.FM	147,110	18.9896	680,851	3,585,393	(82,895)			(82,721)		2.806	2.806	MON	119,925	(27,883)	10/31/2008	09/25/2026
32051D-CJ-9	FIRST HORIZON MORTGAGE P-SERIES 2000-H C			4	1.FM	166,915	99.6896	166,317	166,835	166,695			56		7.000	7.044	MON	1,490	11,459	03/05/2002	05/01/2030
32051D-CK-6	FIRST HORIZON MORTGAGE P-SERIES 2000-H C			4	1.FM	110,208	97.0041	123,083	126,885	116,679			4,081		7.000	11.692	MON	740	8,715	03/05/2002	05/01/2030
32051G-BV-6	FIRST HORIZON ALTERNATIV-SERIES 2004-AA5			4	1.FM	54,949	93.7987	658,041	1,223,155	227,900			100,081		3.925	63.035	MON	30,886	43,319	08/03/2007	12/01/2034
32051G-CF-0	FIRST HORIZON ALTERNATIV-SERIES 2004-AA6			4	1.FM	9,152	10.3935	20,063	193,031	20,481			15,455	12,012	3.982	106.109	MON	1,911	6,501	10/07/2008	01/01/2035
32053L-AA-0	FIRST HORIZON ALTERNATIV-SERIES 2007-FA2			4	1.FM	49,776	66.0286	53,684	81,303	53,181			(843)		5.500	5.659	MON	373	4,392	08/29/2011	04/01/2037
32113J-AA-3	FIRST NLC TRUST-SERIES 2005-1 CLASS A			4	1.FM	291,084	96.3754	343,622	356,545	338,862			6,101		2.966	4.658	MON	4,014	8,840	07/16/2007	05/25/2035
32113J-BV-6	FIRST NLC TRUST-SERIES 2005-3 CLASS M2			4	1.FM	113,355	53.7989	691,658	1,285,636	374,053			84,553		3.526	26.515	MON	7,564	43,272	01/11/2008	12/25/2035
35729P-GT-1	FREMONT HOME LOAN TRUST-SERIES 2004-4 CL			4	1.FM	1,903,009	98.5210	1,859,459	1,887,372	1,941,208			7,512		3.301	3.608	MON	1,038	53,017	11/24/2004	03/25/2035
35729R-AE-6	FREMONT HOME LOAN TRUST-SERIES 2006-A CL			4	1.FM	3,522,472	63.8202	4,310,012	6,753,368	4,217,254			570,609		2.666	14.812	MON	66,746	144,584	01/11/2008	05/25/2036
361924-AJ-2	GIMA-BACKED TRUST-SERIES 3 CLASS F			4	1.FE	6,451	102.3471	8,444	8,251	8,149			104		6.500	9.858	MON	615	6,150	04/22/1991	06/01/2020
36228F-SR-3	GSR MORTGAGE LOAN TRUST-SERIES 2004-7 CL			4	1.FM	305,809	95.0812	300,745	316,303	317,993			1,776		3.605	4.578	MON	1,886	10,850	10/07/2008	06/01/2034
36228F-CS-3	GSA A HOME EQUITY TRUST-SERIES 2004-NC1 C			4,5	1.FM	269,113	100.6177	362,961	360,732	326,817			11,188		4.840	8.253	MON	18,927	12,620	01/11/2008	11/01/2033
36228F-HU-6	GSR MORTGAGE LOAN TRUST-SERIES 2003-9 CL			4	1.FM	230,839	93.7766	509,454	543,264	327,119			71,882		4.597	24.562	MON	13,462	22,628	10/07/2008	08/01/2033
362290-AC-2	GSR MORTGAGE LOAN TRUST-SERIES 2007-AR1			4	1.FM	269,476	89.5387	477,922	533,760	392,421			32,385		4.152	11.431	MON	14,959	20,746	08/29/2011	03/01/2047
362334-ON-2	GSR MORTGAGE LOAN TRUST-SERIES 2006-2F			4	1.FM	15,287	94.0948	19,261	20,470	18,145			475		5.750	8.453	MON	648	1,204	08/29/2011	02/01/2036
362334-NU-4	GSRPM MORTGAGE LOAN TRUS-SERIES 2006-1 C			4	1.FM	51,010	99.4126	50,608	50,907	50,987			(17)		2.806	2.796	MON	24	1,164	07/16/2007	03/25/2035
362341-L4-9	GSAMP TRUST-SERIES 2005-WMC3 CLASS A2B			4	1.FM	1,531,473	99.7069	1,678,709	1,683,643	1,683,643			12,172		2.746	3.570	MON	33,246	40,280	04/10/2008	12/25/2035
362341-VU-0	GSR MORTGAGE LOAN TRUST-SERIES 2005-BF C			4	1.FM	3,765,123	98.0438	4,372,589	4,459,832	4,166,870			149,503		5.500	8.765	MON	62,851	242,080	05/12/2006	11/01/2035
36242D-2A-0	GSAMP TRUST-SERIES 2005-AHL CLASS M1			4	1.FM	11,674	100.0193	12,490	12,487	12,487			3		3.151	3.487	MON	7	306	12/02/2013	04/25/2035
36242D-BJ-1	GSR MORTGAGE LOAN TRUST-SERIES 2004-9 CL			4	1.FM	292,433	95.4606	335,473	351,426	337,368			7,753		4.104	6.536	MON	5,194	14,084	11/17/2008	08/01/2034
36242D-BY-8	GSR MORTGAGE LOAN TRUST-SERIES 2004-9 CL			4	1.FM	96,392	98.3735	109,818	111,013	111,013			1,416		4.594	5.372	MON	1,160	4,255	02/29/2008	08/01/2034
36242D-BZ-5	GSR MORTGAGE LOAN TRUST-SERIES 2004-9 CL			4	1.FM	86,105	95.7984	412,455	430,544	214,085			75,014		4.242	32.847	MON	18,273	17,542	10/07/2008	08/01/2034
36242D-GA-5	GSR MORTGAGE LOAN TRUST-SERIES 2004-11 C			4	1.FM	10,674	63.5611	116,952	184,000	29,715			16,636		4.457	84.107	MON	6,379	9,578	10/06/2005	09/01/2034
362480-AD-7	GSC CAPITAL CORP MORTGAG-SERIES 2006-2 C			4	1.FM	2,688,083	90.8003	3,763,956	4,145,310	3,586,737			222,673		2.686	8.140	MON	10,530	98,098	09/10/2007	05/25/2036
36290P-AK-3	GSMP S MORTGAGE LOAN TRUS-SERIES 2003-2 C			4	1.FM		0.0010	42	4,181,979					6.668	0.000	MON	46,857	15,656	11/15/2004	07/01/2043	
36298X-AA-0	GSMP S MORTGAGE LOAN TRUS-SERIES 2006-PP2			4	1.FM	9,130,095	83.6684	9,541,296	11,403,710	10,396,759			300,412		2.906	4.093	MON	355,295	205,969	07/12/2012	04/25/2036
36298X-AB-8	GSMP S MORTGAGE LOAN TRUS-SERIES 2006-PP2			4	1.FM	7,898,306	83.2500	8,773,358	10,538,567	9,098,											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest					Dates	
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
41161P-FR-9	HARBORVIEW MORTGAGE LOAN-SERIES 2004-6 C			4	1FIM	317,207	.98	365,331	371,909	351,657		5,470			4.526	6.010	MON	15,385	16,475	10/07/2008	08/01/2034
41161P-HC-0	HARBORVIEW MORTGAGE LOAN-SERIES 2004-8 C			4	1FIM	2,381,489	.97	7051	3,112,296	2,662,932		3,185,396			3.270	9.634	MON	10,650	90,224	10/07/2008	11/19/2034
41161P-HU-0	HARBORVIEW MORTGAGE LOAN-SERIES 2004-9 C			4	1FIM	2,253,781	.93	7500	3,072,572	3,277,408		2,443,455			3.230	10.142	MON	26,496	83,594	10/07/2008	12/19/2034
41161P-KH-5	HARBORVIEW MORTGAGE LOAN-SERIES 2004-11C			4	1FIM	110,471	.91	5775	176,709	192,962		151,976			3.230	8.742	MON	238	5,311	07/16/2007	01/19/2035
41161P-TP-8	HARBORVIEW MORTGAGE LOAN-SERIES 2005-10			4	1FIM	74,831	.52	2525	116,334	222,639		103,305			2.850	32.869	MON		5,805	01/11/2008	11/19/2035
41161P-IB-5	HARBORVIEW MORTGAGE LOAN-SERIES 2005-13			4	1FIM	2,161,632	.83	3027	2,417,043	2,901,520		2,109,784			3.030	10.682	MON	3,174	74,489	09/23/2005	02/19/2036
41161P-XH-1	HARBORVIEW MORTGAGE LOAN-SERIES 2005-15C			4	1FIM	218,400	.97	9129	271,097	276,876		246,971			2.740	7.043	MON	3,382	6,529	07/16/2007	10/20/2045
437084-AE-6	HOME EQUITY ASSET TRUST-SERIES 2003-7 CL			4	1FIM	4,100,125	.98	7041	4,533,450	4,592,969		4,592,969			3.481	4.127	MON	2,665	136,865	01/01/2013	03/25/2034
437084-FM-3	HOME EQUITY ASSET TRUST-SERIES 2004-7 CL			4	1FIM	2,872	.99	6947	2,861	2,869		5			3.286	3.867	MON	2	80	07/16/2007	01/25/2035
437084-NZ-5	HOME EQUITY ASSET TRUST-SERIES 2005-7 CL			4	1FIM	3,150,462	100	0586	5,073,018	4,831,516		267,975			2.956	6.747	MON	2,498	124,137	01/01/2013	01/25/2036
43739E-AP-2	HOMEBANC MORTGAGE TRUST-SERIES 2005-1 CL			4	1FIM	3,284,405	.85	9714	3,814,195	4,436,586		3,760,936			2.756	7.574	MON	12,368	110,604	01/01/2013	03/25/2035
43739E-BJ-5	HOMEBANC MORTGAGE TRUST-SERIES 2005-3 CL			4	1FIM	1,455,100	.98	7067	1,639,029	1,660,505		1,638,340			2.746	4.270	MON	9,103	36,835	10/03/2005	07/25/2035
43739E-BS-5	HOMEBANC MORTGAGE TRUST-SERIES 2005-4 CL			4	1FIM	1,661,103	.99	6208	2,153,411	2,161,607		1,942,042			2.776	7.465	MON	10,684	48,042	02/01/2008	10/25/2035
45071K-AE-4	IXIS REAL ESTATE CAPITAL-SERIES 2004-HE4			4	1FIM	1,409,918	.98	2265	1,876,251	1,910,127		1,910,127			3.451	4.138	MON	1,099	56,410	01/01/2013	02/25/2035
45071K-DD-3	IXIS REAL ESTATE CAPITAL-SERIES 2006-HE1			4	1FIM	463,444	.64	6082	621,338	961,701		585,789			2.906	12.560	MON	14,779	21,997	08/29/2008	03/25/2036
45254N-FY-8	IMPAC CMB TRUST-SERIES 2003-11 CLASS 1A1			4	1FIM	286,184	.96	3159	297,402	308,778		302,398			3.266	4.690	MON	168	9,390	08/23/2005	10/25/2033
45254N-HV-2	IMPAC CMB TRUST-SERIES 2004-4 CLASS 1M1			4	1FIM	41,107	.97	4880	77,895	79,903		58,797			3.256	21.050	MON	517	2,193	10/07/2008	09/25/2034
45254N-JB-4	IMPAC CMB TRUST-SERIES 2004-7 CLASS 2A1			4,5	1FIM	1,253,433	100	4898	1,314,194	1,307,788		1,228,242			4.671	7.754	MON	60,044	57,231	10/26/2007	09/01/2034
45254N-JG-3	IMPAC CMB TRUST-SERIES 2004-5 CLASS 1A1			4	1FIM	205,541	.99	4134	223,046	224,362		223,140			3.226	4.035	MON	647	6,277	07/16/2007	10/25/2034
45254N-JK-4	IMPAC CMB TRUST-SERIES 2004-5 CLASS 1M1			4	1FIM	34,045	.95	0708	54,589	57,420		44,750			3.301	11.675	MON	171	1,706	10/07/2008	10/25/2034
45254N-JP-3	IMPAC CMB TRUST-SERIES 2004-5CLASS 1M5			4	1FIM	19,966	.96	9405	51,540	53,166		31,427			4.456	24.077	MON	230	2,123	09/12/2007	10/25/2034
45254N-JV-0	IMPAC CMB TRUST-SERIES 2004-6 CLASS 1A1			4	1FIM	249,311	.97	2959	268,994	276,470		270,646			3.306	4.711	MON	152	7,762	07/16/2007	10/25/2034
45254N-JX-6	IMPAC CMB TRUST-SERIES 2004-6 CLASS 1M1			4	1FIM	54,996	.94	0677	108,612	115,467		76,797			3.331	19.777	MON	346	3,271	10/07/2008	10/25/2034
45254N-KA-4	IMPAC CMB TRUST-SERIES 2004-6 CLASS 1M4			4	1FIM	51,694	.91	5777	239,670	261,712		110,152			4.231	45.943	MON	185	9,795	10/07/2008	10/25/2034
45254N-KK-2	IMPAC CMB TRUST-SERIES 2004-7 CLASS 1M1			4	1FIM	12,426	.96	7601	61,965	64,040		36,731			3.361	22.532	MON	36	1,833	10/07/2008	11/25/2034
45254N-KB-0	IMPAC CMB TRUST-SERIES 2004-11 CLASS 2A1			4	1FIM	205,792	.97	1769	279,457	287,576		258,017			3.166	6.988	MON	837	8,343	10/07/2008	03/25/2035
45254N-KL-8	IMPAC CMB TRUST-SERIES 2005-1 CLASS 1A1			4	1FIM	465,825	.96	3646	534,007	554,153		533,355			3.026	4.486	MON	280	13,989	04/17/2007	04/25/2035
45254N-NP-8	IMPAC CMB TRUST-SERIES 2005-3 CLASS 1A1			4	1FIM	3,913,988	.94	6199	4,481,378	4,736,191		4,322,687			3.926	5.722	MON	23,951	118,183	03/22/2005	08/25/2035
45254N-PA-9	IMPAC CMB TRUST-SERIES 2005-4 CLASS 1A1A			4	1FIM	3,609,261	.97	4860	4,773,357	4,896,452		4,341,927			3.046	6.443	MON	14,444	124,752	10/07/2008	05/25/2035
45254N-PU-5	IMPAC CMB TRUST-SERIES 2005-5 CLASS 1A1			4	1FIM	1,325,740	.97	3281	1,784,425	1,833,411		1,593,736			3.146	6.903	MON	961	48,492	06/28/2005	08/25/2035
45254T-NK-7	IMPAC SECURED ASSETS COR-SERIES 2003-1 C			4,5	1FIM	6,730	.87	4499	25,131	28,737		14,470			4.992	35.723	MON	1,670	1,775	08/27/2003	03/01/2033
45254T-RX-4	IMPAC SECURED ASSETS COR-SERIES 2005-1 C			4	1FIM	126,226	.86	3121	180,614	209,257		151,111			2.816	8.938	MON	98	4,774	09/12/2007	07/25/2035
45254T-SM-7	IMPAC SECURED ASSETS COR-SERIES 2005-2 C			4	1FIM	1,266,614	.82	5965	1,537,594	1,861,573		1,538,233			2.826	8.001	MON	9,531	42,138	03/15/2006	03/25/2036
45660L-AU-3	RES ASSET SECURIZATION TR-SERIES 2004-1P			4	1FIM	51,690	.62	8325	179,629	285,885		124,552			4.439	34.640	MON	10,135	11,657	11/23/2005	12/01/2034
45660L-IV-6	INDYMAC INDX MORTGAGE LO-SERIES 2005-AR3			4	1FIM	996,633	.81	0871	1,413,288	1,742,926		1,321,643			2.796	7.019	MON	8,253	40,255	02/08/2006	01/25/2036
45660L-YY-4	INDYMAC INDX MORTGAGE LO-SERIES 2005-AR2			4	1FIM	31,196	.5	4756	7,436	135,799		497			4.600	4.600	MON	4,053	5,636	07/19/2006	01/01/2036
45660L-YW-3	INDYMAC INDX MORTGAGE LO-SERIES 2005-1 C			4	1FIM	1,309,113	.75	1487	1,639,595	2,181,802		1,560,701			2.806	7.952	MON	50,367	57,320	09/10/2007	11/25/2035
45660N-2J-3	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR8			4	1FIM	1,549,658	.93	3261	2,134,521	2,287,165		1,843,446			3.306	11.798	MON	6,224	64,417	10/07/2008	11/25/2034
45660N-2Y-0	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1			4	1FIM	211,981	.94	7565	256,449	270,640		254,189			3.286	7.259	MON	148	7,333	10/07/2008	05/25/2034
45660N-3S-2	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR9			4	1FIM	962,890	.96	8635	1,082,397	1,117,446		1,110,157			3.306	4.326	MON	11,713	36,265	10/07/2008	11/25/2034
45660N-5H-4	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1			4	1FIM	2,153,413	.88	6474	2,896,297	3,267,211		2,430,912			3.286	13.583	MON	1,789	91,017	10/07/2008	12/25/2034
45660N-7R-0	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1			4	1FIM	21,990	.56	9417	150,594	264,471		33,004			3.817	115.314	MON	10,056	10,370	06/15/2007	01/01/2035
45660N-Q2-4	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR4			4	1FIM	697,488	.98	5123	1,026,137	1,041,634		854,253			3.943	9.516	MON	51,238	40,207	11/17/2008	08/01/2034
45660N-S3-0	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR5			4	1FIM	671,377	.90	8126	731,317	805,304		738,524			3.963	6.906	MON	22,758	(314,041)	01/11/2008	08/25/2034
45660N-T8-8	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR7			4	1FIM	27,248	.89	8892	34,203	38,050		30,020			3.386	12.060	MON	118	1,076	09/19/2007	09/25/2034
45660N-WS-0	RESIDENTIAL ASSET SECURI-SERIES 03-A15 C			4	1FIM	86,507	100	2231	96,273	96,059		92,238			4.250	5.177	MON	680	3,701	02/19/2008	02/01/2034
45660N-ZY-4	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1			4	1FIM	2,608	.99	8984	23,451	23,475		23,328			3.106	6.917	MON	628	1,366	10/07/2008	04/25/2034
45661E-AA-2	INDYMAC INDX MORTGAGE LO-SERIES 2006-AR2			4	1FIM	115,448	.90	3733	206,528	228,5											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
46627M-BQ-9	J.P. MORGAN ALTERNATIVE -SERIES 2005-A2			4	1FM	2,088,906	98.3852	2,269,407	2,306,654	2,291,108			30,089		3.026	3.930	MON	96,973	66,291	12/09/2005	01/25/2036
46627M-CS-4	J.P. MORGAN ALTERNATIVE -SERIES 2006-A1			4	1FM	2,232,571	95.1707	2,781,972	2,781,139	2,236,726			45,489		2.966	9.355	MON	13,516	69,923	02/07/2006	03/25/2036
46629B-AR-0	JP MORGAN MORTGAGE ACQUI-SERIES 2006-CW2			4	1FM	969,469	99.3934	1,150,691	1,157,713	1,144,588			19,348		2.656	4.013	MON	513	24,886	01/22/2008	08/25/2036
46629N-AC-7	JP MORGAN MORTGAGE ACQUI-SERIES 2006-FM1			4	1FM	33,424	52.1255	42,559	31,640	31,640			3,111		2.586	20.957	MON	597	1,620	01/23/2008	08/25/2036
46629T-AE-0	JP MORGAN MORTGAGE ACQUI-SERIES 06-CH1 C			4	1FM	528,914	99.8297	558,375	559,327	559,327			686		2.736	3.071	MON	8,533	14,959	02/13/2015	07/25/2036
46630K-AA-4	JP MORGAN MORTGAGE ACQUI-SERIES 2007-HE1			4	1FM	258,191	69.5075	230,701	331,908	202,630			10,279		2.606	9.948	MON	5,815	5,948	01/14/2008	03/25/2047
50346E-AA-5	LA HIPOTECARIA SA-SERIES 2014-1ACLASS A1			4	1FE	6,236,308	99.0000	5,965,164	6,025,418	6,125,721			(19,632)		3.258	2.658	MON	8,725	144,978	07/23/2014	11/24/2042
525221-AJ-6	LEHMAN XS TRUST-SERIES 2005-3 CLASS 2A1			4	1FM	754,273	97.4903	1,235,455	1,267,260	1,062,097			82,754		3.046	9.868	MON	40,284	34,329	04/18/2008	09/25/2035
525221-CD-7	LEHMAN XS TRUST-SERIES 2005-4 CLASS 1M1			4	1FM	31,117	72.8242	484,178	664,859	82,126			30,463		3.256	48.450	MON	6,434	18,391	01/11/2008	10/25/2035
525221-GB-7	LEHMAN XS TRUST-SERIES 2005-10 CLASS 2A3			4,5	1FM	2,069	110.1247	3,379	3,068	3,056			252		5.346	7.667	MON	205	336	08/29/2011	01/01/2036
525226-AL-0	LEHMAN XS TRUST-SERIES 2006-12N CLASS A4			4	1FM	811,231	60.1895	1,330,971	2,211,303	1,286,018			86,176		2.826	9.723	MON	1,042	53,694	08/29/2007	08/25/2046
525229-AG-5	LEHMAN XS TRUST-SERIES 2006-10N CLASS 1A			4	1FM	1,532,040	75.0073	3,040,191	4,053,195	2,507,503			131,917		2.806	8.747	MON	22,524	93,630	08/29/2007	07/25/2046
542514-RL-0	LONG BEACH MORTGAGE LOAN-SERIES 2006-1 C			4	1FM	1,293,523	80.9380	2,354,818	2,909,409	1,438,679			164,836		2.696	19.095	MON	13,890	63,833	01/01/2013	02/25/2036
550279-AA-1	LUMINENT MORTGAGE TRUST-SERIES 2005-1 CL			4	1FM	1,247,095	96.7608	1,323,226	1,574,218	1,323,135			37,312		2.766	6.821	MON	726	36,868	10/27/2005	11/25/2035
55027A-AR-1	LUMINENT MORTGAGE TRUST-SERIES 2006-3 CL			4	1FM	3,380,536	95.3754	4,396,837	4,610,031	3,652,894			253,299		2.706	9.783	MON	2,079	101,598	04/27/2006	05/25/2036
55027A-AU-4	LUMINENT MORTGAGE TRUST-SERIES 2006-3 CL			4	1FM	1,727,197	94.0766	2,432,468	2,585,624	1,984,430			212,587		4.271	13.204	MON	26,493	57,376	04/27/2006	05/25/2036
55274S-AM-3	MASTR ASSET SECURITIZATI-SERIES 2006-3 C			4	1FM	121,547	47.7303	130,119	272,613	121,266			(647)		2.956	7.371	MON	3,170	6,469	08/29/2011	10/25/2036
55291K-AC-1	MASTR ASSET BACKED SECUR-SERIES 2006-WMC			4	1FM	283,791	48.6010	901,136	1,854,152	574,151			115,691		2.606	24.421	MON	17,501	36,823	08/29/2011	08/25/2036
576433-FP-6	MASTR ADJUSTABLE RATE MO-SERIES 2003-5 C			4	1FM	78,383	89.4503	297,487	332,572	145,352			52,172		4.257	37.555	MON	9,727	13,748	10/07/2008	11/01/2033
576433-GH-0	MASTR ADJUSTABLE RATE MO-SERIES 2003-6 C			4	1FM	327,728	90.6219	1,156,618	1,276,312	445,548			58,355		4.809	35.146	MON	45,282	47,665	10/07/2008	01/01/2034
576433-H3-3	MASTR ADJUSTABLE RATE MO-SERIES 2006-0A1			4	1FM	1,113,778	82.2453	1,696,080	2,062,220	1,647,952			290,392		2.716	16.830	MON	35,290	50,014	10/07/2008	04/25/2046
576433-NH-5	MASTR ADJUSTABLE RATE MO-SERIES 2004-5 C			4	1FM	443,125	96.8564	1,311,018	1,353,569	720,835			217,904		4.136	32.102	MON	62,571	51,668	10/07/2008	07/01/2034
576433-PB-4	MASTR ADJUSTABLE RATE MO-SERIES 2004-8 C			4	1FM	191,062	97.7414	1,442,213	1,475,540	294,718			101,912		4.222	53.385	MON	42,754	56,083	10/07/2008	09/01/2034
576433-RU-2	MASTR ADJUSTABLE RATE MO-SERIES 2004-09			4	1FM	1,049,657	96.7822	2,395,381	2,475,023	1,946,026			330,864		3.656	17.657	MON	16,876	90,570	01/11/2008	11/25/2034
576433-SE-7	MASTR ADJUSTABLE RATE MO-SERIES 2004-11			4	1FM	893,713	101.4498	1,404,384	1,384,314	1,291,512			79,700		3.606	7.966	MON	9,416	34,326	01/11/2008	11/25/2034
576433-WZ-5	MASTR ADJUSTABLE RATE MO-SERIES 2005-1 C			4	1FM	360,364	97.6674	594,871	609,079	565,876			53,460		3.871	9.298	MON	20,769	24,296	03/06/2008	01/01/2035
576433-YN-0	MASTR ADJUSTABLE RATE MO-SERIES 2005-3 C			4	1FM	325,368	95.1272	375,850	395,100	378,056			20,141		2.756	5.928	MON	182	8,875	04/05/2005	04/25/2035
576434-SN-5	MASTR ALTERNATIVE LOANS -SERIES 2004-6 C			4	1FM	12,763	103.7775	17,122	16,499	14,359			458		6.000	10.470	MON	83	969	08/29/2011	07/01/2034
576436-OM-9	MASTR SPECIALIZED LOAN T-SERIES 2005-3 C			4	1FM	27,164	99.7471	27,111	27,180	27,180			280		2.866	3.151	MON	238	705	07/16/2007	11/25/2035
576436-CV-9	MASTR SPECIALIZED LOAN T-SERIES 2006-1 C			4	1FM	11,059	99.9455	12,174	12,181	12,181			6		2.806	3.092	MON	6	264	07/16/2007	01/25/2036
576438-AA-3	MASTR ADJUSTABLE RATE MO-SERIES 2006-2 C			4	1FM	610,440	99.3645	715,342	719,917	632,783			7,971		4.361	8.688	MON	29,163	29,998	03/29/2006	04/01/2036
57643A-AA-8	MASTR SPECIALIZED LOAN T-SERIES 2006-2 C			4	1FM	231,347	98.2692	346,515	352,618	298,773			23,064		2.766	10.318	MON	163	7,975	07/16/2007	02/25/2036
57643L-FG-6	MASTR ASSET BACKED SECUR-SERIES 2004-OPT			4	1FM	4,203,260	96.8764	4,499,412	4,644,486	4,599,298			41,995		3.206	4.073	MON	25,665	126,094	01/29/2008	09/25/2034
57643L-GF-7	MASTR ASSET BACKED SECUR-SERIES 2005-NC1			4	1FM	103,220	98.7567	114,202	115,639	112,433			1,263		3.226	4.349	MON	62	3,158	12/02/2013	12/25/2034
57643L-GY-6	MASTR ASSET BACKED SECUR-SERIES 2005-WMC			4	1FM	392,517	100.6371	424,969	422,279	422,279			650		3.226	3.504	MON	2,507	7,659	12/02/2013	03/25/2035
57643L-HP-8	MASTR ASSET BACKED SECUR-SERIES 2005-NC2			4	1FM	789,575	70.2540	1,129,292	1,607,442	984,110			89,223		3.206	13.421	MON	28,659	38,896	07/16/2007	11/25/2035
576430-AE-5	MASTR REPERFORMING LOAN -SERIES 2005-2 C			4	1FM	3,142,847	79.0053	3,365,017	4,259,229	3,177,611			103,573	480,084	2.856	3.466	MON	42,361	102,093	07/30/2012	05/25/2035
57645L-AA-2	MASTR REPERFORMING LOAN -SERIES 2006-2 C			4,5	1FM	19,067,071	89.0141	20,476,801	23,003,994	20,197,171			438,457		4.397	5.481	MON	704,168	1,054,473	11/25/2008	05/01/2036
585525-FC-7	MELLON RESIDENTIAL FUNDI-SERIES 01-TBC1			4	1FM	16,859	99.5738	17,499	16,859	17,499			639		3.155	3.155	MON	70	469	10/06/2014	11/15/2031
589929-2N-7	MLCC MORTGAGE INVESTORS -SERIES 2003-F C			4	1FM	267,920	99.5849	271,207	272,337	272,337			525		3.272	3.780	MON	149	7,991	11/14/2007	10/25/2028
589929-3W-6	MERRILL LYNCH MORTGAGE I-SERIES 2003-A5			4	1FM	142,238	93.9108	423,027	450,456	283,558			43,974		4.558	19.203	MON	19,272	20,160	10/07/2008	08/01/2033
589929-D6-2	MERRILL LYNCH MORTGAGE I-SERIES 2003-A1			4	1FM	8,133	100.6222	8,050	8,000	8,454			(34)		4.869	3.872	MON	265	399	10/07/2008	12/01/2032
589929-E8-7	MERRILL LYNCH MORTGAGE I-SERIES 2003-A1			4	1FM	63,084	97.6566	235,273	240,919	115,859			20,131		4.406	24.204	MON	5,096		10/07/2008	12/01/2032
589929-N3-8	MERRILL LYNCH MORTGAGE I-SERIES 2003-A2			4	1FM	325,730	98.9626	328,127	331,566	331,566			1,639		4.385	4.645	MON	10,682	14,641	10/07/2008	03/01/2033
589929-W5-3	MERRILL LYNCH MORTGAGE I-SERIES 2003-A4			4	1FM	24,198	98.3530	26,213	26,652	24,661			673		4.597	7.020	MON	494	1,098	11/17/2008	07/01/2033
589929-X2-9	MERRILL LYNCH MORTGAGE I-SERIES 2003-AA			4	1FM	1,320,343	89.2270	1,334,566	1,495,698	1,468,690			17,523		4.560	5.590	MON	66,149	64,454	10/07/2008	07/01/2033
59020U-AA-3	MERRILL LYNCH MORTGAGE I-SERIES 2004-A1			4	1FM	45,802	95.9117	52,248	54,475	53,595											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
59024W-AB-3	MLCC MORTGAGE INVESTORS -SERIES 2007-2 C			4	1.FM	261,279	100.4412	338,982	337,493	303,701		11,435			4.267	8.043	MON	3,566	11,711	08/29/2011	06/01/2037
59024W-AF-4	MLCC MORTGAGE INVESTORS -SERIES 2007-2 C			4	1.FM	78,381	111.9415	193,810	193,810	(22,106)		25,479			5.111	5.111	MON	74,821	(7,857)	05/18/2007	06/25/2037
61744C-JT-4	MORGAN STANLEY CAPITAL I-SERIES 2004-HE9			4	1.FM	864,900	95.5217	826,166	864,900	864,900					3.391	3.414	MON	489	25,085	11/10/2004	11/25/2034
61744C-NH-6	MORGAN STANLEY CAPITAL I-SERIES 2005-NC1			4	1.FM	2,246,973	100.3029	2,281,586	2,274,696	2,295,522		7,729			3.266	3.537	MON	1,238	62,901	10/04/2007	01/25/2035
61744C-NB-8	MORGAN STANLEY CAPITAL I-SERIES 2005-HE2			4	1.FM	5,434,189	99.9028	6,574,283	6,580,682	6,580,682					3.106	3.700	MON	3,407	170,944	01/01/2013	01/25/2035
617463-AA-2	MORGAN STANLEY IXIS REAL-SERIES 2006-2 C			4	1.FM	11,202	47.4506	11,984	25,256	12,191		939			2.556	11.590	MON	206	414	06/25/2008	11/25/2036
61746R-AB-7	MORGAN STANLEY CAPITAL I-SERIES 2002-HE3			4	1.FM	1,193,524	99.5651	1,331,445	1,337,260	1,337,260					4.156	4.790	MON	926	49,011	01/01/2013	03/25/2033
61748H-BF-7	MORGAN STANLEY MORTGAGE -SERIES 2004-6AR			4	1.FM	342,172	100.0867	350,268	349,965	349,965					3.406	3.868	MON	2,135	8,196	08/20/2007	07/25/2034
61749B-AB-9	MORGAN STANLEY CAPITAL I-SERIES 2006-NC5			4	1.FM	124,855	61.8982	104,191	168,327	104,997		10,202			2.576	11.986	MON	759	3,434	11/28/2007	10/25/2036
61749L-AN-1	MORGAN STANLEY MORTGAGE -SERIES 2006-6AR			4	1.FM	195,272	101.9596	303,841	298,002	255,596		11,839			4.293	8.731	MON	7,855	11,812	08/29/2011	06/01/2036
61750F-AE-0	MORGAN STANLEY CAPITAL I-SERIES 2006-HE6			4	1.FM	554,781	47.9954	600,246	1,250,633	606,815		57,090			2.656	12.759	MON	15,463	25,522	06/12/2007	09/25/2036
61750M-AB-1	MORGAN STANLEY CAPITAL I-SERIES 2006-HE7			4	1.FM	4,844	57.1808	5,166	9,035	5,240		494			2.586	11.416	MON	23	185	06/12/2007	09/25/2036
617526-AE-8	MORGAN STANLEY CAPITAL I-SERIES 2007-HE1			4	1.FM	169,352	67.8132	332,469	490,272	276,836		31,848			2.656	14.108	MON	217	10,556	01/11/2008	11/25/2036
61755A-AB-2	MORGAN STANLEY CAPITAL I-SERIES 2007-NC3			4	1.FM	3,356	75.1169	4,323	5,755	4,060		337			2.656	10.300	MON	2	119	01/10/2008	05/25/2037
61757M-AB-4	MORGAN STANLEY CAPITAL I-SERIES 2007-SEA			4	1.FM	1,569,855	27.9644	2,452,513	8,770,139	1,821,017		83,005			4.406	25.334	MON	218,114	180,057	01/24/2008	02/25/2047
61915R-AX-4	MORTGAGEIT TRUST-SERIES 2005-5 CLASS M2			4	1.FM	68,757	106.4633	1,331,182	1,250,367	1,172,782		375,759			3.076	63.911	MON	26,115	35,927	06/14/2007	12/25/2035
61915R-BB-1	MORTGAGEIT TRUST-SERIES 2005-AR1 CLASS M2			4	1.FM	2,506,664	89.4229	3,006,345	3,361,942	2,807,336		151,205			2.756	8.363	MON	37,743	76,832	11/16/2005	11/25/2035
61915R-BZ-8	MORTGAGEIT TRUST-SERIES 2006-1 CLASS 1A2			4	1.FM	236,244	88.6934	379,503	427,882	330,533		25,718			2.706	9.562	MON	2,513	9,828	01/11/2008	04/25/2036
64352V-EG-2	NEW CENTURY HOME EQUITY -SERIES 2003-5 C			4	1.FM	29,362	88.5728	34,744	39,226	35,366		783			3.306	5.872	MON	22	1,102	07/16/2007	11/25/2033
64352V-HX-5	NEW CENTURY HOME EQUITY -SERIES 2005-COL			4	1.FM	625,337	99.9353	628,524	628,931	628,931					2.756	3.008	MON	289	13,673	10/02/2007	12/25/2035
64352V-NY-3	NEW CENTURY HOME EQUITY -SERIES 2005-C			4	1.FM	2,265,900	99.4062	2,982,185	3,000,000	2,899,399		77,174			2.846	5.214	MON	1,423	70,431	07/16/2007	12/25/2035
64352V-OR-5	NEW CENTURY HOME EQUITY -SERIES 2006-1 C			4	1.FM	2,061,567	93.0191	2,976,299	3,199,666	2,486,464		312,173			2.686	15.257	MON	1,433	69,728	03/19/2007	05/25/2036
65106F-AG-7	NEWCASTLE MORTGAGE SECUR-SERIES 2007-1 C			4	6.FM	(301,663)	1.9485	1,079,342	1,079,342	1,766,688		(121,239)			3.156	3.156	MON	14,952	85,953	07/03/2007	04/25/2037
65535V-NS-3	NOMURA ASSET ACCEPTANCE -SERIES 2005-S3C			4	1.FM	681,867	102.9066	1,607,425	1,562,024	688,732		209			3.406	3.406	MON	31,851	55,985	01/01/2013	08/25/2035
65535V-RH-3	NOMURA ASSET ACCEPTANCE -SERIES 2005-AR6			4	1.FM	894,867	99.2025	1,536,861	1,549,216	1,261,432		150,875			4.753	16.266	MON	76,016	83,114	07/27/2007	12/01/2035
65535V-RK-6	NOMURA ASSET ACCEPTANCE -SERIES 2005-AR6			4	1.FM	765,557	39.5436	810,868	2,050,568	787,078		58,397			2.766	13.331	MON	65,918	34,044	12/06/2007	12/25/2035
65535V-US-5	NOMURA ASSET ACCEPTANCE -SERIES 2006-AR2			4	1.FM	950,317	43.5989	1,000,067	2,293,789	779,250		65,637			2.906	15.024	MON	16,798	42,445	03/17/2006	04/25/2036
65538D-AA-3	NOMURA ASSET ACCEPTANCE -SERIES 2006-AR4			4	1.FM	665,991	83.2267	1,102,519	1,324,718	967,769		32,758			2.676	10.689	MON	13,893	29,641	01/09/2008	12/25/2036
66987X-DH-5	NOVASTAR HOME EQUITY LOA-SERIES 2003-4 C			4	1.FM	191,627	98.7922	270,109	273,411	252,825		11,520			3.246	6.629	MON	148	7,519	10/30/2008	02/25/2034
66988A-AF-5	NOVASTAR HOME EQUITY LOA-SERIES 2006-1 C			4	1.FM	27,586	8.8549	52,116	20,389	588,557		1,927			2.956	38.064	MON	9,690	14,858	09/25/2007	05/25/2036
68383N-BZ-5	OPTEUM MORTGAGE ACCEPTAN-SERIES 2005-3 C			4	1.FM	418,466	99.6603	488,801	490,466	488,120		7,538			2.796	4.113	MON	3,801	12,494	10/07/2008	07/25/2035
68383N-CA-9	OPTEUM MORTGAGE ACCEPTAN-SERIES 2005-4 C			4	1.FM	3,381,287	98.7200	4,095,678	4,148,784	3,995,130		115,498			2.816	5.202	MON	1,947	95,582	10/07/2008	11/25/2035
68383N-CU-5	OPTEUM MORTGAGE ACCEPTAN-SERIES 2005-5 C			4	1.FM	2,204,128	91.8411	2,507,489	2,730,246	2,421,877		45,315			2.786	6.173	MON	1,268	62,273	11/15/2005	12/25/2035
68383N-DT-7	OPTEUM MORTGAGE ACCEPTAN-SERIES 2006-1 C			4	1.FM	2,444,774	92.5590	2,959,918	3,197,873	2,742,824		101,868			2.716	6.119	MON	1,448	70,702	10/01/2007	04/25/2036
68383N-DW-0	OPTEUM MORTGAGE ACCEPTAN-SERIES 2006-1 C			4	1.FM	3,655,220	94.0703	4,458,574	4,739,621	4,339,280		101,035			2.806	5.138	MON	2,217	109,102	03/26/2012	04/25/2036
68389F-JX-3	OPTION ONE MORTGAGE LOAN-SERIES 2005-5 C			4	1.FM	842,332	99.8602	847,832	849,019	849,019					2.846	3.083	MON	403	19,494	07/16/2007	12/25/2035
69336R-AW-0	PHMIC MORTGAGE PASS THRO-SERIES 2005-3 C			4,5	1.FM	2,917,491	101.5213	3,065,226	3,019,293	2,963,677		6,911			5.403	5.755	MON	47,501	166,083	06/14/2006	06/01/2035
70069F-BS-5	PARK PLACE SECURITIES IN-SERIES 2004-WHQ			4	1.FM	10,591,355	99.6819	14,496,396	14,542,652	13,953,189		510,529			3.496	6.283	MON	8,474	435,479	01/01/2013	09/25/2034
70069F-HV-2	PARK PLACE SECURITIES IN-SERIES 2005-WHQ			4	1.FM	5,044,493	99.9308	6,425,562	6,430,014	6,329,084		137,083			3.196	4.784	MON	3,425	173,139	01/01/2013	05/25/2035
70069F-KE-6	PARK PLACE SECURITIES IN-SERIES 2005-WOW			4	1.FM	177,801	100.0237	186,499	186,455	186,455					2.956	3.353	MON	17,547	7,286	01/11/2008	09/25/2035
70069F-LG-0	PARK PLACE SECURITIES IN-SERIES 2005-WOW			4	1.FM	28,570	100.0988	32,303	32,272	32,272		58			3.256	3.609	MON	18	881	12/02/2013	07/25/2035
70069F-LH-8	PARK PLACE SECURITIES IN-SERIES 2005-WOW			4	1.FM	11,504,426	99.7912	27,841,739	27,900,000	19,649,461		3,573,138			3.301	20.791	MON	15,351	783,720	01/01/2013	07/25/2035
70069F-LI-5	PARK PLACE SECURITIES IN-PPSI 2005-WO/3			4	1.FM	1,076,835	99.8006	1,174,122	1,176,468	1,176,468		5,092			2.986	3.811	MON	32,740	31,679	11/19/2014	08/25/2035
73316P-FC-9	POPULAR ABS MORTGAGE PAS-SERIES 2005-4 C			4	1.FM	5,252,275	99.8171	7,118,591	7,131,631	6,750,528		280,926			2.966	6.278	MON	3,526	175,590	01/01/2013	09/25/2035
73316P-JD-3	POPULAR ABS MORTGAGE PAS-SERIES 2005-6 C			4,5	1.FM	1,438	100.0471	2,016	2,015	2,005		175			3.838	14.026	MON	32	(44)	08/29/2011	01/01/2036
73316P-KH-2	POPULAR ABS MORTGAGE PAS-SERIES 2006-B C			4	1.FM	44,464	99.7378	48,235	48,362	48,362					2.786	3.219	MON	22	1,097	12/02/2013	05/25/2036
743947-AA-1	PRUDENTIAL HOME MORTGAGE-SERIES 1992-C C			4	1.FM	278	101.5524	289	284	283		1			7.400						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
760985-DV-0	RESIDENTIAL ASSET MTG PRODS 2001-RS2 CTF		4		1.FM	13,514	98.7380	13,337	13,508	13,589		29			3.026	3.362	MON	7	391	07/16/2007	06/25/2031
76110H-4M-8	RESIDENTIAL ACCREDIT LOA-SERIES 2005-044		4		1.FM	(6,757)	5.4310	501	9,220	(3,735)	(1,952)	6,334			4.294	4.294	MON	163	321	03/29/2006	04/01/2035
76110H-5C-9	RESIDENTIAL ACCREDIT LOA-SERIES 2005-045		4		1.FM	78,527	31.5460	264,337	837,940	168,406	83,943				4.332	84.299	MON	57,709	35,697	10/07/2008	04/01/2035
76110W-6M-3	RESIDENTIAL ASSET SECURI-SERIES 2005-AHL		4		1.FM	2,345,269	99.5878	2,298,513	2,308,026	2,335,942					2.846	2.810	MON	11,183	52,581	07/16/2007	11/25/2035
761118-FM-5	RESIDENTIAL ACCREDIT LOA-SERIES 2005-049		4		1.FM	2,870,274	88.6159	3,437,526	3,879,130	3,439,248					4.423	8.024	MON	75,629	148,278	08/15/2007	08/01/2035
761118-RJ-9	RESIDENTIAL ACCREDIT LOA-SERIES 2006-Q01		4		1.FM	98,363	74.5462	143,833	192,944	131,832					2.776	14.298	MON	2,593	4,756	03/15/2006	02/25/2046
76112B-4M-9	RESIDENTIAL ASSET MORTGA-SERIES 2006-NC3		4		1.FM	21,035	99.9654	23,694	23,702	23,702					2.696	2.853	MON	11	307	06/01/2015	03/25/2036
76112B-H5-2	RESIDENTIAL ASSET MORTGA-SERIES 05-EFC5		4		1.FM	707,407	100.0389	756,374	756,079	756,079					3.166	3.725	MON	399	19,794	05/05/2015	10/25/2035
76112B-K6-6	RESIDENTIAL ASSET MORTGA-SERIES 2005-EFC		4		1.FM	7,351	42.1672	251,413	596,229	7,582					3.451	303.925	MON	5,202	17,645	01/11/2008	11/25/2035
76112B-UE-8	GMAC MORTGAGE CORPORATIO-SERIES 2005-AR4		4,5		1.FM	192,980	82.6910	228,837	276,738	220,396					4.435	8.762	MON	5,154	11,843	08/29/2011	07/01/2035
76112H-AE-7	RES ASSET SECURIZATION TR-SERIES 2006-A9		4		1.FM	17,551	59.9516	21,695	36,187	18,189					6.000	11.028	MON	1,131	2,113	08/29/2011	09/01/2036
76113A-BJ-9	RESIDENTIAL ASSET SECURI-SERIES 2006-KS3		4		1.FM	425,775	99.9360	593,438	593,817	591,868					2.776	3.923	MON	275	13,175	07/16/2007	04/25/2036
805564-FM-5	SAXON ASSET SECURITIES T-SERIES 2005-1 C		4		1.FM	887,416	98.8784	1,186,400	1,199,857	1,171,195					3.196	5.342	MON	639	32,267	10/19/2007	05/25/2035
80657B-AM-8	SAXON ASSET SECURITIES T-SERIES 2007-3 C		4		1.FM	3,783,194	98.8187	7,104,716	7,189,650	7,148,083					2.826	3.959	MON	19,173	166,654	09/27/2007	09/25/2047
81375W-CS-3	SECURITIZED ASSET BACKED-SERIES 2005-0P1		4		1.FM	4,235,332	97.4807	4,421,561	4,535,831	4,535,831					3.121	3.828	MON	2,360	119,135	10/30/2007	01/25/2035
81744F-AZ-0	SEQUOIA MORTGAGE TRUST-SERIES 2004-3 CLA		4		1.FM	158,256	96.6077	167,651	173,537	173,537					3.194	3.123	MON	4,555	6,181	03/04/2005	05/20/2034
81744F-DK-0	SEQUOIA MORTGAGE TRUST-SERIES 2004-8 CLA		4		1.FM	677,671	99.0167	682,220	688,995	685,629					3.254	3.611	MON	2,698	19,988	03/23/2005	09/20/2034
81744F-JH-1	SEQUOIA MORTGAGE TRUST-SERIES 2005-4 CLA		4		1.FM	35,346	99.6710	55,120	55,302	45,942					4.696	11.355	MON	1,426	2,384	01/11/2008	04/01/2035
83611M-AQ-1	SOUNDVIEW HOME EQUITY LO-SERIES 2003-2 C		4		1.FM	85,924	102.5187	90,347	88,128	88,128					3.806	4.450	MON	56	2,916	10/31/2007	11/25/2033
83613G-AA-7	SOUNDVIEW HOME EQUITY LO-SERIES 2008-1 C		4		1.FM	880,840	93.8976	964,983	1,027,698	911,005					4.006	15.193	MON	17,127	33,753	01/23/2008	02/25/2038
84751P-AA-7	SPECIALTY UNDERWRITING 8-SERIES 2003-BC1		4		1.FM	35,577	96.4030	33,423	34,671	36,923					3.186	2.429	MON	18	933	07/16/2007	01/25/2034
84751P-AP-4	SPECIALTY UNDERWRITING 8-SERIES 2003-BC2		4		1.FM	290,561	99.8464	410,189	410,820	393,242					5.131	13.430	MON	351	18,998	01/01/2013	06/25/2034
84752C-AE-7	SPECIALTY UNDERWRITING 8-SERIES 2007-AB1		4		1.FM	887,284	53.1051	1,419,878	2,671,449	1,043,373					2.856	18.285	MON	56,610	53,923	01/11/2008	03/25/2037
855541-AC-2	SUNTRUST ADJUSTABLE RATE-SERIES 2007-S1		4		1.FM	665,688	95.0718	898,275	893,299	792,722					4.588	7.758	MON	27,191	37,347	08/29/2011	01/01/2037
85554N-AG-5	SUNTRUST ADJUSTABLE RATE-SERIES 2007-3 C		4		1.FM	212,135	91.5825	294,587	321,663	266,729					4.195	8.738	MON	2,257	6,780	08/29/2011	06/01/2037
863572-2A-0	STRUCTURED ASSET SECURI-SERIES 2000-5 C		4,5		1.FM	93,781	87.8007	131,869	150,191	65,055					5.626	29.426	MON	5,406	4,395	10/07/2008	11/01/2030
863572-F9-9	STRUCTURED ASSET SECURI-SERIES 1999-ALS		4		1.FM	17,897	98.5172	20,531	20,840	11,168					7.250	31.910	MON	126	1,468	10/07/2008	09/01/2029
863579-CB-2	STRUCTURED ADJUSTABLE RA-SERIES 2004-14		4		1.FM	1,571,302	99.7704	2,131,297	2,136,202	1,925,181					4.233	7.594	MON	91,276	88,137	10/07/2008	10/01/2034
863579-DV-7	STRUCTURED ADJUSTABLE RA-SERIES 2004-17		4		1.FM	(55,695)	6.2092	26,540	427,439	5,491					3.106	270.741	MON	30,883	16,801	12/20/2011	11/25/2034
863579-KG-2	STRUCTURED ADJUSTABLE RA-SERIES 2005-2 C		4		1.FM	1,029,505	98.2929	1,264,318	1,286,276	1,149,029					4.211	7.280	MON	47,665	54,922	02/05/2008	02/01/2035
863579-WR-5	STRUCTURED ADJUSTABLE RA-SERIES 2005-16X		4		1.FM	682,475	99.3705	826,157	831,391	815,808					2.846	6.116	MON	394	19,339	10/07/2008	08/25/2035
863579-YR-3	STRUCTURED ADJUSTABLE RA-SERIES 2005-19X		4		1.FM	2,090,168	94.0757	2,839,309	3,018,113	2,287,072					2.826	10.021	MON	28,044	68,474	02/15/2008	10/25/2035
86358H-HX-0	STRUCTURED ASSET MORTGAG-SERIES 1999-2 C		4		1.FM	312,861	87.1744	310,032	355,646	303,381					6.750	10.482	MON	8,266	36,523	09/27/2001	05/01/2029
86358R-A2-3	STRUCTURED ASSET SECURI-SERIES 2002-6 C		4,5		1.FM	1,022,009	98.7199	1,104,241	1,118,560	1,046,548					6.560	8.301	MON	12,742	73,500	10/03/2002	04/01/2032
86359A-5E-9	STRUCTURED ASSET SECURI-SERIES 2003-34A		4		1.FM	53,080	99.4415	80,688	81,141	41,796					4.275	28.510	MON	1,557	3,242	10/07/2008	11/01/2033
86359A-6A-6	STRUCTURED ASSET SECURI-SERIES 2003-34A		4		1.FM	267,348	81.2487	1,390,239	1,711,090	754,637					4.401	41.399	MON	65,086	72,000	10/07/2008	11/01/2033
86359A-CD-3	STRUCTURED ASSET SECURI-SERIES 2002-21A		4		1.FM	99,167	75.4384	750,567	994,941	169,880					4.500	69.031	MON	47,066	36,778	12/20/2011	11/01/2032
86359A-CG-6	STRUCTURED ASSET SECURI-SERIES 2002-21A		4		1.FM	29,493	0.0010	3	267,055	(17,352)					4.010	4.010	MON	19,584	(1,259)	12/20/2011	11/01/2032
86359A-HD-8	AMORTIZING RESIDENTIAL C-SERIES 2002-BC1		4		1.FM	134,888	99.7730	173,544	173,939	161,474					3.906	6.753	MON	652	5,191	07/16/2007	01/25/2033
86359A-HK-5	STRUCTURED ASSET SECURI-SERIES 2003-18X		4,5		1.FM	1,704,344	99.8051	1,901,246	1,904,960	1,814,258					4.786	5.537	MON	74,097	97,340	12/12/2007	06/01/2033
86359A-ZE-6	STRUCTURED ASSET SECURI-SERIES 2003-22A		4		1.FM	340,877	95.5226	1,289,867	1,350,326	551,237					4.410	36.391	MON	36,293	61,912	10/07/2008	06/01/2033
86359B-7K-1	STRUCTURED ASSET SECURI-SERIES 2005-7XS		4		1.FM	32,274	97.1150	44,524	45,846	37,125					3.849	9.857	MON	239	1,511	12/11/2007	04/01/2035
86359B-LB-5	STRUCTURED ADJUSTABLE RA-SERIES 2004-2 C		4		1.FM	373,172	98.1314	431,581	439,799	412,577					4.347	6.524	MON	9,627	17,779	12/20/2011	03/01/2034
86359B-LQ-2	STRUCTURED ADJUSTABLE RA-SERIES 2004-2 C		4		1.FM	340,393	58.1355	2,223,232	3,824,222	1,320,755					4.176	42.775	MON	206,050	171,315	10/07/2008	03/01/2034
86359B-MX-6	WELLS FARGO HOME EQUITY -SERIES 2004-1 C		4		1.FM	1,700,013	97.7657	1,949,595	1,994,151	1,921,168					2.806	4.493	MON	12,860	51,234	06/03/2008	04/25/2034
86359B-UB-2	STRUCTURED ASSET SECURI-SERIES 2004-23X		4		1.FM	98,481	111.7296	1,072,357	959,779	13,781					3.456	307.602	MON	5,732	31,079	01/11/2008	01/25/2035
86359D-DB-0	STRUCTURED ASSET SECURI-SERIES 2005-WF2		4		1.FM	1,066,603	99.2387	1,300,093	1,310,067	1,283,751					3.076	4.684	MON	672	33,708	08/13/2007	05/25/2035
86359D-MC-8	STRUCTURED ASSET SECURI-SERIES 2005-RF3		4		1.FM	6,209,976	89.5281	6,944,762	7,757,073	6,758,592					2.856	6.403	MON	19,893	181,713		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
86363M-AB-7	STRUCTURED ASSET SECURIT-SERIES 2007-GEL			4	1.FM	804,447	99.3736	1,407,182	1,416,052	1,396,985			60,659		2.826	5.153	MON	667	32,601	01/11/2008	05/25/2037
881561-BU-7	TERWIN MORTGAGE TRUST-SERIES 2003-4HE CL			4	1.FM	51,462	96.4772	49,482	51,288	52,090			283		3.366	3.839	MON	1,644	2,806	07/16/2007	09/25/2034
881561-CE-2	TERWIN MORTGAGE TRUST-SERIES 2003-6HE CL			4	1.FM	56,389	95.5963	53,385	55,844	59,085			260		3.446	3.084	MON	32	1,648	07/16/2007	11/25/2033
881561-CX-0	TERWIN MORTGAGE TRUST-SERIES 2003-8HE CL			4	1.FM	51,662	97.6150	50,076	51,299	51,962			289		3.446	3.793	MON	29	1,543	07/16/2007	12/25/2034
88156U-AW-0	TERWIN MORTGAGE TRUST-SERIES 2008-8 CLAS			4,5	1.FM	106,027	3.0523	93,095	3,050,000	27,634			(2,450)		0.848	87.302	MON	31,286	24,125	09/07/2007	08/01/2037
881570-AL-2	TERWIN MORTGAGE TRUST-SERIES 2007-4HE CL			4	1.FM	657,627	14.0468	1,845,609	13,139,000	678,725			12,175		2.956	41.924	MON	270,571	308,817	01/11/2008	05/25/2038
885220-FS-7	THORNBERG MORTGAGE SECUR-SERIES 2004-3 C			4	1.FM	1,475,538	97.9761	1,517,713	1,549,064	1,533,756			15,335		3.246	4.160	MON	838	42,119	02/04/2005	09/25/2044
885220-HB-2	THORNBERG MORTGAGE SECUR-SERIES 2005-1 C			4,5	1.FM	1,210,863	100.5039	1,204,916	1,198,875	1,218,339			7,308		3.718	4.429	MON	54,107	48,438	11/07/2014	04/01/2045
89171V-AK-3	TOWD POINT MORTGAGE TRUS-SERIES 2015-5 C			4,5	1.FM	2,665,881	98.4893	2,620,988	2,661,191	2,663,027			(524)		2.750	2.707	MON	6,099	71,028	10/23/2015	05/01/2055
897896-BD-7	TRUMAN CAPITAL MORTGAGE -SERIES 2005-1 C			4	1.FM	23,557	101.2866	23,712	23,410	23,410			(29)		2.936	17.342	MON	11	1,511	07/16/2007	03/25/2037
89789K-AC-9	TRUMAN CAPITAL MORTGAGE -SERIES 2006-1 C			4	1.FM	7,525	17.2034	119,118	692,410	10,583			3,120		3.406	251.323	MON	7,210	21,429	01/11/2008	03/25/2036
929227-6K-7	WAMU MORTGAGE PASS-THROU-SERIES 2003-AR7			4	1.FM	250,416	102.3979	256,781	250,768	255,792			1,252		4.145	4.396	MON	5,192	9,218	10/04/2006	08/01/2033
929227-EN-2	WAMU MORTGAGE PASS-THROU-SERIES 2001-AR3			4	1.FM	77,540	90.8410	328,549	361,675	128,284			44,366		2.644	33.877	MON	5,958	8,500	10/07/2008	11/01/2041
929227-OB-5	WAMU MORTGAGE PASS-THROU-SERIES 2002-AR6			4	1.FM	53,848	96.2873	67,169	69,759	64,017			1,952		3.557	5.633	MON	1,045	1,996	10/07/2008	06/01/2042
929227-XH-4	WAMU MORTGAGE PASS-THROU-SERIES 2002-AR1			4	1.FM	40,486	96.8790	119,196	123,036	74,767			13,009		2.329	20.180	MON	1,599	2,671	06/18/2004	11/01/2042
929227-ZF-6	WAMU MORTGAGE PASS-THROU-SERIES 2002-AR1			4	1.FM	4,415	84.6337	37,423	44,217	16,263			7,965		4.730	51.777	MON	585	1,640	10/07/2008	01/01/2033
92922F-2G-2	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR1			4	1.FM	82,625	99.2505	86,997	87,654	89,689			31		2.826	3.187	MON	709	2,048	10/06/2014	08/25/2045
92922F-5T-1	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR1			4	1.FM	2,916,969	98.9721	3,197,811	3,231,024	3,187,754			39,193		2.766	3.922	MON	8,455	73,892	10/27/2005	11/25/2045
92922F-7A-0	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR1			4	1.FM	254,642	82.5906	863,868	1,045,964	450,885			160,521		4.280	31.652	MON	16,861	36,340	01/11/2008	12/01/2035
92922F-7Q-5	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR1			4	1.FM	3,377,264	98.6371	3,830,258	3,883,183	3,677,524			80,485		2.796	4.943	MON	2,111	89,023	08/27/2007	12/25/2045
92922F-BT-2	WAMU MORTGAGE PASS-THROU-SERIES 2004-AR1			4	1.FM	363,940	98.5764	394,203	399,896	412,506			(460)		3.246	3.105	MON	5,262	11,309	03/28/2005	11/25/2034
92922F-BW-7	WAMU MORTGAGE PASS-THROU-SERIES 2003-AR9			4	1.FM	84,273	102.3535	87,207	85,202	87,476			320		4.331	4.260	MON	1,562	3,185	09/15/2005	09/01/2033
92922F-J2-5	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR6			4	1.FM	2,041,353	100.0010	2,876,319	2,119,565	2,179,009			(3,040)		2.966	2.813	MON	34,412	54,069	03/30/2005	04/25/2045
92922F-NH-4	WAMU MORTGAGE PASS-THROU-SERIES 2004-AR2			4	1.FM	400,981	98.7659	642,966	651,000	535,937			36,187		3.557	9.960	MON	19,537	20,655	11/17/2008	04/01/2044
92922F-TJ-7	WAMU MORTGAGE PASS-THROU-SERIES 2004-AR8			4	1.FM	439,299	97.0173	531,677	548,022	566,084			15,775		2.926	6.231	MON	7,466	13,546	07/16/2007	06/25/2044
92922F-W6-1	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR1			4	1.FM	158,701	99.7311	148,937	420,066	163,658			45,282		4.126	53.102	MON	13,260	16,275	01/11/2008	09/01/2035
92922F-WU-8	WAMU MORTGAGE PASS-THROU-SERIES 2004-AR1			4	1.FM	1,116,607	98.7659	1,304,415	1,320,714	1,232,561			28,908		2.926	5.300	MON	30,601	34,395	10/07/2008	07/25/2044
92922F-ZD-3	WAMU MORTGAGE PASS-THROU-SERIES 2004-RP1			4	1.FM	5,263,474	98.6029	6,969,904	7,068,664	6,369,616			249,677		4.004	8.194	MON	144,553	261,498	11/21/2008	01/01/2034
92922F-ZF-8	WAMU MORTGAGE PASS-THROU-SERIES 2004-AR1			4	1.FM	2,548,817	100.0342	2,943,935	2,942,928	2,870,223			45,204		3.286	4.642	MON	72,669	79,481	10/07/2008	10/25/2044
92925C-BB-7	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR1			4	1.FM	1,305,351	98.4162	1,470,232	1,493,892	1,451,521			23,972		2.796	4.507	MON	4,566	37,124	08/27/2007	12/25/2045
92925V-AM-2	WAMU MORTGAGE PASS-THROU-SERIES 2007-HY1			4	1.FM	188,691	96.0418	295,450	307,627	243,705			16,831		3.600	9.913	MON	6,794	10,770	08/29/2011	02/01/2037
92926S-AB-2	WAMU ASSET-BACKED CERTIF-SERIES 2007-HE2			4	1.FM		50.5215	661	1,308	614			48		2.616	15.458	MON	3	25	01/09/2008	04/25/2037
92926U-AC-5	WAMU MORTGAGE PASS-THROU-SERIES 2007-HY2			4	1.FM	150,746	93.8036	209,177	222,995	182,627			14,543		4.143	12.085	MON	4,677	8,833	08/29/2011	11/01/2036
92927X-AC-8	WAMU MORTGAGE PASS-THROU-SERIES 2007-HY6			4	1.FM	167,968	91.5573	274,940	300,293	241,272			15,413		3.525	9.625	MON	7,378	10,430	08/29/2011	06/01/2037
92977Y-AY-7	WACHOVIA MORTGAGE LOAN T-SERIES 2005-WMC			4	1.FM	1,208,400	92.9280	3,717,120	4,000,000	2,077,701			251,098		3.196	18.527	MON	2,131	108,103	10/18/2007	10/25/2035
92978E-AA-2	WACHOVIA MORTGAGE LOAN T-SERIES 2006-AMN			4	1.FM	121,245	55.2791	173,198	313,316	149,233			14,518		2.556	12.250	MON	3,510	6,552	11/28/2007	08/25/2036
92979D-AA-3	WACHOVIA MORTGAGE LOAN T-SERIES 2007-A C			4	1.FM	129,091	93.6259	191,069	204,077	178,157			8,935		4.468	8.759	MON	5,220	8,221	08/29/2011	03/01/2037
92990Q-AE-3	WAMU MORTGAGE PASS-THROU-SERIES 2007-HY5			4	1.FM	77,945	89.0875	111,541	125,204	111,886			11,911		3.503	6.607	MON	1,983	4,207	08/29/2011	05/01/2037
93362F-AF-0	WAMU MORTGAGE PASS-THROU-SERIES 2006-AR8			4	1.FM	97,410	95.9667	186,540	194,380	140,611			14,559		3.909	10.039	MON	4,112	7,309	08/29/2011	08/01/2036
933636-AL-6	WAMU MORTGAGE PASS-THROU-SERIES 2007-HY4			4	1.FM	113,635	94.7367	161,987	170,987	139,923			7,006		3.661	9.192	MON	4,995	6,246	08/29/2011	11/01/2036
93363N-AF-2	WAMU MORTGAGE PASS-THROU-SERIES 2006-AR1			4	1.FM	277,180	91.8356	403,326	439,182	345,881			22,982		3.444	9.061	MON	7,788	11,723	08/29/2011	10/01/2036
939335-P9-0	WASHINGTON MUTUAL MSC NO-SERIES 2002-AR1			4	1.FM	5,461	85.9904	80,437	93,542	36,687			13,119		4.238	37.133	MON	2,210	3,576	10/31/2008	02/01/2031
939336-5V-1	WASHINGTON MUTUAL MORTGAGE-SERIES 2005-4 C			4	1.FM	482,991	84.4568	514,870	609,625	527,045			24,719		2.956	7.439	MON	9,487	14,925	02/19/2008	06/25/2035
939336-KZ-5	WASHINGTON MUTUAL MSC NO-SERIES 2002-AR3			4	1.FM	908,071	99.8923	883,175	884,126	912,123			(315)		4.217	4.023	MON	23,538	32,608	10/07/2008	12/01/2032
939336-X6-5	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR1			4	1.FM	3,561,837	98.7646	4,187,644	4,240,026	4,060,614			73,162		3.186	4.928	MON	85,859	119,305	10/07/2008	01/25/2045
939336-Z4-8	WAMU MORTGAGE PASS-THROU-SERIES 2005-AR3			4	1.FM		100.8043	126,466	125,457				2,349		3.672	0.000	MON	1,651	4,537	12/20/2011	03/01/2035
93934X-AB-9	WASHINGTON MUTUAL ASSET-SERIES 2006-HE5																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
94982H-AC-1	WELLS FARGO MORTGAGE BAC-SERIES 2005-AR9		4		1FM	240,649	101.0274	246,433	243,927	245,787		1,861			4.668	5.049	MON	8,516	9,708	09/21/2006	10/01/2033
94983K-AG-4	WELLS FARGO MORTGAGE BAC-SERIES 2006-AR2		4,5		1FM	168,575	98.9472	238,150	240,684	210,393		13,355			4.607	9.059	MON	6,962	9,980	08/29/2011	03/01/2036
94983Y-AD-1	WELLS FARGO MORTGAGE BAC-SERIES 2006-AR1		4		1FM	52,436	100.4815	99,645	99,168	79,097		7,385			4.337	11.988	MON	5,655	4,296	08/29/2011	07/01/2036
94984G-AD-9	WELLS FARGO MORTGAGE BAC-SERIES 2006-AR1		4		1FM	85,560	100.1459	125,142	124,959	107,046		5,237			4.709	10.361	MON	4,311	5,550	08/29/2011	09/01/2036
576444-AA-1	MASTR ALTERNATIVE NII-SERIES 2006-5 CLAS		D	4	1FM	46	0.0000		348,933						7.750	0.000	MON	54,460	27,042	10/31/2008	05/26/2046
74951P-BT-4	RESI FINANCE LIMITED PAR-SERIES 2003-C C		D	4	1FM	94,466	87.8247	556,999	634,217	299,056		40,940			3.787	39.204	MON	3,402	21,636	09/11/2003	09/10/2035
74951P-BV-9	RESI FINANCE LIMITED PAR-SERIES 2003-C C		D	4	1FM			79,799	142,804	39,499		10,527			4.687	87.329	MON	409	6,118	09/11/2003	09/10/2035
86358E-DS-2	STRUCTURED ASSET INVESTM-SERIES 2003-BC9		C	4	1FM	9,032	100.0984	9,031	9,023	9,023					3.206	3.718	MON	5	244	07/16/2007	08/25/2033
86358E-QJ-8	STRUCTURED ASSET INVESTM-SERIES 2005-1 C		C	4	1FM	1,726,726	100.1372	2,209,531	2,206,504	2,193,304		27,637			3.226	4.185	MON	1,186	60,020	01/21/2005	02/25/2035
Q3R733-AD-4	Firstmac Mortgage Fundin-FMACB 2018-2 B		B	4	1FE	7,602,000	100.0060	7,043,420	7,043,000	7,043,000					3.895	3.895	MON	54,286	93,851	06/08/2018	10/20/2049
Q3R733-AE-2	Firstmac Mortgage Fundin-FMACB 2018-2 C		B	4	1FE	1,064,280	100.0066	986,085	986,020	986,020					4.895	4.895	MON	9,612	16,603	06/08/2018	10/20/2049
Q3R733-AF-9	Firstmac Mortgage Fundin-FMACB 2018-2 AB		B	4	1FE	9,122,400	99.4368	8,404,001	8,451,600	8,451,600					3.745	3.745	MON	62,556	108,168	06/08/2018	10/20/2049
Q3R736-AD-7	Firstmac Mortgage Fundin-FMACB 2018-3 B		B	4	1FE	7,126,000	100.0161	7,044,137	7,043,000	7,043,000					4.043	4.043	MON	11,755	41,659	10/19/2018	04/15/2050
Q3R736-AF-2	Firstmac Mortgage Fundin-FMACB 2018-3 AB		B	4	1FE	24,370,920	100.0157	24,090,842	24,087,060	24,087,060					3.843	3.843	MON	38,214	135,298	10/19/2018	04/15/2050
Q54773-AD-0	La Trobe Financial Capit-LTFC 2018-1 CLA		B	4	1FE	15,416,000	99.2003	13,973,354	14,086,000	14,086,000					3.901	3.901	MON	78,015	335,478	03/27/2018	07/11/2049
Q73855-AJ-9	Pepper Residential Secur-PEPAU 22X B		B	4	1FE	21,891,000	99.8951	21,106,836	21,129,000	21,129,000					4.417	4.353	MON	67,295	67,295	11/30/2018	06/20/2060
Q7389H-AC-4	Pepper I-Prime 2018-1 Tr-SERIES 18-1 CLA		B	4	1FE	6,799,500	99.7595	6,323,457	6,338,700	6,338,700					3.675	3.675	MON	23,243	112,786	05/25/2018	11/23/2049
Q7389H-AE-0	Pepper I-Prime 2018-1 Tr-SERIES 18-1 CLA		B	4	1FE	3,777,500	100.2056	3,528,739	3,521,500	3,521,500					4.725	4.725	MON	16,733	81,240	05/25/2018	11/23/2049
Q7389H-AH-3	Pepper Residential Secur-PEPAU 2018-1 B		B	4	1FE	6,044,000	99.4501	5,603,417	5,634,400	5,634,400					3.875	3.875	MON	21,825	105,917	05/25/2018	11/23/2049
Q7389H-AH-2	Pepper Residential Secur-SERIES 20X CLAS		B	4	1FE	29,332,200	99.9878	26,760,127	26,763,400	26,763,400					3.843	3.796	MON	129,972	676,601	03/21/2018	09/16/2059
Q7389N-AC-1	Pepper Residential Secur-PEPAU 21X A2		B	4	1FE	29,564,000	99.1230	27,924,920	28,172,000	28,172,000					3.843	3.843	MON	133,810	322,090	07/26/2018	01/16/2060
Q7389N-AH-0	Pepper Residential Secur-PEPAU 21X B		B	4	1FE	14,782,000	99.3017	13,987,642	14,086,000	14,086,000					4.143	4.143	MON	72,228	173,854	07/26/2018	01/16/2060
Q7443L-AC-9	Sapphire XIX Series 2018-SAPP 2018-2 A2B		B	4	1FE	14,532,000	100.0024	14,086,342	14,086,000	14,086,000					4.074	4.074	MON	110,013	71,010	08/30/2018	01/21/2050
Q7443P-AC-0	Sapphire Trust-SAPP 2018-3 A2		B	4	1FE	18,075,000	99.9441	17,597,657	17,607,500	17,607,500					4.028	3.972	MON	35,218		11/27/2018	01/21/2050
Q7444F-AD-2	AFG 2018-1 Trust-AFG 2018-1 AB		B	4	1FE	4,984,200	99.9987	4,753,964	4,754,025	4,754,025					3.645	3.645	MON	23,652	67,929	06/20/2018	01/10/2050
Q7444F-AF-7	AFG 2018-1 Trust-AFG 2018-1 C		B	4	1FE	2,713,620	99.9983	2,588,259	2,588,303	2,588,303					4.795	4.795	MON	16,962	48,579	06/20/2018	01/10/2050
Q7444F-AJ-9	AFG 2018-1 Trust-AFG 2018-1 B		B	4	1FE	3,747,380	99.9987	3,574,275	3,574,323	3,574,323					3.845	3.845	MON	18,764	53,857	06/20/2018	01/10/2050
Q744AN-AD-5	La Trobe Financial Capit-LTFC 2018-2 A2		B	4	1FE	45,200,071	100.0037	44,111,919	44,110,309	44,110,309					3.905	3.905	MON	95,224	96,188	11/14/2018	03/12/2050
Q744AN-AK-9	La Trobe Financial Capit-LTFC 2018-2 B		B	4	1FE	8,912,995	99.8300	8,683,315	8,698,105	8,698,105					4.255	4.255	MON	20,460	20,687	11/14/2018	03/12/2050
Q7500H-AB-3	RESIMAC Bastille Trust S-RESI 2018-1NCX		B	4	1FE	54,735,000	99.6498	52,637,505	52,822,500	52,822,500					3.785	3.785	MON	149,814	621,214	08/10/2018	12/05/2059
Q7500P-AC-3	RedZed Trust Series 2018-REDZE 2018-1 A2		B	4	1FE	14,332,000	99.6772	14,040,535	14,086,000	14,086,000					3.945	3.920	MON	82,204	76,919	09/12/2018	03/09/2050
Q751BB-AB-4	RESIMAC Premier Series 2-RESI 2017-3 AB		B	4	1FE	8,858,450	100.2408	8,118,952	8,099,450	8,099,450					3.745	3.720	MON	44,862	262,126	12/21/2017	08/09/2053
Q751BB-AD-0	RESIMAC Premier Series 2-CLASS C		B	4	1FE	8,473,300	98.9171	7,663,405	7,747,300	7,747,300					5.045	5.020	MON	57,866	339,294	12/21/2017	08/09/2053
Q751BB-AF-5	RESIMAC Premier Series 2-CLASS B		B	4	1FE	20,027,800	98.3359	18,007,075	18,311,800	18,311,800					4.045	4.020	MON	109,585	640,805	12/21/2017	08/09/2053
Q9035L-AE-5	Triton Trust No 8 Bond S-TRTN 2018-1 A3		B	4	1FE	19,459,738	99.9966	18,497,818	18,498,440	18,498,440					3.745	3.745	MON	164,678	141,286	07/13/2018	12/20/2049
Q9035L-AG-0	Triton Trust No 8 Bond S-TRTN 2018-1 B		B	4	1FE	9,853,970	100.0389	9,370,830	9,367,190	9,367,190					3.925	3.925	MON	72,774	89,873	07/13/2018	12/20/2049
Q9035L-AH-8	Triton Trust No 8 Bond S-TRTN 2018-1 C		B	4	1FE	4,778,805	100.1085	4,547,663	4,542,735	4,542,735					4.695	4.695	MON	42,430	52,451	07/13/2018	12/20/2049
Q9035L-AL-9	Triton Trust No 8 Bond S-TRTN 2018-1 AB		B	4	1FE	7,634,974	99.9966	7,257,561	7,257,812	7,257,812					3.845	3.845	MON	55,201	68,164	07/13/2018	12/20/2049
3399999. Subtotal - Bonds - Industrial and Miscellaneous (Unaffiliated) - Residential Mortgage-Backed Securities						899,468,705	XXX	1,060,597,633	1,192,183,164	972,231,204	803,777	30,063,470	1,634,451	(19,717,635)	XXX	XXX	XXX	13,338,974	26,152,703	XXX	XXX
Q3927R-AA-2	ARCAP REIT INC-SERIES 2006-RR7 CLASS AD		4,5		6FE	1,404,842	11.1866	963,516	8,613,115	963,516					5.616	(4.767)	MON	403,146	678,643	01/01/2013	09/01/2045
05359A-AJ-2	Aventura Mall Trust-SERIES 2018 AVM CLAS		4,5		1FM	28,232,496	97.5567	28,096,332	28,800,000	28,252,292		(630,479)			4.112	4.416	MON	151,813	641,042	06/19/2018	07/01/2040
05491V-AE-6	BBCMS 2018-CHRS Mortgage-BBCMS 2018-CHRS		4,5		1FM	5,626,533	101.5975	5,689,462	5,600,000	5,625,919					4.267	4.271	MON	52,442	49,101	07/26/2018	08/01/2038
05491V-AG-1	BBCMS 2018-CHRS Mortgage-BBCMS 2018-CHRS		4,5		1FM	17,315,341	99.6563	17,449,818	17,510,000	17,322,239					4.267	4.467	MON	183,058	134,444	07/26/2018	08/01/2038
05491V-AJ-5	BBCMS 2018-CHRS Mortgage-BBCMS 2018-CHRS		4,5		1FM	13,340,114	97.3852	13,400,199	13,760,000	13,353,819		13,706			4.267	4.713	MON	148,398	101,107	07/26/2018	08/01/2038
05549G-AG-6	BHMS 2018-ATLS-BHMS 2018-ATLS B		A	4	1FM	35,000,000	98.9003	34,615,119	35,000,000	35,000,000					3.955	3.955	MON	65,370	508,468	07/13/2018	07/15/2035
056059-AN-8	BX Trust-BX 2018-IND E		A	4	1FM	23,744,569	98.8753	23,477,521	23,744,569	23,744,569					4.155	4.155	MON	46,590	118,464	10/22/2018	11/15/2035
05947U-DI-5	BANK OF AMERICA-FIRST UN-SERIES 2001-3 C																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest					Dates	
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
06540R-AK-0	BANK 2017-BNK9-SERIES 2017-BNK9 CLASS 9			4,5	1FIM	10,284,710	.985327	10,001,073	10,150,000	10,273,246		(11,138)			4.221	4.116	MON	192,493	432,073	12/05/2017	11/01/2054
06541F-BF-5	BANK 2017-BNK4-SERIES 2017-BNK4 CLASS C			4,5	1FIM	8,260,576	.986815	7,914,259	8,020,000	8,225,597		(20,870)			4.372	4.003	MON	29,220	350,634	04/05/2017	05/01/2050
06541K-BE-7	BANK 2017-BNK4-BANK 2018-BN12 B			4,5	1FIM	3,272,712	103.1822	3,301,832	3,200,000	3,269,168		(3,544)			4.422	4.196	MON	29,246	66,843	05/15/2018	05/01/2061
06541K-BF-4	BANK 2017-BNK4-BANK 2018-BN12 C			4,5	1FIM	2,270,116	.990669	2,278,538	2,300,000	2,271,500		1,384			4.422	4.640	MON	20,618	48,446	05/15/2018	05/01/2061
06541X-AK-6	BANK 2017-BNK7-SERIES 2017-BNK7 CLASS B			4	1FIM	5,252,597	.986455	5,030,919	5,100,000	5,236,121		(13,155)			3.949	3.590	MON	16,783	201,399	09/19/2017	09/01/2060
06541X-AL-4	BANK 2017-BNK7-SERIES 2017-BNK7 CLASS C			4,5	1FIM	6,375,068	.958113	6,084,018	6,350,000	6,366,878		(6,556)			4.057	4.041	MON	93,834	233,433	10/22/2018	09/01/2060
07383F-4F-2	BEAR STEARNS COMMERCIAL -SERIES 2005-PIWR			5,6	6FE	331,784	.00007	482	69,863,943	(1,417)	1,074,847			0.095	(301,454)	MON	29,840	(1,004,097)	01/01/2013	02/01/2041	
07383F-5R-5	BEAR STEARNS COMMERCIAL -SERIES 2005-T18			5,6	6FE	36,395	.01046	4,456	4,261,650	4,456	(5,703)			0.085	(11,544)	MON	2,020	(4,770)	01/01/2013	02/01/2042	
07387B-AR-4	BEAR STEARNS COMMERCIAL -SERIES 2005-PIWR			5,6	6FE	92,367	.02803	35,372	12,620,124	35,140	17,181			0.232	31,307	MON	15,390	1,743	01/01/2013	09/01/2042	
07388V-AG-3	BEAR STEARNS COMMERCIAL -SERIES 2007-T26			4,5	1FIM	43,358	100.5456	40,384	40,165	40,295		84		5.465	4.489	MON	183	2,097	12/02/2013	01/01/2045	
07388V-AH-1	BEAR STEARNS COMMERCIAL -SERIES 2007-T26			4,5	4FIM	7,875,821	.897816	7,032,591	7,833,000	7,832,057		383		5.465	5.548	MON	361,218	423,120	04/05/2007	01/01/2045	
11777L-AB-7	BEAR STEARNS DEUTSCHE BA-SERIES 2005-AFR			4	1FIM	1,607,112	101.3269	1,440,080	1,421,222	1,450,785		(38,151)		5.008	1.882	MON	3,163	70,831	01/01/2013	09/15/2027	
11777L-AD-3	BEAR STEARNS DEUTSCHE BA-SERIES 2005-AFR			4	1FIM	1,849,470	101.4370	2,028,740	2,000,000	1,980,899		25,627		5.038	6.426	MON	4,478	100,760	01/01/2013	09/15/2027	
12513Y-BD-1	CD COMMERCIAL MORTGAGE T-SERIES 2007-CD4			5,6	6FE	3,655	1.0842	5,151	475,076	(28)				0.752	0.752	MON	5,392	7,016	01/01/2013	12/01/2049	
125156-AH-0	CD COMMERCIAL MORTGAGE T-CD 2017-CD3 C			4,5	1FIM	4,630,033	.985099	4,432,945	4,500,000	4,608,764		(11,322)		4.562	4.265	MON	69,001	191,036	01/27/2017	02/01/2050	
12527D-AR-1	CFORE COMMERCIAL MORTGAGE-SERIES 2011-C2			4,5	1FIM	37,605,665	101.0463	37,437,662	37,050,000	37,195,196		(58,893)		3.834	3.660	MON	1,443,135	1,420,608	12/06/2011	12/01/2047	
12527E-AD-0	CFORE COMMERCIAL MORTGAGE-SERIES 2011-C2			4,5	1FIM	3,083,520	103.1312	2,701,283	2,619,268	2,760,604		(24,394)		4.961	2.221	MON	35,939	144,353	01/01/2013	04/01/2044	
12531W-BA-9	CFORE 2016-3 MTG TR PASS THRU CTF CL A-2			4	1FIM	8,130,402	.997418	8,029,214	8,050,000	8,108,641		(7,534)		3.597	3.476	MON	24,130	289,558	01/22/2016	01/01/2048	
12532A-BA-6	CFORE COMMERCIAL MORTGAGE-SERIES 2016-C6			4,5	1FIM	3,239,306	.976825	3,072,113	3,145,000	3,221,696		(8,500)		3.502	3.150	MON	9,178	102,419	11/01/2016	11/01/2049	
12532A-BB-4	CFORE COMMERCIAL MORTGAGE-SERIES 2016-C6			4	1FIM	3,419,576	.974849	3,236,498	3,320,000	3,401,210		(8,879)		3.804	3.447	MON	10,524	126,293	11/01/2016	11/01/2049	
12591K-AH-8	COMM MORTGAGE TRUST-SERIES 2013 GR12CLAS			4,5	1FIM	2,986,872	103.2547	2,994,385	2,900,000	2,946,172		(8,410)		4.762	4.395	MON	11,508	138,098	10/24/2013	10/01/2046	
12591K-AK-1	COMM MORTGAGE TRUST-SERIES 2013CR12 CLAS			4,5	2FIM	2,736,952	101.1176	2,730,174	2,700,000	2,719,945		(3,326)		5.085	4.987	MON	78,614	139,088	10/24/2013	10/01/2046	
12591U-AJ-2	COMM MORTGAGE TRUST-SERIES 2014-UBS2 CLA			4	1FIM	3,192,865	102.6160	3,181,094	3,100,000	3,152,092		(8,967)		4.701	4.332	MON	12,144	145,731	03/03/2014	03/01/2047	
12591U-AL-7	COMM MORTGAGE TRUST -SERIES 2014 -UBS2			4,5	1FIM	4,196,982	101.0487	4,117,735	4,075,000	4,142,701		(11,845)		5.151	4.677	MON	120,707	206,479	03/03/2014	03/01/2047	
12591U-AP-8	COMM MORTGAGE TRUST-SERIES 2014-UBS2 CLA			4,5	1FIM	2,538,724	.884040	2,453,212	2,775,000	2,633,816		22,675		5.183	6.248	MON	59,531	136,913	03/03/2014	03/01/2047	
12592K-BF-0	COMM MORTGAGE TRUST-SERIES 2014-UBS5 REI			4,5	1FIM	7,672,234	101.2432	7,643,861	7,550,000	7,642,470		(7,611)		4.514	4.270	MON	28,401	133,915	12/06/2018	09/01/2047	
12592K-BH-6	COMM MORTGAGE TRUST-SERIES 2014-UBS5 CLA			4,5	1FIM	7,758,152	.995367	7,664,328	7,700,000	7,742,512		(5,312)		4.611	4.582	MON	180,519	360,011	09/09/2014	09/01/2047	
12592L-BM-3	COMM MORTGAGE TRUST-SERIES 2014-CR20 CLA			4,5	1FIM	5,594,591	101.0684	5,490,034	5,432,000	5,533,094		(15,397)		4.239	3.877	MON	19,189	230,262	10/22/2014	11/01/2047	
12592L-BP-6	COMM MORTGAGE TRUST-SERIES 2014-CR20 CLA			4,5	1FIM	9,567,783	.990222	9,357,595	9,450,000	9,525,035		(10,172)		4.502	4.420	MON	251,838	431,464	10/22/2014	11/01/2047	
12592M-BN-9	COMM MORTGAGE TRUST-SERIES 2014-LC17 CLA			4,5	1FIM	2,142,372	102.0772	2,123,206	2,080,000	2,118,422		(5,898)		4.490	4.124	MON	93,392	99,182	09/18/2014	10/01/2047	
12592M-BQ-2	COMM MORTGAGE TRUST-SERIES 2014-LC17 CLA			4,5	1FIM	8,851,121	.991953	8,788,704	8,860,000	8,843,471		(4,688)		4.554	4.685	MON	181,241	272,359	10/29/2018	10/01/2047	
12592X-BG-0	COMM MORTGAGE TRUST-SERIES 2015-1A CLASS			4,5	1FIM	6,298,095	.987453	6,038,273	6,115,000	6,235,617		(17,181)		3.926	3.569	MON	20,006	240,075	03/18/2015	03/01/2048	
12592X-BJ-4	COMM MORTGAGE TRUST-SERIES 2015-CR22 C			4,5	1FIM	8,961,780	.971652	8,545,676	8,795,000	8,918,368		(11,225)		4.121	3.991	MON	215,556	352,106	03/18/2015	03/01/2048	
12593A-BD-6	COMM MORTGAGE TRUST-SERIES 2015-CR23 CLA			4,5	1FIM	1,879,697	100.4033	1,832,360	1,825,000	1,861,796		(5,115)		4.183	3.820	MON	5,362	76,340	05/06/2015	05/01/2048	
12593A-BE-4	COMM MORTGAGE TRUST-COMM 2015-CR23			4,5	1FIM	6,432,734	.975128	6,328,583	6,490,000	6,450,395		5,885		4.252	4.432	MON	163,341	279,842	05/06/2015	05/01/2048	
12593Y-BD-4	COMM 2016-CORE28 MTG TR-MTG PASS THRU CL			4	1FIM	3,393,423	.996645	3,348,728	3,360,000	3,384,410		(3,155)		3.495	3.375	MON	9,786	117,432	01/27/2016	11/10/2025	
12594M-BC-1	COMM MORTGAGE TRUST-COMM 2016-COR1 A4			4	1FIM	7,827,827	.960045	7,296,342	7,600,000	7,781,647		(21,365)		3.091	2.740	MON	19,576	234,916	10/07/2016	10/01/2049	
12594M-BE-7	COMM MORTGAGE TRUST-COMM 2016-COR1 B			4	1FIM	8,342,698	.980543	7,942,396	8,100,000	8,295,542		(21,920)		3.897	3.536	MON	26,305	315,657	10/07/2016	10/01/2049	
12595F-AK-8	CSAIL 2017-CX9 COMMERCIAL-SERIES 2017-CX9			4,5	1FIM	6,691,198	.994746	6,465,846	6,500,000	6,668,058		(18,733)		3.968	3.640	MON	83,428	261,735	09/19/2017	09/01/2050	
12595F-AL-6	CSAIL 2017-CX9 COMMERCIAL-SERIES 2017-CX9			4,5	1FIM	5,945,016	.969734	5,672,944	5,850,000	5,932,862		(9,888)		4.158	3.988	MON	78,078	246,676	09/19/2017	09/01/2050	
12624B-AC-0	COMM MORTGAGE TRUST-SERIES 2012-CR1 CLAS			4	1FIM	17,688,865	100.1653	17,371,032	17,342,361	17,480,182		(40,363)		3.391	3.122	MON	472,408	592,977	05/18/2012	05/01/2045	
12624B-AF-3	COMM MORTGAGE TRUST-SERIES 2012-CR1 CLAS			4	1FIM	11,678,423	101.6495	11,638,864	11,450,000	11,531,906		(22,677)		3.912	3.684	MON	37,327	447,924	05/18/2012	05/01/2045	
12624C-AF-3	COMM MORTGAGE TRUST-SERIES 2012-CR2 CLAS			4	1FIM	2,174,496	101.7547	2,055,445	2,020,000	2,081,341		(16,422)		3.791	2.878	MON	6,382	76,578	01/01/2013	08/01/2045	
12624C-AC-7	COMM MORTGAGE TRUST-SERIES 2012-CR4 CLAS			4,5	2FIM	3,894,838	.910076	3,458,290	3,800,000	3,899,473		(9,404)		4.442	4.146	MON	14,066	168,796	11/02/2012	10/01/2045	
12624C-AT-0	COMM MORTGAGE TRUST-SERIES 2012-CR4 CLAS			4	1FIM	1,844,977	.984672	1,772,410	1,800,000	1,818,078		(4,491)		3.251	2.968	MON	4,877	58,518	11/02/2012	10/01/2045	
12624C-BA-0	COMM MORTGAGE TRUST-SERIES 2012-CR4 CLAS			4	1FIM	2,357,339	.959312	2,202,417	2,300,000	2,323,249											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
126300-BD-5	COMM MORTGAGE TRUST-SERIES 2014-CR14 CLA			4,5	1FIM	2,320,506	98.5776	2,341,218	2,375,000	2,361,656			9,318		4.645	5.106	MON	46,402	110,319	01/09/2014	02/01/2047
12636M-AJ-7	CSAIL 2016-06 COML MTG T-COML MTG PASSTH			4	1FIM	1,199,941	96.8789	1,128,639	1,165,000	1,191,581			(3,273)		3.346	2.993	MON	3,249	38,985	05/17/2016	01/01/2049
12636M-AK-4	CSAIL 2016-06 COML MTG T-COML MTG PASSTH			4,5	1FIM	5,767,950	98.8058	5,533,127	5,600,000	5,729,009			(15,324)		3.924	3.563	MON	18,312	219,738	05/17/2016	01/01/2049
12636M-AL-2	CSAIL 2016-06 COML MTG T-COML MTG PASSTH			4,5	1FIM	1,797,702	102.5017	1,814,280	1,770,000	1,792,915			(1,809)		4.752	4.655	MON	17,242	69,220	11/16/2018	01/01/2049
17318U-AF-1	CITIGROUP COMMERCIAL MOR-SERIES 2012-GC8			4	1FIM	3,587,210	101.2771	3,544,700	3,500,000	3,533,847			(8,957)		3.683	3.390	MON	10,742	128,905	09/10/2012	09/01/2045
17318U-AG-9	CITIGROUP COMMERCIAL MOR-SERIES 2012-GC8			4	1FIM	8,917,215	101.3471	8,817,195	8,700,000	8,785,475			(22,315)		4.285	3.984	MON	31,066	372,795	09/10/2012	09/01/2045
17318U-AH-7	CITIGROUP COMMERCIAL MOR-SERIES 2012-GC8			4,5	1FIM	4,999,052	101.5134	5,063,490	4,988,000	4,990,618			(541)		4.873	4.923	MON	143,741	246,443	09/10/2012	09/01/2045
17321J-AG-9	CITIGROUP COMMERCIAL MOR-SERIES 2013-GC1			4,5	1FIM	9,770,957	105.5880	10,030,856	9,500,000	9,663,407			(24,078)		5.217	4.879	MON	267,373	495,183	09/18/2013	09/01/2046
17321J-AH-7	CITIGROUP COMMERCIAL MOR-SERIES 2013-GC1			4,5	1FIM	2,730,654	103.1490	2,888,171	2,800,000	2,769,716			(7,674)		5.217	5.555	MON	90,798	145,949	09/18/2013	09/01/2046
17322V-AV-8	CITIGROUP COMMERCIAL MOR-SERIES 2014-GC2			4	1FIM	2,229,775	101.5554	2,198,673	2,165,000	2,203,463			(6,232)		3.863	3.507	MON	6,969	83,634	07/17/2014	07/01/2047
17322V-AW-6	CITIGROUP COMMERCIAL MOR-SERIES 2014-GC2			4,5	1FIM	4,840,776	100.6818	4,732,044	4,700,000	4,784,062			(13,481)		4.175	3.814	MON	16,352	196,225	07/17/2014	07/01/2047
17322V-AX-4	Citigroup Commercial Mtg Trust Series 20			4,5	1FIM	7,673,077	98.5589	7,342,640	7,450,000	7,582,358			(21,612)		4.451	4.143	MON	168,900	336,819	07/17/2014	07/01/2047
17324T-AJ-8	CITIGROUP COMMERCIAL MOR-SERIES 2016-GC3			4	1FIM	5,767,826	100.7788	5,643,613	5,600,000	5,724,547			(15,439)		3.849	3.490	MON	17,962	215,544	02/03/2016	02/01/2049
17325H-BT-0	CITIGROUP COMMERCIAL MOR-CGOMT 2017-P7 C			4,5	1FIM	9,825,383	98.1160	9,360,269	9,540,000	9,788,966			(21,310)		4.340	4.072	MON	185,232	456,067	03/31/2017	04/01/2050
17326F-AJ-6	CITIGROUP COMMERCIAL MOR-SERIES 2017-C4			4,5	1FIM	6,797,751	99.3192	6,555,069	6,600,000	6,777,913			(17,057)		4.096	3.732	MON	29,355	337,920	10/19/2017	10/01/2050
17326F-AK-3	CITIGROUP COMMERCIAL MOR-SERIES 2017-C4			4,5	1FIM	9,474,166	95.3213	8,960,206	9,400,000	9,464,617			(9,028)		4.194	4.130	MON	134,232	498,744	10/19/2017	10/01/2050
200474-AE-4	COMM 2015-LC19 Mortgage -COMM 2015-LC19			4	1FIM	7,315,137	82.8541	7,042,596	8,500,000	7,349,613			34,476		2.867	5.522	MON	20,308	40,616	10/16/2018	02/01/2048
200474-BF-0	COMM MORTGAGE TRUST-SERIES 2015-LC19 CLA			4,5	1FIM	2,544,061	98.3856	2,430,125	2,470,000	2,522,137			(7,692)		3.829	3.439	MON	7,881	94,577	01/26/2015	02/01/2048
200474-BH-6	COMM MORTGAGE TRUST-SERIES 2015-LC19 CLA			4,5	1FIM	6,055,764	98.5238	5,803,050	5,890,000	5,993,081			(16,285)		4.259	3.967	MON	148,483	254,412	01/26/2015	02/01/2048
20048E-BB-6	COMM MORTGAGE TRUST-SERIES 2013-LC6 CLAS			4	1FIM	7,621,435	100.0782	7,405,785	7,400,000	7,496,910			(22,246)		3.739	3.388	MON	46,114	276,686	01/24/2013	01/01/2046
20048E-BC-4	COMM MORTGAGE TRUST-SERIES 2013-LC6 CLAS			4,5	1FIM	7,518,668	101.2031	7,387,827	7,300,000	7,396,825			(21,949)		4.242	3.883	MON	51,611	309,666	01/24/2013	01/01/2046
225458-UK-0	CREDIT SUISSE FIRST BOST-SERIES 2005-C3			5,6	6FE	67,757	0.2582	11,496	4,451,869	11,496		(15,563)		0.513	13.616	MON	18,529	6,388	01/01/2013	07/01/2037	
22545X-BB-8	CREDIT SUISSE MORTGAGE T-SERIES 2007-C1			5,6	6FE	370,900	0.3930	156,820	370,900	65,530		87,634		0.605	75.337	MON	149,982	203,668	01/01/2013	02/01/2040	
225470-BU-6	CREDIT SUISSE FIRST BOST-SERIES 2005-C5			5,6	6*	25,350	0.0010	87	25,350	87		(34,290)		0.207	(9.575)	MON	20,122	2,695	01/01/2013	08/01/2038	
233050-AC-7	DBUBS MORTGAGE TRUST-SERIES 2011-LC1A CL			4	1FIM	3,130,807	102.8804	3,189,291	3,100,000	3,106,204			(3,081)		5.002	4.890	MON	12,922	155,062	02/08/2011	11/01/2046
233050-AG-8	DBUBS MORTGAGE TRUST-SERIES 2011-LC1A CL			4,5	1FIM	1,557,333	104.3613	1,617,600	1,550,000	1,548,029			1,005		5.698	5.850	MON	51,967	89,523	02/08/2011	11/01/2046
23305M-AE-5	DBOCHE MORTGAGE TRUST-SERIES 2014-ARCP C			4	1FIM	8,703,446	102.8507	8,690,885	8,450,000	8,589,439			(24,531)		4.590	4.223	MON	32,318	387,813	01/24/2014	01/01/2034
23305M-AG-0	DBOCHE MORTGAGE TRUST-SERIES 2014-ARCP C			4,5	1FIM	11,577,516	100.6592	11,475,150	11,400,000	11,498,101			(16,350)		4.935	4.814	MON	237,514	617,224	01/24/2014	01/01/2034
23305M-AJ-4	DBOCHE MORTGAGE TRUST-SERIES 2014-ARCP C			4,5	1FIM	14,840,452	96.6763	14,791,475	15,300,000	15,035,072			45,738		4.935	5.404	MON	190,842	765,464	01/24/2014	01/01/2034
23305U-AB-3	DBRR TRUST-SERIES 2011-LC2 CLASS A4B REI			4,5	1FIM	8,615,865	102.0646	8,752,038	8,575,000	8,583,915			(3,554)		4.537	4.490	MON	32,421	389,048	02/08/2011	07/01/2044
23305X-AD-3	DBUBS MORTGAGE TRUST-SERIES 2011-LC2A CL			4	1FIM	21,712,703	102.8123	22,102,961	21,498,367	21,549,190			(21,171)		4.537	4.426	MON	81,282	975,375	06/17/2011	07/01/2044
23305Y-AD-1	DBUBS MORTGAGE TRUST-SERIES 2011-LC3A CL			4,5	1FIM	3,668,402	102.2435	3,713,818	3,632,327	3,640,813			(2,934)		4.551	4.428	MON	29,704	182,461	08/18/2011	08/01/2044
23305Y-AJ-8	DBUBS MORTGAGE TRUST-SERIES 2011-LC3A CL			4,5	1FIM	11,689,270	104.6320	12,346,574	11,800,000	11,751,434			18,388		5.338	5.599	MON	265,993	638,894	08/11/2011	08/01/2044
23312J-AJ-2	DEUTSCHE BANK COMMERCIAL-SERIES 2017-C6			4,5	1FIM	5,129,168	96.5069	4,806,044	4,980,000	5,109,669			(13,064)		3.792	3.435	MON	15,737	166,848	06/14/2017	06/01/2050
23312J-AK-9	DEUTSCHE BANK COMMERCIAL-SERIES 2017-C6			4,5	1FIM	2,440,987	95.0793	2,253,380	2,370,000	2,431,864			(6,119)		4.174	3.811	MON	8,244	81,497	06/14/2017	06/01/2050
23312L-AS-7	DBJPM 2016-C1 MTG TR COML MTG PASSTHRU C			4	1FIM	3,110,574	98.1970	2,965,550	3,020,000	3,087,953			(8,549)		4.195	3.831	MON	8,245	98,935	03/31/2016	05/01/2049
23312L-AU-2	DBJPM 2016-C1 MTG TR PASSTHRU CTF CL B			4,5	1FIM	6,411,242	99.4729	6,192,186	6,225,000	6,386,843			(16,890)		3.276	2.923	MON	21,762	261,139	03/31/2016	05/01/2049
23312V-AJ-5	DEUTSCHE BANK COMMERCIAL-DBJPM 2016-C3 B			4	1FIM	1,802,381	93.7249	1,640,186	1,750,000	1,791,170			(4,781)		3.264	2.918	MON	4,760	57,120	07/26/2016	08/01/2049
23312V-AK-2	DEUTSCHE BANK COMMERCIAL-DBJPM 2016-C3 C			4,5	1FIM	2,800,008	91.7274	2,637,164	2,875,000	2,814,734			6,328		3.493	3.858	MON	50,754	102,123	07/26/2016	08/01/2049
3137FA-QE-1	Freddie Mac Multifamily -FHM5 KIIO3 A2			4	1Z	550,961	98.0905	534,593	545,000	549,603			(1,187)		3.019	2.733	MON	1,371	16,454	11/14/2017	06/01/2027
350910-AN-5	FOUR TIMES SQUARE TRUST-SERIES 2006-4TS			4	1FIM	17,137,159	103.5727	14,797,176	14,286,752	15,033,787			(358,019)		5.401	2.562	MON	42,868	770,432	01/01/2013	12/11/2028
361849-K7-6	GMAC COMMERCIAL MORTGAGE-SERIES 2004-C3			5,6	6*	97,194	0.5607	47,404	8,454,568	47,404		(10,417)		0.902	37.987	MON	20,679	32,238	01/01/2013	12/01/2041	
36191Y-AE-8	GS MORTGAGE SECURITIES T-SERIES 2011-GC5			4,5	1FIM	12,523,103	104.3347	12,937,505	12,400,000	12,842,846			(168,563)		5.209	3.689	MON	141,511	645,916	09/22/2011	08/01/2044
36191Y-AG-3	GS MORTGAGE SECURITIES T-SERIES 2011-GC5			4,5	1FIM	9,849,729	103.5474	11,066,115	10,687,000	10,687,316			41,521		5.391	5.930	MON	244,711	583,948	09/22/2011	08/01/2044
36191Y-BB-3	GS MORTGAGE SECURITIES T-SERIES 2011-GC5			4	1FIM	17,783,289	101.2788	17,673,145	17,450,000	17,541,609			(37,787)		3.707	3.469	MON	505			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36228C-WD-1	GS MORTGAGE SECURITIES T-SERIES 2005-GG4			5,6	6FE	18,198	0.0010	12	1,241,161			(30)			1.369	1.369	MON	6,007	18,128	01/01/2013	07/01/2039
36248F-AG-7	GS MORTGAGE SECURITIES T-SERIES 2011-GC3			4	1FM	12,797,693	102.7651	12,957,541	12,608,899	12,661,196			(16,684)		4.753	4.565	MON	49,942	504,183	08/31/2011	03/01/2044
36248F-AL-6	GS MORTGAGE SECURITIES T-SERIES 2011-GC3			4,5	1FM	7,672,189	103.3134	7,335,252	7,100,000	7,383,096			(132,048)		5.361	3.334	MON	31,719	380,631	07/02/2015	03/01/2044
36250P-AJ-4	GS MORTGAGE SECURITIES T-SERIES 2015-GC3			4,5	1FM	1,750,876	101.4010	1,723,817	1,700,000	1,740,267			(5,163)		4.401	4.056	MON	17,014	75,667	07/16/2015	07/01/2048
36250P-AL-9	GS MORTGAGE SECURITIES T-SERIES 2015-GC3			4,5	2FM	938,855	98.8425	943,946	955,000	943,697			1,534		4.411	4.693	MON	7,194	42,715	07/16/2015	07/01/2048
36250S-AL-3	GS Mortgage Securities C-GSMS 2018-GS10			4,5	1FM	7,901,796	99.5316	7,856,032	7,893,000	7,902,620			824		4.413	4.509	MON	84,081	74,362	11/01/2018	07/01/2051
36250V-AJ-1	GS MORTGAGE SECURITIES T-SERIES 2015-GC3			4,5	1FM	5,700,874	101.4974	5,617,883	5,535,000	5,654,452			(15,055)		4.466	4.099	MON	20,599	247,193	10/14/2015	10/01/2048
36250V-AL-6	GS MORTGAGE SECURITIES T-SERIES 2015-GC3			4,5	1FM	7,148,809	100.1537	7,371,309	7,360,000	7,203,410			18,483		4.653	5.084	MON	116,309	323,121	10/14/2015	10/01/2048
36251P-AJ-3	GS MORTGAGE SECURITIES T-GSMS 2016-GS3 B			4,5	1FM	11,594,063	95.7674	10,780,540	11,257,000	11,526,180			(30,707)		3.395	3.045	MON	31,848	330,786	09/22/2016	10/01/2049
36251P-AL-8	GS MORTGAGE SECURITIES T-GSMS 2016-GS3 C			4,5	2FM	2,602,560	98.1776	2,501,566	2,548,000	2,591,725			(4,928)		3.997	3.787	MON	34,766	103,180	09/22/2016	10/01/2049
36251X-AV-9	GS MORTGAGE SECURITIES T-GSMS 2016-GS4 A			4,5	1FM	4,408,345	97.0726	4,154,707	4,280,000	4,384,714			(11,531)		3.645	3.290	MON	13,001	148,503	11/16/2016	11/01/2049
36251X-AW-7	GS MORTGAGE SECURITIES T-GSMS 2016-GS4 B			4,5	1FM	1,786,911	97.2575	1,687,417	1,735,000	1,780,231			(4,059)		3.701	3.468	MON	24,748	65,099	11/16/2016	11/01/2049
36251X-AY-3	GS MORTGAGE SECURITIES T-GSMS 2016-GS4 C			4,5	1FM	3,503,015	95.5598	3,440,153	3,600,000	3,525,915			11,172		3.802	4.258	MON	45,069	138,712	11/16/2016	11/01/2049
36252H-AK-7	GS MORTGAGE SECURITIES T-GSMS 2017-GS5 C			4,5	1FM	7,158,600	99.2090	7,093,444	7,150,000	7,151,188			(3,625)		4.299	4.295	MON	25,615	158,347	09/13/2018	03/01/2050
36252T-AV-7	GS MTG SECS TR 2016-GS2-COML MTG PASSTHR			4	1FM	8,095,634	97.6748	7,677,237	7,860,000	8,039,414			(22,459)		3.292	2.935	MON	21,563	258,751	05/17/2016	05/01/2049
36252T-AW-5	GS Mortgage Securities T-COML MTG PASSTHR			4,5	1FM	2,584,116	98.5834	2,473,457	2,509,000	2,566,794			(6,958)		3.759	3.399	MON	7,859	94,313	05/17/2016	05/01/2049
36252T-AY-1	GS MTG SECS TR 2016-GS2-COML MTG PASSTHR			4,5	1FM	2,562,856	101.8567	2,541,324	2,495,000	2,554,060			(3,586)		4.528	4.342	MON	41,118	114,564	05/17/2016	05/01/2049
36253P-AH-5	GS MORTGAGE SECURITIES T-SERIES 2017-GS6			4,5	1FM	7,734,770	98.6677	7,409,942	7,510,000	7,703,912			(19,688)		3.869	3.511	MON	24,214	290,562	05/19/2017	05/01/2050
36255N-AY-1	GS Mortgage Securities C-GS MORTGAGE SEC			4,5	1FM	2,265,875	100.9083	2,219,983	2,200,000	2,261,717			(4,158)		4.321	3.956	MON	7,922	71,296	03/15/2018	03/01/2051
36255N-AZ-8	GS Mortgage Securities C-GS MORTGAGE SEC			4,5	1FM	8,138,527	98.8542	7,985,438	8,078,000	8,134,392			(4,135)		4.364	4.330	MON	112,564	189,068	03/15/2018	03/01/2051
36828Q-KX-3	GE COMMERCIAL MORTGAGE C-SERIES 2005-C1			4,5	2FM	2,635,455	83.7726	2,280,603	2,722,372	2,722,372					4.415	4.445	MON	68,448	118,922	01/01/2013	06/01/2048
36828Q-QJ-8	GE COMMERCIAL MORTGAGE C-SERIES 2005-C4			4,5	1FM	4,358,748	99.4725	5,765,427	5,796,000	5,796,000					5.749	6.103	MON	84,193	337,466	01/01/2013	11/01/2045
46590M-AW-0	JP MORGAN CHASE COMMERCIAL-MJMC 2016-JP2			4,5	1FM	1,895,198	94.9938	1,747,885	1,840,000	1,883,221			(5,039)		3.460	3.108	MON	63,655	67,087	07/08/2016	08/01/2049
46590M-AX-8	JP MORGAN CHASE COMMERCIAL-MJMC 2016-JP2			4,5	1FM	1,441,207	93.6138	1,394,845	1,490,000	1,450,676			4,060		3.792	4.246	MON	20,856	52,683	07/08/2016	08/01/2049
46625M-P9-4	JP MORGAN CHASE COMMERCIAL-MJMC 2016-CB7			5,6	6FE	52,036	0.1287	9,549	7,417,870	9,549			(2,376)		0.047	0.707	MON	9,185	(2,552)	01/01/2013	01/01/2038
46631Q-AR-3	JP MORGAN CHASE COMMERCIAL-SERIES 2007-CB2			4,5	1FM	954,182	100.8758	2,017,517	2,000,000	1,999,726					6.233	6.316	MON	95,471	126,500	01/01/2013	02/01/2051
46634G-AB-7	JP MORGAN CHASE COMMERCIAL-SERIES 2009-IWS			4	1FM	10,760,922	102.3686	9,213,174	9,000,000	9,251,147			(267,373)		5.633	2.550	MON	42,248	506,970	01/01/2013	12/01/2027
46634S-AF-2	JP MORGAN CHASE COMMERCIAL-SERIES 2012-C6			4	1FM	13,819,981	101.4611	13,679,995	13,483,000	13,602,638			(33,922)		4.117	3.826	MON	46,253	555,041	04/18/2012	05/01/2045
46634S-AG-0	JP MORGAN CHASE COMMERCIAL-SERIES 2012-C6			4,5	1FM	3,026,822	102.3093	3,021,193	2,953,000	2,979,607			(7,432)		4.819	4.520	MON	11,858	142,293	04/18/2012	05/01/2045
46635T-CG-5	JP MORGAN CHASE COMMERCIAL-SERIES 2011-C3			4	1FM	2,258,933	102.1682	1,969,290	1,928,115	2,017,639			(39,493)		4.717	2.217	MON	15,934	90,897	01/01/2013	02/01/2046
46636D-AJ-5	JP MORGAN CHASE COMMERCIAL-SERIES 2011-C4			4	1FM	23,133,694	102.5595	23,490,967	22,904,716	22,955,769			(19,858)		4.388	4.283	MON	83,751	1,002,837	05/25/2011	07/01/2046
46636D-AS-5	JP MORGAN CHASE COMMERCIAL-SERIES 2011-C4			4	1FM	3,231,997	103.0018	3,296,058	3,200,000	3,207,255			(2,874)		4.801	4.698	MON	12,802	153,629	05/25/2011	07/01/2046
46637W-AF-0	JP MORGAN CHASE COMMERCIAL-SERIES 2012-CBX			4	1FM	4,375,779	102.0468	4,377,808	4,290,000	4,321,854			(8,523)		4.271	4.038	MON	15,268	183,213	06/22/2012	06/01/2045
46637W-AG-8	JP MORGAN CHASE COMMERCIAL-SERIES 2012-CBX			4,5	1FM	4,181,980	103.1838	4,230,536	4,100,000	4,119,922			(4,050)		4.970	4.746	MON	239,369	204,225	06/22/2012	06/01/2045
46639Y-AV-9	JP MORGAN CHASE COMMERCIAL-SERIES 2013-LC1			4	1FM	6,797,967	97.4303	6,430,401	6,600,000	6,690,789			(19,654)		3.499	3.152	MON	19,242	230,908	05/02/2013	04/01/2046
46639Y-AW-7	JP MORGAN CHASE COMMERCIAL-SERIES 2013-LC1			4,5	1FM	3,759,493	98.3640	3,590,285	3,650,000	3,701,075			(10,821)		3.958	3.605	MON	12,040	144,474	05/02/2013	04/01/2046
46639Y-AX-5	JP MORGAN CHASE COMMERCIAL-SERIES 2013-LC1			4,5	1FM	4,598,634	84.5761	4,093,482	4,840,000	4,708,893			26,129		4.169	4.921	MON	117,917	204,682	05/02/2013	04/01/2046
46640L-AJ-1	JPMBB COMMERCIAL MORT-SERIES 2013-C14 CL			4,5	1FM	5,789,210	102.2660	5,946,765	5,815,000	5,820,109			6,974		4.566	4.753	MON	192,601	269,260	08/02/2013	08/01/2046
46640L-AK-8	JPMBB COMMERCIAL MORT-SERIES 2013-C14 CL			4,5	1FM	8,955,726	101.5192	9,644,319	9,500,000	9,243,841			61,359		4.566	5.440	MON	313,621	439,891	08/02/2013	08/01/2046
46640L-AN-2	JPMBB COMMERCIAL MORT-SERIES 2013-C14 CL			4,5	1FM	8,168,642	89.8656	8,537,227	9,500,000	8,808,583			338,309		4.566	6.619	MON	318,400	439,891	08/02/2013	08/01/2046
46642E-BD-7	JPMBB COMMERCIAL MORT-SERIES 2014-C21 CL			4,5	1FM	15,131,528	100.1256	15,060,891	15,042,000	15,076,876			(12,094)		4.341	4.293	MON	54,418	272,431	11/20/2018	08/01/2047
46642E-BE-5	JPMBB COMMERCIAL MORT-SERIES 2014-C21 CL			4,5	1FM	6,413,528	98.9734	6,136,353	6,200,000	6,326,374			(20,276)		4.654	4.298	MON	195,729	292,823	07/01/2014	08/01/2047
46643G-AK-6	JPMBB COMMERCIAL MORT-SERIES 2014-C24 CL			4,5	1FM	8,031,924	99.2166	7,736,909	7,798,000	7,947,277			(22,840)		4.116	3.745	MON	26,745	320,942	10/09/2014	11/01/2047
46643G-AL-4	JPMBB COMMERCIAL MORT-SERIES 2014-C24 CL			4,5	1FM	2,439,850	99.5040	2,368,196	2,380,000	2,414,206			(6,058)		4.390	4.147	MON	62,382	106,372	10/09/2014	11/01/2047
46643G-AY-6	JPMBB COMMERCIAL MORT-SERIES 2014-C24 CL			4,5	1FM	6,994,387	85.4232	6,787,730	7,946,000	7,321,849			86,802		3.890	5.526	MON	185,077	315,409	10/09/2014	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
55312Y-BD-3	ML-CFC COMMERCIAL MORTGA-SERIES 2007-5 C			5,6	6FE	64,194	0.0003	9	3,542,920	9	(422,546)				0.534	(173.402)	MON	15,322	438,159	01/01/2013	08/01/2048
61690G-AF-8	MORGAN STANLEY BAML TRUS-SERIES 2014-C14			4	1FM	3,913,938	103.0323	3,915,228	3,800,000	3,861,483		(11,164)		4.064	3.704	MON	12,869	154,432	01/30/2014	02/01/2047	
61690G-AL-5	MORGAN STANLEY BAML TRUS-SERIES 2014-C14			4,5	1FM	8,739,201	102.5700	8,949,232	8,725,000	8,765,164		7,855		4.864	4.959	MON	142,880	426,932	01/30/2014	02/01/2047	
61690G-AT-8	MORGAN STANLEY BAML TRUS-SERIES 2014-C14			4,5	1FM	9,988,083	94.9596	10,624,076	11,188,000	10,523,202		126,495		4.864	6.443	MON	183,214	547,451	01/30/2014	02/01/2047	
61690K-AH-5	MORGAN STANLEY BAML TRUS-SERIES 2013-C7			4	1FM	7,261,149	99.7318	7,031,090	7,050,000	7,141,591		(21,008)		3.769	3.421	MON	22,143	265,715	01/09/2013	02/01/2046	
61690K-AK-8	MORGAN STANLEY BAML TRUS-SERIES 2013-C7			4,5	1FM	5,046,987	100.3375	4,916,538	4,900,000	4,959,902		(13,737)		4.107	3.842	MON	68,535	205,057	01/09/2013	02/01/2046	
61691E-BD-6	MORGAN STANLEY CAPITAL I-SERIES 2016-UB1			4,5	1FM	9,240,826	100.0250	8,974,247	8,972,000	9,191,963		(24,077)		3.778	3.421	MON	28,247	310,715	11/22/2016	12/01/2049	
61691E-BE-4	MORGAN STANLEY CAPITAL I-SERIE 2016-UB12			4,5	1FM	6,067,567	99.3256	5,851,273	5,891,000	6,035,805		(15,672)		4.030	3.668	MON	19,784	217,623	11/22/2016	12/01/2049	
61691R-AH-9	MSC 2018-H4 AS			4,5	1FE	20,598,630	104.4568	20,891,354	20,000,000	20,598,070		(560)		4.621	4.235	MON	77,017		12/14/2018	12/01/2051	
617459-AD-4	MORGAN STANLEY CAPITAL I-SERIES 2011-C2			4	1FM	18,078,322	103.2497	18,481,702	17,900,000	17,939,900		(16,427)		4.661	4.557	MON	139,053	834,319	06/09/2011	06/01/2044	
617459-AG-7	MORGAN STANLEY CAPITAL I-SERIES 2011-C2			4,5	1FM	4,257,399	101.9469	4,251,626	4,200,000	4,215,626		(6,009)		5.200	5.035	MON	36,400	218,400	12/02/2013	06/01/2044	
617459-AH-5	MORGAN STANLEY CAPITAL I-SERIES 2011-C2			4,5	1FM	3,970,648	101.3280	4,053,122	4,000,000	3,982,071		2,911		5.485	5.647	MON	74,337	222,405	06/09/2011	06/01/2044	
61745M-5K-5	MORGAN STANLEY CAPITAL I-SERIES 2005-T19			4,5	1FM	826,776	99.9930	864,670	864,731	864,691		1,465		5.062	5.104	MON	3,648	31,168	01/01/2013	06/01/2047	
61760R-BA-9	MORGAN STANLEY CAPITAL I-SERIES 2011-C3			4	1FM	4,144,883	100.2603	4,114,658	4,103,977	4,105,984		(4,054)		4.054	3.940	MON	27,863	164,423	09/14/2011	07/01/2049	
61760R-BB-7	MORGAN STANLEY CAPITAL I-SERIES 2011-C3			4	1FM	6,867,971	102.2655	6,954,055	6,800,000	6,816,855		(6,566)		4.118	4.010	MON	276,592	280,024	09/14/2011	07/01/2049	
61760V-AA-1	Morgan Stanley Capital I-SERIES 2012-C4C			5,6	1FE	5,835,922	5.2669	1,982,520	5,835,922	1,862,839		(933)		2.084	4.981	MON	551,316	89,595	03/13/2012	03/01/2045	
61760V-AN-3	MORGAN STANLEY CAPITAL I-SERIES 2012-C4			4	1FM	1,202,529	99.7697	1,187,895	1,190,638	1,192,538				2.991	2.834	MON	2,968	34,295	03/09/2012	03/01/2045	
61760V-AO-6	MORGAN STANLEY CAPITAL I-SERIE 2012-C4			4	1FM	14,745,752	100.8098	14,718,224	14,600,000	14,647,180		(13,798)		3.773	3.665	MON	45,905	550,858	03/09/2012	03/01/2045	
61761A-AZ-1	MORGAN STANLEY BAML TRUS-SERIES 2012-C5			4	1FM	1,009,267	99.5600	945,820	950,000	972,617		(6,387)		3.176	2.437	MON	2,514	30,172	01/01/2013	08/01/2045	
61761A-BA-5	MORGAN STANLEY BAML TRUS-SERIES 2012-C5			4	1FM	2,090,881	101.2268	2,075,149	2,050,000	2,065,413		(4,063)		3.792	3.563	MON	6,478	77,736	07/13/2012	08/01/2045	
61761A-BB-3	MORGAN STANLEY BAML TRUS-SERIES 2012-C5			4,5	1FM	1,351,471	102.2716	1,355,099	1,325,000	1,355,106		(2,625)		4.443	4.208	MON	4,906	58,870	07/13/2012	08/01/2045	
61761B-AL-0	MORGAN STANLEY CAPITAL I-SERIES 2012-SA			4	1FM	2,408,598	99.0475	2,327,617	2,350,000	2,373,035		(5,977)		3.451	3.161	MON	6,758	81,098	08/02/2012	08/01/2034	
61761B-AN-6	MORGAN STANLEY CAPITAL I-SERIES 2012-SA			4	1FM	1,639,953	99.6304	1,594,086	1,600,000	1,615,875		(4,081)		3.852	3.557	MON	5,136	61,632	08/02/2012	08/01/2034	
61761B-AQ-9	MORGAN STANLEY CAPITAL I-SERIES 2012-SA			4	1FM	3,981,935	98.8603	3,957,376	4,003,000	3,993,947		2,433		4.057	4.052	MON	40,601	145,381	08/02/2012	08/01/2034	
61761B-AS-5	MORGAN STANLEY CAPITAL I-SERIE 2012-SA			4	1FM	6,214,229	96.9974	6,207,831	6,400,000	6,322,955		19,658		4.057	4.348	MON	64,913	211,495	08/02/2012	08/01/2034	
61761D-AE-2	MORGAN STANLEY BAML TRUS-SERIES 2012-C6			4	1FM	3,707,708	100.4572	3,616,458	3,600,000	3,642,893		(10,869)		3.476	3.132	MON	10,428	125,136	10/03/2012	11/01/2045	
61761D-AF-9	MORGAN STANLEY BAML TRUS-SERIES 2012-C6			4	1FM	4,634,756	100.6749	4,530,372	4,500,000	4,554,201		(13,591)		3.930	3.579	MON	14,738	176,850	10/03/2012	11/01/2045	
61761D-AH-5	MORGAN STANLEY BAML TRUS-SERIES 2012-C6			4,5	1FM	4,548,265	101.1013	4,464,635	4,416,000	4,470,040		(13,294)		4.536	4.177	MON	16,692	200,310	10/03/2012	11/01/2045	
61761Q-AH-6	MORGAN STANLEY BAML TRUS-SERIES 2013-C8			4,5	1FM	5,767,560	98.6851	5,526,367	5,600,000	5,664,400		(14,879)		3.562	3.310	MON	67,749	202,631	02/05/2013	12/01/2048	
61761Q-AK-9	MORGAN STANLEY BAML TRUS-SERIES 2013-C8			4,5	1FM	5,066,941	97.7440	4,813,893	4,925,000	4,982,012		(4,259)		4.059	3.811	MON	67,742	202,684	02/05/2013	12/01/2048	
61761X-AA-6	MORGAN STANLEY CAPITAL I-SERIES 2013-WLS			4	1FM	7,994,757	99.2338	7,740,235	7,800,000	7,829,448		(28,775)		2.695	2.313	MON	17,517	210,210	02/14/2013	01/01/2032	
61761X-AG-3	MORGAN STANLEY CAPITAL I-SERIES 2013-WLS			4	1FM	2,869,978	99.1144	2,775,202	2,800,000	2,810,614		(10,351)		2.897	2.513	MON	6,760	81,116	02/14/2013	01/01/2032	
61761X-AJ-7	MORGAN STANLEY CAPITAL I-SERIES 2013-WLS			4	1FM	4,817,413	99.0244	4,654,147	4,700,000	4,717,925		(17,429)		3.199	2.812	MON	12,529	150,353	02/14/2013	01/01/2032	
61761X-AL-2	MORGAN STANLEY CAPITAL I-SERIES 2013-WLS			4,5	1FM	11,845,227	98.6010	11,733,521	11,900,000	11,889,618		11,128		3.512	3.659	MON	104,467	427,156	02/14/2013	01/01/2032	
61764P-BX-9	MORGAN STANLEY BAML TRUS-COIL MITG PT CTF			4,5	1FM	3,440,348	98.9928	3,316,257	3,350,000	3,407,044		(8,475)		4.000	3.679	MON	11,167	134,000	12/09/2014	12/01/2047	
61764P-BZ-4	MORGAN STANLEY BAML TRUS-COIL MITG PT CTF			4	1FM	2,561,123	95.8561	2,540,187	2,650,000	2,591,991		8,393		4.000	4.421	MON	8,833	106,000	12/09/2014	12/01/2047	
61765D-AX-6	MORGAN STANLEY CAPITAL I-SERIES 2015-MS1			4,5	1FM	8,843,262	100.5285	8,826,933	8,880,000	8,852,286		3,912		4.031	4.144	MON	90,471	362,869	06/25/2015	05/01/2048	
61765D-AZ-1	MORGAN STANLEY CAPITAL I-SERIES 2015-MS1			4,5	1FM	3,240,348	98.0374	3,333,270	3,400,000	3,287,660		14,749		4.031	4.686	MON	30,030	138,936	06/25/2015	05/01/2048	
61766C-AK-5	MORGAN STANLEY CAPITAL I-SERIES 2016-UBS			4,5	1FM	2,415,192	102.7767	2,410,113	2,345,000	2,398,838		(5,843)		4.526	4.238	MON	21,462	107,636	02/19/2016	03/01/2049	
61766C-AL-3	MORGAN STANLEY CAPITAL I-SERIES 2016-UBS			4,5	1FM	2,892,565	99.4312	3,122,139	3,140,000	2,950,323		21,866		4.542	5.666	MON	34,987	144,630	02/19/2016	03/01/2049	
61766C-AV-1	MORGAN STANLEY CAPITAL I-SERIE 2016-UBS			4	1FM	6,944,390	83.9950	7,315,965	8,710,000	7,141,867		91,154		3.000	6.107	MON	21,775	119,550	10/02/2018	03/01/2049	
61766E-BE-4	MORGAN STANLEY BAML TRUS-SERIES 2016-C29			4	1FM	1,200,918	98.3871	1,147,193	1,166,000	1,166,309		(3,300)		3.325	2.970	MON	3,231	38,770	04/22/2016	05/01/2049	
61766E-BH-7	MORGAN STANLEY BAML TRUS-SERIES 2016-C29			4	1FM	5,793,407	98.3505	5,532,213	5,625,000	5,753,083		(15,483)		3.604	3.250	MON	16,894	202,725	04/22/2016	05/01/2049	
61766E-BJ-3	MORGAN STANLEY BAML TRUS-SERIES 2016-C29			4,5	1FM	3,532,839	97.6315	3,348,761	3,430,000	3,510,453		(9,513)		4.039	3.670	MON	11,545	138,538	04/22/2016	05/01/2049	
61767Y-BD-1	Morgan Stanley Capital I-MSC 2018-H3 B			4	1FM	6,344,746	101.1200	6,228,993	6,160,000	6,337,622		(7,123)		4.620	4.248	MON	23,716	118,580	06/27/2018	07/01/2051	
74824D-AL-4	QUEENS CENTER MORTGAGE T-SERIES 2013-OCA			4,5	1FM	12,181,714	96.2082	12,314,646	12,800,000	12,423,439		54,755		3.474	4.080	MON	112,767	450,874	07/02/2015	01/01/2037	
78419C-AD-6	SG COMMERCIAL MORTGAGE S-SGMS																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
90276C-AJ-0	UBS Commercial Mortgage -SERIES 2017-C2			4,5	1.FM	7,106,940	98.6498	6,806,834	6,900,000	7,082,557		(17,895)		3,993	3.632	MON	22,960	275,517	07/31/2017	08/01/2050	
90276C-AK-7	UBS Commercial Mortgage -SERIES 2017-C2			4,5	1.FM	2,008,347	95.7455	1,867,037	1,950,000	2,001,586		(4,958)		4,295	3.931	MON	6,979	83,753	07/31/2017	08/01/2050	
90349G-AN-5	UBS-BARCLAYS COMMERCIAL -SERIES 2013-C6			4,5	1.FM	7,209,946	100.0685	7,004,798	7,000,000	7,096,800		(21,047)		3,875	3.520	MON	22,605	271,257	04/11/2013	04/01/2046	
90349G-AQ-8	UBS-BARCLAYS COMMERCIAL -SERIES 2013-C6			4,5	1.FM	4,499,714	98.8760	4,449,422	4,500,000	4,494,963		607		4,035	4.121	MON	121,387	184,567	04/11/2013	04/01/2046	
91830C-AJ-7	VNO MORTGAGE TRUST-SERIES 2012-6AVE CLAS			4,5	1.FM	7,089,766	99.2181	7,044,485	7,100,000	7,094,104		1,721		3,337	3.411	MON	141,238	240,232	11/16/2012	11/01/2030	
91830C-AL-2	VNO MORTGAGE TRUST-SERIES 2012-6AVE CLAS			4,5	1.FM	10,099,918	97.0117	10,186,223	10,500,000	10,324,543		42,118		3,337	3.858	MON	208,927	355,273	11/16/2012	11/01/2030	
91830M-AG-1	VNO MORTGAGE TRUST-SERIES 2013-PENN CLAS			4,5	1.FM	2,354,164	100.6925	2,315,928	2,300,000	2,315,911		(7,691)		3,947	3.636	MON	44,219	92,046	12/05/2013	12/01/2029	
91830M-AJ-5	VNO MORTGAGE TRUST-SERIES 2013-PENN CLAS			4,5	1.FM	2,839,354	100.2649	2,857,551	2,850,000	2,846,283		2,050		3,947	4.081	MON	55,216	114,056	12/05/2013	12/01/2029	
91830M-AL-0	VNO MORTGAGE TRUST-SERIES 2013-PENN CLAS			4,5	1.FM	3,248,689	99.7475	3,391,415	3,400,000	3,352,487		23,384		3,947	4.774	MON	66,192	136,067	12/05/2013	12/01/2029	
92890N-AE-9	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C10			4,5	1.FM	4,155,906	85.3099	4,180,183	4,900,000	4,543,115		76,942		4,442	6.613	MON	129,214	220,793	11/30/2012	12/01/2045	
92890N-AX-7	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C10			4,5	1.FM	6,354,771	97.5384	6,047,381	6,200,000	6,265,435		(15,337)		3,744	3.456	MON	19,344	232,128	11/30/2012	12/01/2045	
92890N-AY-5	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C10			4,5	1.FM	4,612,379	96.1755	4,327,897	4,500,000	4,545,910		(10,900)		4,377	4.149	MON	117,054	199,844	11/30/2012	12/01/2045	
92890P-AJ-3	WF-RBS COMMERCIAL MORTGA-SERIES 2013-C14			4,5	1.FM	3,475,783	98.6822	3,355,193	3,400,000	3,434,908		(7,159)		3,979	3.786	MON	78,411	137,371	05/22/2013	06/01/2046	
92890P-BG-8	WF-RBS COMMERCIAL MORTGA-SERIES 2013-C14			4,5	1.FM	14,218,297	90.6918	14,238,613	15,700,000	14,940,758		350,404		3,979	5.281	MON	359,915	634,330	05/22/2013	06/01/2046	
92903P-AC-3	VORNADO DP LLC-SERIES 2010-VNO CL AZFX R			4,5	1.FM	11,156,737	101.8858	11,462,153	11,250,000	11,228,622		11,940		4,004	4.120	MON	26,273	450,394	08/05/2011	09/10/2028	
92935J-AJ-4	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C2C			4,5	1.FM	4,895,933	102.7270	4,930,894	4,800,000	4,800,859		(14,348)		5,174	4.836	MON	20,696	248,352	02/17/2011	02/01/2044	
92935J-AL-9	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C2C			4,5	1.FM	132,513	102.2064	127,758	125,000	127,325		(1,088)		5,392	4.419	MON	562	6,740	12/02/2013	02/01/2044	
92935J-BG-8	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C2C			4,5	1.FM	24,101,026	102.6530	24,285,706	23,658,058	23,800,271		(63,872)		4,869	4.539	MON	95,993	1,148,782	03/16/2011	02/01/2044	
92935V-AG-3	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C3C			4,5	1.FM	31,005,526	102.0349	31,324,717	30,700,000	30,824,769		(52,971)		4,375	4.182	MON	111,927	1,343,125	05/26/2011	03/01/2044	
92935V-AN-8	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C2C			4,5	1.FM	4,246,328	101.7544	4,273,683	4,200,000	4,211,076		(4,402)		4,740	4.620	MON	16,590	199,080	12/02/2013	03/01/2044	
92936J-AG-9	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C5C			4,5	1.FM	2,345,444	105.2705	2,579,128	2,450,000	2,414,559		11,968		5,672	6.347	MON	70,776	140,873	11/01/2011	11/01/2044	
92936J-AJ-3	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C5C			4,5	1.FM	2,194,160	104.0300	2,522,728	2,425,000	2,344,125		25,900		5,672	7.098	MON	81,594	139,435	12/02/2013	11/01/2044	
92936J-AL-8	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C5C			4,5	1.FM	2,386,296	102.3791	3,020,183	2,950,000	2,741,741		64,569		5,672	8.655	MON	99,210	169,622	12/02/2013	11/01/2044	
92936J-BB-9	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C5C			4,5	1.FM	16,108,224	101.0453	16,116,729	15,950,000	16,005,809		(20,464)		3,667	3.524	MON	673,506	584,886	11/01/2011	11/01/2044	
92936Q-AG-3	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C6C			4,5	1.FM	27,521,274	100.5090	27,388,689	27,250,000	27,350,113		(36,247)		3,440	3.293	MON	871,323	937,400	03/16/2012	04/01/2045	
92936Q-AJ-7	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C6C			4,5	1.FM	3,736,908	102.3925	3,788,523	3,700,000	3,717,290		(4,995)		4,697	4.537	MON	14,482	173,789	03/16/2012	04/01/2045	
92936Q-AQ-1	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C6C			4,5	1.FM	4,265,814	103.8430	4,478,403	4,312,667	4,295,770		5,996		5,582	5.826	MON	142,907	244,050	03/16/2012	04/01/2045	
92936Q-BC-1	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C6C			4,5	1.FM	13,129,207	101.1345	13,147,480	13,000,000	13,054,551		(16,717)		3,835	3.688	MON	41,546	498,550	03/16/2012	04/01/2045	
92936T-AC-4	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C7C			4,5	1.FM	4,895,798	101.6613	4,879,743	4,800,000	4,835,439		(9,520)		4,090	3.859	MON	16,360	196,320	06/07/2012	06/01/2045	
92936T-AD-4	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C7C			4,5	1.FM	4,792,562	102.1113	4,799,233	4,700,000	4,730,887		(9,109)		4,090	4.595	MON	132,717	226,671	06/07/2012	06/01/2045	
92936T-AE-2	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C7C			4,5	1.FM	1,709,620	100.0707	1,901,344	1,900,000	1,818,483		20,409		4,821	6.267	MON	46,674	92,868	06/07/2012	06/01/2045	
92936Y-AG-5	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C8C			4,5	1.FM	1,253,407	99.3492	1,192,190	1,200,000	1,220,615		(5,688)		3,001	2.478	MON	3,001	36,012	02/01/2013	08/01/2045	
92936Y-AE-1	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C8C			4,5	1.FM	2,254,149	100.8583	2,228,969	2,210,000	2,226,633		(4,397)		3,660	3.431	MON	6,741	80,896	07/20/2012	08/01/2045	
92936Y-AF-8	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C8C			4,5	1.FM	2,956,951	101.1496	2,932,327	2,899,000	2,921,104		(5,758)		4,311	4.077	MON	10,415	124,976	07/20/2012	08/01/2045	
92936Y-AG-6	WF-RBS COMMERCIAL MORTGA-SERIES 2012-C8C			4,5	1.FM	4,113,594	100.7989	4,208,352	4,175,000	4,147,796		6,564		4,893	5.157	MON	121,039	207,110	12/02/2013	08/01/2045	
92937E-AG-9	WF-RBS COMMERCIAL MORTGA-SERIES 2013-C11			4,5	1.FM	3,913,810	99.7860	3,791,870	3,800,000	3,849,458		(11,360)		3,714	3.366	MON	11,761	141,132	01/28/2013	03/01/2045	
92937E-AH-7	WF-RBS COMMERCIAL MORTGA-SERIES 2013-C11			4,5	1.FM	4,274,429	100.0752	4,153,121	4,150,000	4,209,543		(13,479)		4,209	3.882	MON	103,350	177,339	01/28/2013	03/01/2045	
92937E-AJ-3	WF-RBS COMMERCIAL MORTGA-SERIES 2013-C11			4,5	1.FM	3,116,213	97.3707	3,213,232	3,300,000	3,217,091		18,274		4,265	5.021	MON	107,031	142,864	01/28/2013	03/01/2045	
92937U-AH-1	WF-RBS COMMERCIAL MORTGA-SERIES 2013-C13			4,5	1.FM	6,797,894	98.6215	6,509,021	6,600,000	6,692,499		(19,397)		3,910	3.651	MON	21,505	258,060	04/17/2013	05/01/2045	
92937U-AJ-7	WF-RBS COMMERCIAL MORTGA-SERIES 2013-C13			4,5	1.FM	4,332,409	94.0394	4,325,814	4,600,000	4,464,808		27,149		4,133	4.942	MON	110,685	192,940	04/17/2013	05/01/2045	
92939G-AA-5	WFLD MORTGAGE TRUST-SERIES 2014-MONT CLA			4,5	1.FM	3,039,379	101.1044	2,982,579	2,950,000	3,007,587		(8,845)		3,755	3.426	MON	32,693	111,997	08/07/2014	08/01/2031	
92939G-AL-1	WFLD MORTGAGE TRUST-SERIES 2014-MONT CLA			4,5	1.FM	4,171,732	95.6970	4,186,744	4,375,000	4,249,389		19,592		3,755	4.392	MON	48,252	166,098	08/07/2014	08/01/2031	
94987M-AA-9	WELLS FARGO COMMERCIAL M-WIFOM 2010-C1 CL			4,5	1.FM	24,631	100.0936	23,454	23,432	23,662		(241)		3,349	1.505	MON	65	729	12/02/2013	11/01/2043	
94987M-AB-7	WELLS FARGO COMMERCIAL M-WIFOM 2010-C1 CL			4,5	1.FM	20,598,840	101.6954	20,339,078	20,000,000	20,104,426		(64,247)		4,393	4.044	MON	73,217	878,600	10/28/2010	11/01/2043	
94989H-BF-6	WELLS FARGO COMMERCIAL M-WIFOM 2015-NXS1			4,5	1.FM	4,866,424	98.1596	4,638,039	4,725,000	4,818,810		(13,294)		3,658	3.306	MON	14,403	172,841	04/20/2015	05/01/2048	
94989H-BJ-8	WELLS FARGO COMMERCIAL M-WIFOM 2015-NXS1																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest					Dates	
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
95001N-BB-3	Wells Fargo Commercial M-WFCM 2018-C45 A		4	5	1FM	15,449,160		15,643,337	15,000,000	15,432,150		(17,010)			4.405	4.037	MON	55,063	275,312	06/28/2018	06/01/2051
95001N-BC-1	Wells Fargo Commercial M-WFCM 2018-C45 B		4		1FM	6,416,620		6,408,395	6,230,000	6,409,605		(7,014)			4.556	4.185	MON	23,653	118,266	06/28/2018	06/01/2051
3499999. Subtotal - Bonds - Industrial and Miscellaneous (Unaffiliated) - Commercial Mortgage-Backed Securities						1,912,913,807	XXX	1,883,051,015	2,081,192,865	1,897,104,192	83,128	(427,575)	1,683,436		XXX	XXX	XXX	23,868,667	72,413,945	XXX	XXX
000366-AA-2	AASET 2017-1 TRUST-SERIES 17-1A CLASS A		4		1FE	17,885,016		17,854,343	17,885,107	17,900,672		(2,254)			3.967	3.940	MON	29,563	712,045	05/25/2017	05/16/2042
000366-AA-8	AASET 2017-1 TRUST-SERIES 17-1A CLASS A		4		1FE	3,368,491		3,405,263	3,411,131	3,369,474		982			3.967	4.345	MON	5,638	11,277	11/27/2018	05/16/2042
00400V-AB-3	ACADEMIC LOAN FUNDING TR-ALFT 2012-1A A2		4		1FE	7,074,847		7,405,962	7,287,978	7,287,978		77,906			3.606	4.612	MON	4,429	229,020	05/31/2016	12/27/2044
00432C-AR-2	ACCESS GROUP-STUDENT LN REVENUE NT		4		1FE	1,329,470		1,437,600	1,450,001	1,344,965		642			1.970	2.453	MJSD	14,764	26,619	02/26/2016	09/25/2037
00432C-AV-3	ACCESS GROUP INC-SERIES 2003-A CLASS A3		4		1FE	2,155,146		2,212,024	2,212,463	2,202,053		31,180			3.590	4.690	MON	50,023	75,816	12/02/2013	07/01/2038
00432C-AV-3	ACCESS GROUP INC-SERIES 2003-A CLASS A3		4		1FE	671,349		676,288	676,422	676,422		3,883			3.590	4.083	MON	15,641	8,468	02/19/2014	07/01/2038
00432C-CF-6	ACCESS GROUP INC DEL 2005-1 ASSET BKD CT		4		1FE	26,881		27,265	27,268	27,268		9			2.974	2.849	MJSD	18	186	01/07/2016	06/22/2022
00432C-CII-9	ACCESS GROUP INC-SERIES 2005-B CLASS A3		4		1FE	8,420,557		9,837,979	9,261,518	8,973,510		179,402			2.860	4.731	JAJO	50,031	228,784	03/16/2016	07/25/2035
00432C-DE-8	ACCESS GROUP INC-SERIES 2005-1 CLASS B		4		1FE	1,607,891		1,904,136	1,985,051	1,742,758		50,149			3.139	6.020	FMAN	6,232	51,537	02/24/2016	08/25/2037
00435T-AB-7	ACCESS GROUP INC-SERIES 2015-1 CLASS B		4		1FE	1,807,065		1,971,105	2,100,000	1,885,874		22,510			4.006	5.645	MON	1,202	74,000	07/17/2015	07/25/2058
006346-AS-9	ADAMS OUTDOOR ADV SECD REV NT SER 2018-1		4		1FE	18,896,859		19,435,417	18,897,428	18,896,565		(294)			4.810	4.799	MON	40,399	90,896	10/19/2018	11/15/2048
02155L-AA-0	ALTERNA FUNDING LLC-SERIES 2015-1A CLASS		4		1FE	600,432		605,568	608,611	439,573		(111,952)			2.500	0.159	MON	676	13,447	02/05/2016	02/15/2024
023765-AA-8	AMER AIRLINE 16-2 AA PTT-FIRST LIEN		1		1FE	6,935,145		6,520,285	6,935,145	6,935,145		9,863			3.200	3.199	JD	9,863	221,392	05/02/2016	06/15/2028
023767-AA-4	AMER AIRL PASS THRU TR 2011-1A CTF		1		1FE	504,535		419,642	410,910	432,479		(26,600)			5.250	(0.457)	JJ	9,049	19,960	06/02/2015	01/31/2021
023766-AA-4	AMER AIRLINE 16-2 B PTT-2ND LIEN		1		2FE	248,153		241,252	246,000	247,702		(584)			4.375	4.125	JD	9,798	9,798	05/18/2017	06/15/2024
02376T-AC-2	AMER AIRLN 13-2 B PTT-PASS THRU CERTS		1		3FE	329,197		318,145	315,776	318,706		(5,773)			5.600	3.794	JJ	8,154	16,703	08/02/2016	07/15/2020
02376U-AA-3	AMER AIRLS INC 2016-1 CL AA CTF		1		1FE	16,874,572		16,514,763	16,821,395	16,861,575		(6,473)			3.575	3.529	JJ	277,296	586,887	01/20/2016	01/15/2028
02376X-AA-7	AMER AIRLN 14-1 B PTT-SECURED NOTE		1		2FE	2,057,964		1,995,126	2,016,552	2,045,983		(13,369)			4.375	3.663	AO	22,056	85,553	09/21/2017	10/01/2022
02376Y-AA-5	AMER AIRLINE 16-1 B PTT-3RD LIEN		1		2FE	4,597,302		4,500,705	4,372,189	4,546,364		(59,400)			5.250	3.764	JJ	105,843	216,928	07/27/2017	01/15/2024
023770-AA-8	AMER AIRLN 15-1 A PTT-SECURED		1		1FE	17,802,800		17,014,093	17,903,164	17,929,293		13,781			3.375	3.464	MN	100,705	598,081	08/02/2016	05/01/2027
023770-AB-6	AMER AIRLN 15-1 B PTT-PASS THRU CERTS		1		2FE	273,184		269,098	279,089	275,276		1,737			3.700	4.361	MN	1,721	10,116	05/18/2017	05/01/2023
02377A-AA-6	AMER AIRLN 14-1 A PTT-SECURED NOTE		1		1FE	6,081,706		5,877,272	6,070,308	6,079,288		(1,933)			3.700	3.666	AO	56,150	220,054	08/20/2018	10/01/2026
02377D-AA-0	AMERICAN AIRLINES 2017-2-3RD LIEN		1		2FE	14,241,703		13,775,068	14,241,703	14,241,703		14,241,703			3.700	3.700	AO	111,244	520,241	09/26/2017	10/15/2025
02378W-AA-7	AMER AIRLINE 17-1B PTT-3RD LIEN		1		2FE	1,142,600		1,095,442	1,092,487	1,103,365		(11,490)			4.950	3.769	FA	20,430	51,226	08/17/2017	02/15/2025
02665U-AA-3	AMERICAN HOMES 4 RENT-SERIES 2014-SFR2 C		4		1FE	9,109,550		9,191,387	9,110,006	9,109,656		50			3.786	3.787	MON	28,742	344,386	09/10/2014	10/01/2036
02666B-AA-4	AMERICAN HOMES 4 RENT-SERIES 2015-SFR2 C		4		1FE	1,655,661		1,685,807	1,655,713	1,655,465		30			3.732	3.735	MON	5,149	61,672	09/11/2015	10/01/2045
03027W-AJ-1	AMERICAN TOWER TRUST I-1ST LIEN		1		1FE	4,544,200		4,441,624	4,510,000	4,527,611		(3,876)			3.070	2.971	MON	6,154	138,457	03/05/2015	03/15/2048
038779-AA-2	ARBYS FUNDING LLC 2015-1A A2		4		2AM	18,565,800		18,937,487	18,565,800	18,565,800					4.969	5.235	JAJO	156,318	920,923	11/06/2015	10/30/2045
03927R-AB-0	ARCAP REIT INC-SERIES 2006-RR7 CLASS A R		4,5		6FE	348,528		221,546	221,546	221,546		(187,345)			0.000	0.174	MON	113,228	247,249	01/01/2013	09/01/2045
04546K-AA-6	AASET 2018-2 US LTD-AASET 2018-2A A		4		1FE	15,222,749		15,378,044	15,223,230	15,222,449		(300)			4.454	4.440	MON	98,424	98,424	11/01/2018	11/16/2038
05377R-BF-0	AVIS BUDGET RENTAL CAR F-SERIES 2013-2A		4		1FE	3,332,767		3,331,904	3,333,333	3,333,322		143			2.970	2.975	MON	3,025	92,950	09/10/2013	02/20/2020
05377R-BV-5	AVIS BUDGET RENTAL CAR F-SERIES 2014-2A		4		1FE	8,647,881		8,610,285	8,650,000	8,649,545		474			2.500	2.506	MON	6,608	216,250	07/17/2014	02/20/2021
05377R-DE-1	Avis Budget Rental Car Funding - Series		4		2AM	3,123,930		3,210,687	3,125,000	3,121,879		(2,051)			4.950	4.973	MON	4,727	23,632	10/17/2018	03/20/2025
05577E-AG-5	BTMU Capital Corp. Equipment Note		1		1	5,667,193		5,086,897	4,819,136	5,013,503		(142,629)			6.550	3.584	FA	109,602	305,215	01/01/2013	02/26/2021
05577E-AH-3	BTMU Capital Corp. Equipment Note		1		1	5,454,347		4,895,846	4,638,142	4,825,208		(137,272)			6.550	3.584	FA	105,486	293,752	01/01/2013	02/26/2021
05577E-AJ-9	BTMU Capital Corp. Equipment Note		1		1	1,312,224		1,166,971	1,105,545	1,125,733		(41,106)			6.550	3.195	FA	167,692	81,524	01/01/2013	02/26/2021
05577E-AK-6	BTMU Capital Corp. Equipment Note		1		1	1,703,257		1,529,090	1,448,603	1,506,967		(42,829)			6.550	3.587	FA	32,946	91,746	01/01/2013	02/26/2021
05577E-AM-2	BTMU Capital Corp. Equipment Note		1		1	230,422		243,225	230,422	230,422					6.550	6.547	FA	21,425	15,680	02/26/2009	02/26/2021
05577E-AN-0	BTMU Capital Corp. Equipment Note		1		1	7,987,773		7,671,142	7,411,059	7,588,514		(110,193)			4.830	3.385	AO	269,460	360,274	01/01/2013	10/15/2024
05577E-AP-5	BTMU Capital Corp. Equip Note UPRR		1		1	1,078,618		1,092,053	1,078,618	1,078,618					3.930	3.929	FA	15,072	38,868	02/23/2011	02/23/2026
05577E-AQ-3	BTMU Capital Corp. Equip Note UPRR		1		1	507,585		513,907	507,585	507,585					3.930	3.929	FA	7,093	18,291	02/23/2011	02/23/2026
05577E-AR-1	BTMU CAP CORP EQUIP NT UPRR 2011-A SER B		1		1	2,062,064		2,089,308	2,062,064	2,062,064					3.930	3.929	MN	12,606	78,094	05/05/2011	05/05/2026
07324N-AA-1	BAYVIEW COMMERCIAL ASSET-SERIES 2006-3A		4		4AM	1,518,519		2,366,464	2,508,601	2,060,103		188,604			2.756	10.970	MON	1,152	56,470	01/01/2013	10/27/2036
07324N-AB-9	BAYVIEW COMMERCIAL ASSET-SERIES 2006-3A		4		4AM	2,042,559		3,331,477	3,522,717	2,842,771		282,739			2.806	11.760	MON	1,648	81,078	01/01/2013	10/27/2036
07324S-AY-8	BAYVIEW COMMERCIAL ASSET-SERIES 2004-3 C		4		1FE	125,532		98,8712	158,932	146,842		5,708			2.527	6.866	MON	67	3,317	01/01/2013	01/25/2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
07325B-AE-8	BAYVIEW COMMERCIAL ASSET-SERIES 2006-4A			4	6FE	151,010		90,682.71	444,146	282,428					2.816	20.634	MON	208	10,227	01/01/2013	12/25/2036
07325B-AF-5	BAYVIEW COMMERCIAL ASSET-SERIES 2006-4A			4	6FE	66,418		88,047.77	442,787	228,743					2.846	31.158	MON	210	10,329	01/01/2013	12/25/2036
07325B-AG-3	BAYVIEW COMMERCIAL ASSET-SERIES 2006-4A			4	6FE	37,964		79,233.4	210,910	98,137					2.906	37.749	MON	965	15,603	01/01/2013	12/25/2036
07325B-AA-6	BAYVIEW COMMERCIAL ASSET-SERIES 2006-SP2			4	5AM	41,421		94,159.8	41,839	39,396					2.786	3.508	MON	104	927	05/04/2007	01/25/2037
07325M-AA-2	BAYVIEW COMMERCIAL ASSET-SERIES 2007-1 C			4	1FE	1,706,755		93,744.1	2,032,262	1,945,284					2.501	7.097	MON	904	48,006	01/01/2013	03/25/2037
07325M-AE-4	BAYVIEW COMMERCIAL ASSET-SERIES 2007-1 C			4	6FE	48,655		89,428.4	255,810	147,943					2.601	26.729	MON	1,075	5,035	01/01/2013	03/25/2037
07325Y-AB-4	BAYVIEW COMMERCIAL ASSET-SERIES 2007-3 C			4	5AM	1,267,965		94,180.8	1,364,686	1,449,007					2.796	4.268	MON	675	30,822	01/11/2008	07/25/2037
09628E-AA-0	BLUE VIRGO-SERIES 15-1A CLASS NOTE			4	1FE	1,215,509		100,000.0	1,220,986	1,220,986					3.000	3.304	MON	1,628	33,535	11/10/2015	12/15/2022
10620N-AX-6	BRAZOS HIGHER EDUCATION -SER 2006-2 STUD			4	1FE	9,727,613		99,086.4	10,469,775	10,352,635					2.942	4.300	MJSD	5,180	247,089	12/16/2015	06/25/2026
106238-LJ-5	BRAZOS TX HGR EDU AUTH REVENUE BOND			4,5	1FE	3,746,500		99,005.0	5,050,000	4,290,093					3.450	7.996	MON	215,737	156,950	02/26/2013	06/25/2041
11042T-AA-1	BRITISH AIRWAYS 2018-1 C-FIRST LIEN			2	1FE	31,819,196		98,042.0	31,820,304	31,819,979			(216)		3.800	3.801	MJSD	339,459	462,984	06/28/2018	09/20/2031
12189P-AK-8	BURLINGTN NO SF 01-2 TR-SECURED NOTE			2	1FE	1,817,525		101,867.9	1,530,662	1,502,595					6.462	0.684	JJ	44,773	75,103	01/01/2013	01/15/2021
12189P-AL-6	BURLINGTN NO SF 02-1 TR-PASS THRU CERTS			2	1FE	308,184		102,283.0	315,220	308,184					5.943	5.936	JJ	8,445	12,595	06/20/2002	01/15/2022
12189P-AM-4	BURLINGTN NO SF SECURED PT CERTS SER 02-			2	1FE	549,265		100,622.4	542,767	539,410			(10,343)		5.140	4.113	JJ	12,785	(5,546)	08/11/2014	01/15/2021
12189T-AH-7	BURLINGTN NO SF 98-A TR-PASS THRU CERTIF			1	1FE	1,245,118		100,008.7	1,331,382	1,331,266			89,992		6.600	7.521	JJ	43,688	(302,529)	08/04/1999	01/02/2019
12479R-AB-3	CAPITAL AUTOMOTIVE REIT-SERIES 2014-1A C			4	1FE	10,343,778		99,679.7	10,316,849	10,350,000					3.660	3.670	MON	111,539	374,601	10/10/2014	10/15/2044
12479R-AD-9	CAPITAL AUTOMOTIVE REIT-SERIES 17-1A CLA			4	1FE	12,140,646		100,018.7	12,146,432	12,144,167					3.870	3.882	MON	126,017	469,267	03/30/2017	04/15/2047
12479R-AE-7	CAPITAL AUTOMOTIVE REIT-SERIES 17-1A CLA			4	1FE	9,389,524		100,599.2	9,447,099	9,390,833					4.180	4.188	MON	82,980	392,701	03/30/2017	04/15/2047
1248MP-AH-7	CREDIT-BASED ASSET SERVI-SERIES 2007-MX1			4,5	6FE			2,145.1	16,890	787,371			(13,292)		6.532	168.065	MON	74,181	(13,418)	05/08/2007	12/01/2036
12532*-AA-0	CFT Investments 1, LLC Equipment Note			1	1	1,292,042		104,161.1	1,345,805	1,292,042					5.660	5.657	JJ	33,721	73,130	08/04/2004	01/15/2023
12532*-AA-8	CFT Investments 2 LLC Equipment Note			1	1	1,292,042		104,161.1	1,345,805	1,292,042					5.660	5.657	JJ	106,850	73,130	08/04/2004	01/15/2023
12533*-AA-5	CFT Investments 3 LLC Equipment Note			1	1	1,977,617		104,161.1	2,059,907	1,977,617					5.660	5.657	JJ	51,614	111,933	08/04/2004	01/15/2023
12533*-AA-9	CFT Investments 4 LLC Equipment Note			1	1	1,398,274		103,986.4	1,454,015	1,398,274					5.660	5.657	JJ	36,493	79,142	10/13/2004	01/15/2023
12533*-AA-7	CFT Investments 5 LLC Equipment Note			1	1	1,016,926		103,986.4	1,057,465	1,016,926					5.660	5.657	JJ	26,541	57,558	10/13/2004	01/15/2023
12563A-AN-5	CLI FUNDING LLC-SERIES 2014-1A CLASS A			4	1FE	4,025,688		98,481.0	4,159,684	4,223,846			36,863		3.290	4.168	MON	5,018	137,838	02/02/2016	06/18/2029
12563A-AO-8	CLI FUNDING LLC-SERIES 2014-2A CLASS A			4	1FE	1,787,629		99,331.0	1,785,614	1,793,527			1,387		3.380	3.463	MON	2,194	60,331	10/08/2015	10/18/2029
12563L-AA-5	CLI FUNDING LLC-SERIES 16-1A CLASS A			4	1FE	6,612,859		98,150.2	6,491,196	6,613,192			116		4.210	4.212	MON	10,054	276,158	02/04/2016	02/18/2041
12563L-AE-7	CLI FUNDING LLC-SERIES 17-1A CLASS A			4	1FE	22,831,188		99,553.8	22,731,864	22,833,757			1,609		3.620	3.640	MON	29,849	808,919	05/24/2017	05/18/2042
12649*-AA-6	CTL 2009-14 Trust Ser 2009 Lease			1	1	19,322,013		115,738.2	22,362,951	19,322,013					6.275	6.275	MON	156,267	1,211,796	07/30/2009	07/15/2030
126650-BC-3	CVS PASS-THROUGH TRUST-FIRST LIEN			1	2FE	75,445		105,386.5	70,283	66,690			(1,642)		5.880	3.228	MON	229	3,903	08/02/2016	01/10/2028
126650-BP-4	CVS PASS-THROUGH TRUST-SECURED NOTE			1	2FE	18,325,349		106,461.2	15,542,098	14,598,844			(395,613)		6.036	3.092	MON	51,403	877,490	12/09/2015	12/10/2028
126650-BO-2	CVS HEALTH CORP PASS THRU CTF 30/360			1	2FE	562,929		111,095.9	512,228	461,069					6.943	3.703	MON	12,347	1,867	12/28/2018	01/10/2030
126650-BS-8	CVS PASS-THROUGH TRUST-NOTE			1	2FE	6,779,041		115,594.8	7,743,922	6,699,198					7.507	7.299	MON	88,745	503,687	08/02/2016	01/10/2032
126650-BV-1	CVS Pass-Through Trust-FIRST LIEN			5	2FE	1,904,937		105,132.4	1,738,833	1,653,947					5.773	4.444	MON	78,414	94,562	06/07/2017	01/10/2033
126650-BY-5	CVS PASS-THROUGH TRUST-SERVO SECURED NO			2,5	2FE	1,027,394		107,701.1	989,293	918,553					5.926	4.344	MON	3,175	54,307	08/02/2016	01/10/2034
12665U-AA-2	CVS PASS-THROUGH TRUST-1ST LIEN			1	2FE	53,376		97,920.0	50,638	51,713			(142)		4.704	4.317	MON	147	2,429	12/09/2015	01/10/2036
12674*-AA-6	CVS Lease Backed Trust 2 Pass Thru Ctf			1	2	12,640,269		94,191.2	11,906,021	12,640,269					4.016	4.016	MON	73,520	508,015	07/11/2013	08/10/2035
12695*-AA-3	CVS Caremark Corporation Pass-Through Ce			2	2	32,525,239		87,250.0	28,386,402	32,525,239					3.416	3.416	MON	64,812	1,108,815	09/15/2016	10/10/2038
12707*-AA-7	CVS 2018 - 08 Trust (CVS Senior Secured			2	2	18,065,775		100,191.9	18,100,443	18,065,775					5.120	5.120	MON	377,011	135	07/24/2018	07/15/2041
14155*-AB-6	Cardinals Ballpark LLC Senior Secured			2	2	8,911,157		104,963.8	8,911,157	8,911,157					5.770	5.770	MS	129,972	503,395	12/23/2003	09/30/2027
14856C-AB-5	Castlelake Aircraft Secu-SERIES 2018-1 C			4	3AM	6,788,445		101,257.0	6,834,949	6,750,100			(1,935)		5.300	5.214	MON	15,900	194,778	06/29/2018	06/15/2043
14856C-AB-5	Castlelake Aircraft Secu-SERIES 2018-1 C			4	3AM	5,835,523		101,257.0	5,858,528	5,785,800			(2,084)		5.300	5.170	MON	13,629	197,049	07/27/2018	06/15/2043
14856C-AB-5	Castlelake Aircraft Secu-SERIES 2018-1 C			4	3AM	965,581		101,257.0	976,421	964,300			(25)		5.300	5.280	MON	2,271	208,407	10/18/2018	06/15/2043
149806-AA-9	CAZENOVIA CREEK FUNDING LLC-SER 2015-1A			4	1FE	263,758		99,437.5	262,395	263,880			13		2.000	2.016	MON	3	4,452	07/01/2015	12/10/2023
14983C-AA-3	CBA COMMERCIAL SMALL BAL-SERIES 2006-2A			4,5	1AM	294,025		83,968.5	397,255	473,156			241		5.540	5.540	MON	38,865	27,291	01/11/2008	01/01/2039
15723*-AA-8	CGA Lease-Backed Pass Th Pass Thru Ctf			1	1	19,717,131		101,758.1	20,063,778	19,717,131					4.470	4.470	MON	51,412	880,562	03/26/2015	03/10/2045
17284L-AB-0	CIT EDUCATION LOAN TRUST-SERIES 2007-1 C			4	1FE	1,062,880		92,869.0	1,192,854	1,284,447					3.122	6.399	MJSD	7,198	32,735	11/03/2015	06/25/2042
194204-AB-9	COLLEGE AVE STUDENT LOAN-SERIES 2017-A C			4	3AM	10,018,302		99,424.0	9,964,812	10,049,412			(3,212)		3.750	3.676	MON	6,284	375,029	07/11/2017	11/26/2046
194204-AC-7	COLLEGE AVE STUDENT LOAN-SERIES 2017 CLA			4	2AM	3,228,554		101,104.8	3,346,567	3,310,000					4.500	4.896	MON	2,483	132,120	10/04/2018	11/26/2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
20267V-AC-1	COMMONBOND STUDENT LOAN -SERIES 17-AGS C			4	1FE	4,809,929	98.4256	4,734,450	4,810,183	4,825,556	(3,930)				3.470	3.376	MON	2,782	165,560	06/02/2017	05/25/2041
20267X-AC-7	Commonbond Student Loan -CBSLT 2018-CGS			4	1FE	32,575,522	100.0000	32,583,000	32,574,331	32,574,331	(1,191)				4.250	4.181	MON	69,239		12/06/2018	02/25/2046
20268K-AC-4	COMMONBOND STUDENT LOAN -SERIES 17-BGS C			4	1FE	999,674	96.8331	968,331	1,000,000	1,001,930	2,321				3.260	3.222	MON	543	32,600	10/19/2017	09/25/2042
20268K-AD-2	COMMONBOND STUDENT LOAN -SERIES 17-BGS C			4	3AM	1,319,918	100.5729	1,327,563	1,320,000	1,323,064	3,266				4.440	4.327	MON	977	58,608	10/19/2017	09/25/2042
210795-PZ-7	CONTL AIRLINES 2012-1 A-FIRST LIEN			1	1FE	188,933	99.7400	181,849	182,324	186,644	(1,230)				4.150	3.413	AO	1,681	7,453	12/15/2015	04/11/2024
210795-QB-9	CONTL AIRLINES 2012-2 A-FIRST LIEN			1	1FE	158,797	98.7500	150,035	151,935	156,685	(1,227)				4.000	3.119	AO	1,047	6,009	08/02/2016	10/29/2024
210795-QC-7	CONTL AIRLINES 2012-2 B-2ND LIEN			1	2FE	328,257	101.0100	316,092	312,932	320,704	(7,229)				5.500	3.211	AO	2,964	16,476	06/26/2017	10/29/2020
21079R-AA-0	CONTL AIRLINES 2007-1-2ND LIEN			1	2FE	651,126	102.7600	634,516	617,474	628,033	(28,015)				6.903	2.928	AO	8,525	35,174	05/17/2017	04/19/2022
22546U-AA-6	CREDIT SUISSE ABS REPACKAGING TR 2013-A			4	2AM	1,288,492	93.6303	1,249,837	1,334,864	1,312,263	6,699				2.500	3.013	JAJO	6,118	28,610	09/30/2015	01/25/2030
22546U-AA-6	CREDIT SUISSE ABS REPACKAGING TR 2013-A			4	1AM	791,466	93.6303	781,249	834,397	812,867	6,358				2.500	3.287	JAJO	3,824	20,860	05/25/2016	01/25/2030
22970F-AA-4	CTL 2015-20 Trust Pass-Through Le			2	1FE	36,598,094	98.4707	36,038,399	36,598,094	36,598,094					3.780	3.780	MON	176,829	1,383,304	09/02/2015	03/15/2029
233046-AD-3	DB MASTER FINANCE LLC-DKN1 2015 - 1A A2I			4	3AM	37,784,256	101.3940	37,435,210	36,920,538	37,606,239	90,474				3.980	3.696	FIHAN	167,353	1,467,698	08/02/2016	02/20/2045
233046-AE-1	DB Master Finance LLC-SERIES 2017-1A CLA			4	1AM	4,702,432	96.6220	4,665,132	4,828,230	4,713,694	11,262				3.629	4.340	FIHAN	19,955	87,608	08/01/2018	11/20/2047
23312A-AA-0	DCP RIGHTS LLC-2014-1A A CLASS A			4	2AM	7,191,000	102.1234	7,343,697	7,191,000	7,191,000					5.463	5.463	JAJO	72,021	391,695	12/19/2014	10/25/2044
23340K-AB-2	DRB PRIME STUDENT LOAN T-SERIES 2015-A C			4	1FE	7,465,371	99.7424	7,475,561	7,494,866	7,485,263	3,666				3.060	3.108	MON	23,658	228,266	01/25/2016	07/25/2031
23340K-AC-0	DRB PRIME STUDENT LOAN T-SERIES 2015-A C			4	1FE	262,030	99.5191	260,813	262,074	262,079	(38)				2.320	2.312	MON	3,563	8,138	06/19/2015	04/25/2030
23340L-AA-2	DRB PRIME STUDENT LOAN T-SERIES 2015-B C			4	1FE	3,461,017	101.7390	3,540,334	3,479,822	3,479,822					4.406	5.056	MON	105,723	143,748	03/23/2016	10/27/2031
23340L-AB-0	DRB PRIME STUDENT LOAN T-SERIES 2015-B C			4	1FE	7,297,176	99.2998	7,206,382	7,257,194	7,277,486	(7,302)				3.170	3.071	MON	3,834	228,445	05/05/2016	07/25/2031
23340L-AC-8	DRB PRIME STUDENT LOAN T-SERIES 2015-B C			4	1FE	392,166	99.5817	390,569	392,210	392,210	6				2.540	2.541	MON	856	9,838	09/23/2015	04/27/2026
23340W-AB-6	DRB PRIME STUDENT LOAN T-SERIES 16-A CLA			4	1FE	7,884,474	98.3783	7,780,174	7,908,423	7,894,695	3,923				3.080	3.131	MON	4,060	242,370	04/12/2016	04/25/2040
23341B-AC-9	DRB PRIME STUDENT LOAN T-DRB 2016-B A2			4	1FE	14,740,432	99.3372	14,647,184	14,741,911	14,741,911	(17)				2.890	2.896	MON	7,102	423,680	05/12/2016	06/25/2040
23341K-AA-3	DRB PRIME STUDENT LOAN T-SERIES 2015-D C			4	1FE	3,395,083	101.5250	3,530,966	3,477,928	3,446,945	33,554				4.206	5.139	MON	42,756	108,106	02/01/2016	01/25/2040
23341K-AB-1	DRB PRIME STUDENT LOAN T-SERIES 15-D CLA			4	1FE	11,355,834	100.0336	11,337,838	11,334,030	11,352,905	(6,198)				3.200	3.107	MON	14,442	340,304	07/21/2016	01/25/2040
23342B-AB-0	DRB PRIME STUDENT LOAN T-SERIES 16-R CLA			4	1FE	12,698,199	99.1448	12,591,910	12,700,525	12,719,129	1,046				3.070	3.025	MON	6,498	351,046	10/04/2016	10/25/2044
23342K-AD-6	DRB PRIME STUDENT LOAN T-DRB 2017-A B			4,5	1FE	4,017,381	98.4007	3,953,408	4,017,661	4,053,078	14,708				3.100	3.027	MON	31,741	116,040	04/13/2017	05/27/2042
247358-AA-2	DELTA AIR LINES 2012-1A-FIRST LIEN			1	1FE	112,062	101.2300	107,400	106,095	106,688	(2,835)				4.750	2.227	MM	756	4,814	12/15/2015	05/07/2020
247361-ZH-4	DELTA AIR LINES INC 2010-2A MTG PASS THR			1	1FE	87,648	100.5500	81,877	81,429	81,429	(1,405)				4.950	1.035	MM	425	3,069	07/10/2015	05/23/2019
247367-BH-7	DELTA AIR LINES 2007-1 A-FIRST LIEN			1	1FE	102,651	107.3700	95,322	98,779	96,478	(3,493)				6.821	2.821	FA	5,840		12/15/2015	08/10/2022
25273L-AA-8	DIAMOND RESORTS OWN TRST-SERIES 2015-2 C			4	1FE	1,949,095	99.7696	1,945,163	1,949,656	1,949,498	425				2.990	3.009	MON	5,860	57,010	11/10/2015	05/22/2028
25273L-AB-6	DIAMOND RESORTS OWN TRST-SERIES 2015-2 C			4	1FE	1,073,496	99.8260	1,071,687	1,073,555	1,073,541	21				3.540	3.543	MON	3,570	37,295	11/10/2015	05/22/2028
25755T-AE-0	DOMINOS PIZZA MASTER ISS-SERIES 2015-1A			4	2AM	37,074,375	100.9290	37,418,796	37,074,375	37,074,375					4.474	4.475	JAJO	304,096	1,655,588	10/14/2015	10/25/2045
25755T-AH-3	DOMINOS PIZZA MASTER ISS-SERIES 17-1A QL			4	2AM	13,311,500	97.9770	13,042,208	13,311,500	13,311,500					4.118	4.133	JAJO	100,497	600,082	06/12/2017	07/25/2047
25755T-AH-3	DOMINOS PIZZA MASTER ISS-SERIES 17-1A QL			4	2AM	6,901,689	97.9770	6,869,412	7,011,250	6,907,337	5,638				4.118	4.392	JAJO	52,933	72,181	08/01/2018	07/25/2047
25755T-AK-6	Domino's Pizza Master Iss-DPABS 2018-1A A			4	2AM	41,790,000	101.0660	42,235,481	41,790,000	41,790,000					4.328	4.326	JAJO	331,590	909,359	04/18/2018	07/25/2048
26207K-AE-1	Drive Auto Receivables T-DRIVE 2017-3 B			4	1FE	436,849	99.8884	436,980	437,469	437,171	322				2.300	2.819	MON	447	1,170	10/04/2018	05/17/2021
26208B-AL-4	Drive Auto Receivables T-DRIVE 2016-CA C			4	1FE	1,000,042	99.9413	998,819	999,406	999,879	(163)				3.020	2.900	MON	1,341	4,601	10/04/2018	11/15/2021
26208C-AN-8	Drive Auto Receivables T-DRIVE 2017-AA D			4	3AM	504,863	101.1265	505,633	504,351	504,351	(512)				4.160	3.659	MON	924	3,640	10/04/2018	05/15/2024
26208D-AF-3	Drive Auto Receivables T-DRIVE 2017-BA D			4	1FE	1,154,109	100.1897	1,152,182	1,150,000	1,153,481	(628)				3.720	3.460	MON	1,901	7,487	10/04/2018	10/17/2022
26208G-AF-6	Drive Auto Receivables T-DRIVE 2018-1 C			4	1FE	1,276,390	99.7973	1,277,405	1,280,000	1,276,881	490				3.220	3.404	MON	1,832	7,213	10/04/2018	03/15/2023
26208J-AE-3	Drive Auto Receivables T-DRIVE 2018-2 B			4	1FE	899,023	99.8952	899,057	900,000	899,193	170				3.220	3.310	MON	1,288	5,072	10/04/2018	04/15/2022
26208K-AE-0	Drive Auto Receivables T-DRIVE 2018-3 B			4	1FE	300,114	100.0518	300,155	300,000	300,099	(15)				3.370	3.346	MON	449	1,770	10/04/2018	09/15/2022
26223N-AD-7	DRUG ROYALTY CORPORATION-SERIES 2012-1 C			4	2AM	34,103	100.2281	34,180	34,103	34,103					7.322	7.829	JAJO	2,707	3,132	03/21/2012	07/15/2024
26223N-AD-7	DRUG ROYALTY CORPORATION-SERIES 2012-1 C			4	3AM	110,003	100.2281	107,912	107,667	107,819	(979)				7.322	7.029	JAJO	6,294	1,474	10/14/2015	07/15/2024
26223N-AE-5	DRUG ROYALTY CORPORATION-SERIES 2012-1 C			4	2AM	89,625	99.8664	89,521	89,641	89,641					5.800	5.800	JAJO	1,098	3,264	03/21/2012	07/15/2024
26223U-AC-3	DRUG ROYALTY II LP 1-SERIES 2014-1 CLASS			4	2AM	942,747	100.6404	948,783	942,747	942,747					5.286	4.513	JAJO	26,053	31,978	06/18/2014	07/15/2023
26223U-AD-1	DRUG ROYALTY II LP 1-SERIES 2014-1 CLASS			4	2AM	782,467	99.6597	779,817	782,480	782,471	15				3.484	3.485	JAJO	5,755	27,262	06/18/2014	07/15/2023
26223U-AD-1	DRUG ROYALTY II LP 1-SERIES 2014-1 CLASS			4	3AM	1,117,731	99.6597	1,099,260	1,103,014	1,104,776	(5,014)		</								

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
281378-AB-5	EDUCATIONAL SERVICES OF -SERIES 2015-1 C			4	1FE	2,086,648	.92	2,261,054	2,450,000	2,147,401		6,056			4.006	6.053	MON	1,636	86,334	05/01/2015	10/25/2056
281377-AB-9	EDUCATIONAL SERVICES OF -SERIES 2014-2 C			4	1FE	2,411,244	.93	2,455,243	2,625,000	2,490,583					4.006	5.125	MON	1,753	92,501	05/16/2014	02/27/2045
28138J-AB-0	EDUCATIONAL SERVICES OF -SERIES 15-2 CLA			4	1FE	1,591,735	101	1,779,866	1,750,000	1,679,498					4.006	5.617	MON	1,168	61,667	12/10/2015	12/25/2058
281397-AB-5	Education Loan Asset-Bac-SERIES 2003-1 C			4,5	1FE	6,555,938	101	6,556,435	6,750,000	6,668,047		50,671			0.989	3.153	MON	125,931	205,510	08/01/2014	02/01/2043
281397-AP-4	Education Loan Asset-Bac-SERIES 2003-2 C			4,5	1FE	7,430,063	96	7,399,023	7,650,000	7,540,332		66,718			2.152	3.376	MON	43,901	184,074	08/01/2014	08/01/2043
281397-AQ-2	Education Loan Asset-Bac-SERIES 2003-2 C			4,5	1FE	4,301,898	.97	4,317,823	4,450,000	4,450,000					2.739	2.739	MON	285,957	298,630	09/09/2014	08/01/2043
28140D-AC-7	EDUCATION LOAN ASSET-BAC-SERIES 13-1 CLA			4	1FE	5,199,891	.97	5,244,940	5,398,978	5,291,781		62,066			3.506	4.654	MON	3,155	162,592	06/08/2017	11/25/2033
28140X-AE-9	EDUCATION FUNDING LLC-SERIES 2006-1A CLA			4	6FE		0.0012	24	2,000,000						3.840	0.000	JAJO			10/27/2006	07/25/2034
28148W-AC-7	EDUCATIONAL FUNDING OF T-SERIES 2011-1 C			4	1FE	9,667,802	105	10,662,526	10,098,000	10,038,755		240,087			6.190	7.019	JAJO	118,066	600,064	10/15/2014	04/25/2046
28148W-AE-3	ED FGD SOUTH INC STUDENT LN ASSET BKD NT			4	1FE	7,497,000	110	7,488,280	6,800,000	7,468,358		(28,642)			5.815	4.728	MON	37,230	194,077	06/04/2018	12/28/2048
284157-AA-2	ELARA HGV TIMESHARE ISSU-SERIES 2014-A C			4	1FE	1,513,556	.98	1,494,275	1,513,588	1,513,579		8			2.530	2.530	MON	638	37,942	10/22/2014	02/25/2027
284157-AB-0	ELARA HGV TIMESHARE ISS-SERIES 2014-A CL			4,5	2AM	623,973	98	622,704	629,878	628,696		1,004			3.020	3.160	MON	317	18,848	08/13/2015	02/25/2027
28618X-AA-0	ELEMENT RAIL LEASING II LLC 2015-1 ETC C			4	1FE	4,829,526	98	4,793,877	4,852,398	4,845,512		5,137			2.707	2.803	MON	4,378	130,004	03/24/2016	02/19/2045
28618X-AB-8	ELEMENT RAIL LEASING II LLC 2015-1 ETC C			4	1FE	5,350,000	100	5,360,548	5,350,000	5,350,000					3.585	3.585	MON	5,393	191,797	02/26/2015	02/19/2045
28618X-AD-4	ELEMENT RAIL LEASING II LLC 2016-1 ETC C			4	1FE	10,304,242	101	10,417,261	10,304,242	10,304,242					3.968	3.968	MON	52,590	409,627	03/14/2016	03/19/2046
28618X-AE-2	ELEMENT RAIL LEASING LLC-SERIES 16-1A CL			4	1FE	14,030,719	104	14,477,308	13,800,000	13,965,456		(35,418)			5.047	4.727	MON	23,216	696,486	02/09/2017	03/19/2046
30280E-AA-4	FR-Enclave SPV LP Secured Note			1	2	24,827,365	105	26,093,993	24,714,363	24,791,087		(8,273)			5.190	5.141	JAJO	299,291	1,273,516	01/01/2013	10/07/2033
30605X-AA-1	FAIRWAY OUTDOOR FUNDING -SERIES 2012-1A			4	1FE	6,041,096	100	5,975,235	5,970,578	5,994,586		(30,726)			4.212	3.684	MON	11,177	251,088	07/08/2014	10/15/2042
31305E-AA-3	FBI Phoenix Lease Financ Lease Backed Pa			1	1	22,919,505	106	24,356,719	22,919,505	22,919,505					4.670	4.670	MON	47,571	1,067,784	03/29/2012	02/15/2032
31331F-AX-9	FEDEX CORP 1998 PASS TST-1ST LIEN PT CER			2	2FE	367,539	103	332,525	321,038	328,022		(20,372)			6.720	1.084	JJ	9,948	19,152	01/27/2016	01/15/2022
33632*-UF-2	First Security Bank, NA-Fed Express LN C			2	2	1,799,179	101	1,831,748	1,799,179	1,799,179					8.410	8.396	JJ	69,771	113,390	10/30/2000	01/15/2020
33632*-UK-1	FIRST SEC BK NA LN CTF-FED EXPRESS N596F			2	2	2,074,844	102	2,119,839	2,074,844	2,074,844					8.410	8.397	JJ	80,461	137,392	03/01/2001	01/15/2020
33843L-AA-3	FLAGSHIP CREDIT AUTO TRU-SERIES 2015-3 C			4	1FE	296,811	99	296,586	296,812	296,812					2.380	2.380	MON	314	4,844	10/28/2015	10/15/2020
33844F-AC-1	Flagship Credit Auto Tru-FCAT 2016-4 B			4	1FE	139,242	99	139,079	140,000	139,437		195			2.410	3.061	MON	150	590	10/04/2018	10/15/2021
34486B-AA-2	FOOTBALL CLUB TERM NTS 2020 TR CTF			1	1FE	451,115	103	426,465	448,901	458,901		(2,214)			5.350	3.568	OCT	5,694	(1,339,418)	09/11/2018	10/05/2020
36246M-AU-3	GTP ACQ PARTNERS I-SECD REV NT AMER TIWR			1	1FE	1,636,576	98	1,600,954	1,622,000	1,631,885		(1,804)			3.482	3.348	MON	2,510	56,478	08/02/2016	06/16/2025
36804*-AA-6	GATX Corp. Pass Thru Cfts			2	2	6,915,803	99	6,877,766	6,915,803	6,915,803					4.420	4.419	MS	667,866	18,828	09/23/2010	03/01/2027
37186L-AA-9	GENESIS SOLAR 2011 PASS-SECURED NOTE			2	1FE	17,653,160	101	16,710,019	16,493,949	17,214,312		(56,874)			3.875	3.374	FA	241,453	639,141	01/01/2013	02/15/2038
37186L-AB-7	GENESIS SOLAR 2011 PASS-SECURED NOTE			2	2FE	3,970,881	100	4,159,543	4,123,487	3,983,813		10,036			5.125	5.567	FA	79,835	211,329	01/01/2013	02/15/2038
374593-A*-2	Giants Stadium LLC Series Secured			2	2AM	16,876,065	117	16,832,121	16,876,065	16,876,065					7.100	7.100	AO	299,550	1,194,602	06/30/2010	04/01/2040
38021B-AG-5	GOAL CAPITAL FUNDING TRU-SERIES 2006-1 C			4	1FE	6,256,877	93	6,456,214	6,905,400	6,470,392		122,336			3.127	4.901	FMAN	21,593	179,165	01/10/2017	08/25/2042
38021E-AA-2	GOAL CAPITAL FUNDING TR 2010-1 STUDENT L			4	1FE	2,634,816	99	2,748,377	2,749,074	2,698,010		44,267			3.389	4.543	FMAN	9,317	77,520	01/04/2016	08/25/2048
38021F-AB-7	GOAL CAPITAL FUNDING TRU-SERIES 2015-1 C			4	1AM	1,591,863	98	1,811,193	1,835,000	1,659,443		23,143			4.006	5.722	MON	1,225	64,663	03/25/2015	09/25/2043
38021X-AB-8	GOAL STRUCTURED SOLUTION-SERIES 2016-A C			4	1FE	11,178,968	99	11,048,670	11,082,000	11,217,330		24,998			4.250	4.310	MON	249,765	407,110	08/07/2017	02/25/2048
38217K-AA-2	GOODGREEN TRUST-SERIES 16-1A CLASS A			4	1FE	23,170,644	98	22,806,709	23,182,191	23,182,191		70,353			3.230	3.396	MON	160,043	340,735	10/28/2016	10/15/2052
38217V-AA-8	GOODGREEN TRUST-SERIES 17-1A CLASS A			4	1FE	13,013,344	101	13,156,405	13,019,403	13,019,403					3.740	3.946	MON	369,911	454,367	04/21/2017	10/15/2052
393505-E3-2	CONSECO FINANCIAL CORP-SERIES 1998-3 CLA			4	1FE	89,656	104	93,731	89,859	89,859		14			6.220	6.236	MON	966	5,123	06/29/2005	03/01/2030
404170-AC-9	HERO FUNDING TRUST-HERO 2016-4A A2			4,5	1FE	12,962,265	104	13,204,138	12,649,424	12,649,424		(7,659)			4.290	4.304	MON	861,361	636,809	12/01/2016	09/20/2047
419839-AA-3	HAWAIIAN AIRLINES 13-1B-SERIES 13-1 CLAS			1	3FE	806,234	99	787,405	789,458	800,335		(4,925)			4.950	4.264	JJ	18,019	34,151	06/07/2017	01/15/2022
42329G-AA-8	HELIOS ISSUER LLC-SERIES 17-1A CLASS A			4	1FE	17,844,959	101	18,182,689	17,853,352	17,788,952		9,034			4.940	5.030	MS	247,438	868,502	04/11/2017	09/20/2049
42770L-AA-1	HERO FUNDING TRUST-HERO 2015-1A A			4	1FE	10,947,891	101	10,906,163	10,746,396	10,947,891					3.840	3.840	MON	207,375	12,000	12/06/2016	09/21/2040
42770X-AC-1	HERO FUNDING TRUST-SERIES 16-3A CLASS A2			4,5	1FE	13,717,200	100	13,481,241	13,382,872	13,717,200					3.910	3.910	MON	453,871	9,910	09/15/2016	09/20/2042
42806D-BR-9	Hertz Vehicle Financing -HERTZ 2018-1A B			4	1FE	49,849,233	98	49,862,816	50,520,000	49,887,235		38,002			3.600	3.925	MON	30,312	1,105,862	09/28/2018	02/25/2024
42806D-BS-7	Hertz Vehicle Financing -HERTZ 2018-1A C			4	2AM	7,688,400	101	7,795,949	7,690,000	7,690,000		1,039			4.390	4.392	MON	5,627	310,396	01/17/2018	02/25/2024
42806D-CA-5	Hertz Vehicle Financing -SERIES 18-3A CL			4	1FE	18,894,927	101	19,240,448	18,900,000	18,891,204		(3,723)			4.370	4.381	MON	13,766	408,376	06/21/2018	07/25/2024
42806D-CB-3	Hertz Vehicle Financing -SERIES 18-3A CL			4	2AM	9,936,446	101	10,094,198	9,937,000	9,933,917		(2,529)			5.110	5.118	MON	8,463	251,069	06/21/2018	07/25/2024
429827-AB-4	HIGHER EDUCATION FUNDING-SERIES 2004-1 C			4	1FE	1,045,290	95	1,136,607	1,195,000	1,103,943		33,382			2.723	6.368	MON	24,952	31,791	08/16/2016	01/01/2044
429827-AK-4	Higher Education Funding-SERIES 2004-1																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
45254N-RV-1	IMPAC OMB TRUST-SERIES 2005-8 CLASS 2M1			4	1FM	219,170	.96	9156	290,715	257,070					3.256	7.963	MON	158	8,011	01/01/2013	02/25/2036
45254N-RW-9	IMPAC OMB TRUST-SERIES 2005-8 CLASS 2M2			4	1FM	436,941	.96	4349	580,035	514,497					3.631	8.278	MON	351	18,182	01/01/2013	02/25/2036
45257E-AE-4	IMPAC SECURED ASSETS COR-SERIES 2006-5 C			4	1FM	2,437,900	.98	7679	2,804,787	2,699,906					2.706	4.898	MON	1,265	61,717	01/01/2013	12/25/2036
462590-JT-8	IOWA STUDENT LOAN LIQUID-SERIES 2012-1 C			4	1FE	1,842,750	.107	5960	1,800,000	1,861,867					5.815	6.059	MON	103,762	99,784	06/10/2013	12/26/2046
462592-AD-8	IOWA STUDENT LOAN LIQUID-SERIES 2005-1 C			4	1FE	666,281	.91	5878	841,700	919,008					2.723	6.445	MJSD	417	23,597	07/13/2011	09/25/2037
46590U-AB-8	JG Wentworth XLII LLC-SERIES 18-2A CLAS			4	3AM	4,418,571	.103	6395	4,580,865	4,421,420					4.700	4.696	MON	26,545	20,197	10/02/2018	10/15/2077
46616V-AA-8	J G WENTWORTH RECV XXV-ASSET BKD NT 12-1			4	1FE	3,237,099	.104	6153	3,252,587	3,109,092					4.210	3.613	MON	80,976	136,011	01/25/2016	02/16/2065
46617A-AA-3	JGWPT XXVII LLC-ASSET BKD SERIES 2012-3			4	1FE	5,295,397	.97	9078	5,324,372	5,438,148					3.220	3.595	MON	155,536	180,347	02/26/2016	09/15/2065
46617T-AA-2	JGWPT XXXI LLC-ASSET BKD SERIES 2014-1 C			4	1FE	2,512,037	.102	6534	2,539,408	2,473,770					3.960	3.753	MON	9,962	101,998	02/12/2016	03/15/2063
46617T-AA-2	JGWPT XXXI LLC-ASSET BKD SERIES 2014-1 C			4	1FE	1,903,951	.102	6534	1,979,245	1,928,086					3.960	4.137	MON	7,764	72,186	12/15/2016	03/15/2063
46618H-AA-7	J G WENTWORTH XXXIII LLC-ASSET BKD SER 2			4	1FE	8,458,394	.99	2627	8,472,309	8,464,021					3.500	3.609	MON	13,277	297,666	01/29/2016	06/15/2077
46618L-AA-8	J G WENTWORTH XXXIV LLC-ASSET BKD SER 20			4	1FE	7,615,424	.98	4691	7,651,714	7,770,674					3.260	3.502	MON	11,259	252,427	01/28/2016	09/15/2072
46619R-AA-4	J G WENTWORTH XXXV LLC-ASSET BKD NT 15-			4	1FE	8,824,333	.102	7908	9,059,857	8,813,881					3.870	3.857	MON	15,160	340,154	02/10/2016	03/15/2058
46620D-AA-2	321 HENDERSON RECEIVABLE-SERIES 16-1A CL			4	1FE	8,742,923	.97	9466	8,495,965	8,674,076					3.410	3.422	MON	146,487	299,748	10/19/2016	06/15/2067
46620D-AB-0	J.G. Wentworth XXXVII LL-HENDR 2016-1A B			4	3AM	5,107,031	.105	9817	5,299,085	5,105,008					5.190	4.936	MON	33,879		11/13/2018	06/17/2069
47714M-AA-7	JetBlue Airways Corporat Pass-Thru Ctf 2			1	2PL	1,815,479	.100	1010	1,815,479	1,815,479					6.780	6.779	JAJO	60,754	123,711	12/06/2006	01/15/2019
47715*-AA-5	JetBlue Airways Corporat Pass Thru Certi			1	1PL	28,971,924	.100	7152	29,179,131	28,971,924					4.420	4.419	MS	412,625	817,578	03/05/2014	03/05/2023
48122H-AB-0	JP Morgan Student Loan T-SERIES 2007-A C			4	1FE	4,224,477	.95	5243	4,233,863	4,432,238					2.859	4.173	MJSD	64,587	110,249	02/05/2017	06/28/2039
48275P-AE-1	KREF 2018-FL1 Ltd-KREF 2018-FL1 B			4	1FE	6,650,000	.98	2657	6,534,669	6,650,000					3.902	3.849	MON	24,507		11/07/2018	06/15/2036
48275P-AG-6	KREF 2018-FL1 Ltd-KREF 2018-FL1 C			4	1FE	4,770,000	.98	0224	4,675,667	4,770,000					4.302	4.246	MON	19,381		11/07/2018	06/15/2036
48275P-AJ-0	KREF 2018-FL1 LTD-KREF 2018-FL1 D			4	2AM	3,430,000	.97	8206	3,355,247	3,430,000					4.852	4.791	MON	15,718		11/07/2018	06/15/2036
49255P-AA-1	Kestrel Aircraft Funding-KSTRL 2018-1A A			4	1FE	27,210,070	.97	1788	27,210,070	28,000,000					4.250	4.720	MON	56,194		12/11/2018	12/15/2038
49326B-AU-0	KEYCORP STUDENT LOAN TRU-SERIES 1999-B C			4	1FE	2,664,211	.100	1128	3,308,371	3,304,645					3.589	9.157	FMAN	109,422	115,792	01/01/2013	11/25/2036
49326B-AW-6	KEYCORP STUDENT LOAN TRU-SERIES 2000-A C			4	1FE	343,091	.99	6865	358,131	359,257					3.009	3.344	FMAN	1,081	8,577	05/03/2013	05/25/2029
49326B-BW-5	KEYCORP STUDENT LOAN TRU-SERIES 2004-A C			4	1FE	1,614,324	.92	5140	1,686,948	1,823,451					2.939	4.748	JAJO	22,284	47,879	04/18/2013	01/27/2043
49326B-BZ-8	KEYCORP STUDENT LOAN TRU-SERIES 2004-A C			4	1FE	486	.100	0165	573	572					3.039	4.703	JAJO	3	(4,317)	12/02/2013	01/27/2042
49326B-CL-8	KEYCORP STUDENT LOAN TRU-SERIES 2005-A C			4	1AM	689,837	.93	4742	1,661,479	689,837					4.122	4.122	MJSD	1,018	62,876	06/07/2007	12/27/2038
49327H-AG-0	KEYCORP STUDENT LOAN TRU-SERIES 2006-A C			4	1FE	1,315,546	.100	0081	1,467,612	1,467,493					3.132	3.481	MJSD	638	26,881	01/16/2015	09/27/2035
50543L-AA-0	LABRADOR AVIATION FINANC-SERIES 2016-1A			4	1FE	39,168,840	.101	9212	40,711,251	39,943,854					4.300	4.578	MON	76,337	1,712,165	12/08/2016	01/15/2042
54627R-AG-5	LOUISIANA ST LOCAL GOVT -SERIES 2010-EGS			4	1FE	2,263,860	.101	5590	2,031,180	2,068,419					3.990	2.170	FA	33,250	79,800	01/01/2013	08/01/2024
55388P-AA-8	MVI OWNER TRUST-SERIES 15-1A CLASS A			4	1FE	2,534,673	.98	4737	2,496,171	2,534,820					2.520	2.521	MON	5,810	62,981	08/04/2015	12/20/2032
55388P-AB-6	MVI OWNER TRUST-SERIES 15-1A CLASS B			4	2AM	351,992	.98	3834	346,373	352,048					2.960	2.963	MON	960	10,331	08/04/2015	12/20/2032
56602H-AA-8	Marbeth Lease Fin Trust Pass-Thru Ctf			2	2	8,318,080	.107	8384	8,547,678	7,926,377					8.550	7.917	MON	83,839	673,280	04/14/2005	11/17/2022
57165A-AA-6	MARRIOTT VACATION CLUB 0-SERIES 2012-1A			4	1FE	12,230	.99	4000	11,958	12,030					2.510	1.984	MON	46	306	12/02/2013	05/20/2030
61205P-AL-3	MONTANA HIGHER EDUCATION-SERIES 12-1 CLA			4	1FE	22,618,750	.100	1305	23,530,677	23,500,000					3.520	4.493	MON	231,339	718,160	10/28/2016	07/20/2043
61946E-AA-6	MOSAIC SOLAR LOANS LLC-SERIES 17-1A CLAS			4	1FE	8,852,244	.100	7411	8,920,405	8,854,780					4.450	4.505	MON	12,040	390,632	01/26/2017	06/20/2042
61946G-AA-1	MOSAIC SOLAR LOANS 2017-2017-2A CLASS A			4	1FE	7,288,563	.100	6063	7,333,702	7,289,505					3.820	3.842	MON	8,508	275,901	10/17/2017	06/22/2043
61946G-AB-9	MOSAIC SOLAR LOANS 2017-2017-2A CLASS B			4	3AM	2,979,536	.100	8518	2,972,559	2,973,870					4.770	4.546	MON	4,296	140,473	11/30/2017	06/22/2043
61946G-AB-9	MOSAIC SOLAR LOANS 2017-2017-2A CLASS B			4	2AM	1,669,827	.100	8518	1,684,450	1,668,645					4.770	4.794	MON	2,434	79,670	10/17/2017	06/22/2043
61946L-AA-0	Mosaic Solar Loan Trust -MISAIC 2018-2GS			4	1FE	6,349,198	.99	8599	6,408,394	6,417,382					4.200	4.356	MON	8,236	22,461	12/17/2018	02/22/2044
62942Q-BH-5	NEW RESIDENTIAL ADVANCE -SERIES 16-T3 CL			4	1FE	48,299,976	.98	6504	47,648,158	48,300,000					2.833	2.840	MON	60,819	1,368,436	10/14/2016	10/16/2051
62970E-AA-2	NYC-DEA LEASE FIN TR PASS THRU CTF-GEN S			2	1FE	138,574,398	.95	8137	132,773,258	138,574,398					3.750	3.750	MON	303,131	5,188,774	08/13/2014	06/10/2031
63080F-AA-5	NARA Caves Lease Trust Lease Backed Ce			1	1	7,508,013	.108	7103	8,161,984	7,508,013					5.300	5.300	MON	17,686	396,575	06/03/2010	09/15/2028
63543V-AJ-2	NATIONAL COLLEGIATE STUD-SERIES 2006-3 C			4	6FE		.00	0010	2,000,000						3.656	0.000	MON	109,108	63,380	09/15/2006	03/25/2032
63543W-AH-4	NATIONAL COLLEGIATE STUD-SERIES 2006-4 C			4	6FE		.00	0010	1,000,000						3.606	0.000	MON	53,534	31,183	11/29/2006	05/25/2032
63543X-AH-2	NATIONAL COLLEGIATE STUD-SERIES 2007-1 C			4	6FE		.00	0010	2,000,000						3.656	0.000	MON	109,108	63,380	03/02/2007	01/25/2034
63890F-AA-1	NationsBank Trust Compan Equipment Trust			2	2	1,788,968	.103	7138	1,747,023	1,684,466					8.880	7.981	JD	257,329	249,365	08/14/2000	12/21/2019
63890B-AC-0	Navigent Student Loan Tru-NAVSL 2018-EA B			4	1Z	8,429,471	.103	9822	8,765,695	8,429,037					4.440	4.396	MON	47,828		11/06/2018	12/15/2059
63938E-AD-6	NAVIENT STUDENT LOAN TRU-SERIES 2014-1 C			4	1FE	3,652,031	.99	1422	3,940,904	3,975,000					3.256	4.487	MON	2,157	109,995	11/06/2015	02/25/2039
63938E-AE-4	NAVIENT STUDENT LOAN TRU-SERIES 2014-1 C			4	1FE																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
63940L-AC-8	NAVIENT STUDENT LOAN TRU-SERIES 2016-6A			4	1FE	65,300,000	102.1467	66,701,808	65,300,000	65,300,000					3.806	3.738	MON	41,425	2,168,656	10/12/2016	03/25/2066
63940V-AD-6	Navient Private Educatio-SERIES 18-DA CL			4	1FE	14,993,829	104.1482	15,622,233	15,000,000	14,994,046		217			4.570	4.576	MON	30,467	95,208	10/18/2018	12/15/2059
63940V-AC-6	Navient Private Educatio-NAVSL 2018-CA B			4	1FE	15,799,147	101.6955	16,067,883	15,800,000	15,832,744		33,597			4.220	4.189	MON	29,634	257,443	07/18/2018	06/16/2042
63941D-AD-3	Navient Student Loan Tru-NAVIENT STUDENT			4	1FE	8,900,000	98.6865	8,783,101	8,900,000	8,900,000					3.656	4.165	MON	93,052	127,074	03/20/2018	03/25/2067
63941N-AD-1	Navient Student Loan Tru-NAVSL 2018-4A B			4	1FE	10,200,000	98.6347	10,060,736	10,200,000	10,200,000					3.806	3.806	MON	71,649	30,729	09/10/2018	06/27/2067
64031A-AJ-5	NELNET STUDENT LOAN TRUS-SERIES 2006-3 C			4	1FE	4,812,743	93.9517	4,886,447	5,201,021	4,981,340					3.072	4.631	MJSD	2,663	128,310	09/19/2014	06/25/2041
64031C-AB-8	NELNET STUDENT LOAN TRUS-SERIES 2012-2A			4	1FE	8,374,813	94.4804	8,881,153	9,400,000	8,791,794					3.506	5.323	MON	49,701	282,186	08/18/2014	11/25/2036
64031Q-BR-1	NELNET STUDENT LOAN TRUS-SERIES 2005-1 C			4	1FE	8,841,705	98.6506	9,200,627	9,326,481	9,196,079					2.600	4.607	JAJO	45,801	211,163	08/27/2015	10/25/2033
64031Q-BX-8	NELNET STUDENT LOAN TRUS-SERIES 2005-2 C			4	1FE	7,351,798	98.9957	7,781,316	7,860,259	7,703,901					2.924	4.919	MJSD	146,758	181,355	03/28/2016	03/23/2037
64031Q-CX-5	NELNET STUDENT LOAN TRUS-SERIES 2005-4 C			4	1AM	4,608,563	98.4219	5,430,424	5,517,498	5,158,616					0.000	6.744	MJSD	235,800	207,809	02/02/2012	03/22/2032
64031Q-CM-1	NELNET STUDENT LOAN TRUS-SERIES 2005-4 C			4	1AM	3,261,949	98.4219	4,001,365	4,065,525	3,506,777					1.526	1.994	MON	791,518	223,136	01/19/2012	03/22/2032
64032A-AB-1	NELNET STUDENT LOAN TRUS-SERIES 2012-1A			4	1FE	3,330,625	95.2263	3,475,759	3,650,000	3,650,000					3.506	4.152	MON	9,212	109,570	07/22/2014	06/25/2042
64032F-AH-7	Nelnet Student Loan Trus-SERIES 2007-2A			4,5	1FE	2,807,000	99.3515	3,377,949	3,400,000	3,059,627					1.977	8.462	MON	24,086	103,241	02/29/2012	06/25/2035
64033J-AB-1	NELNET STUDENT LOAN TRUS-SERIES 2014-1A			4	1FE	5,187,741	100.0713	5,603,990	5,600,000	5,381,839					4.006	5.353	MON	34,742	196,500	07/09/2014	10/25/2047
64033K-AB-8	NELNET STUDENT LOAN TRUS-SERIES 2014-3A			4	1FE	2,991,148	99.3076	3,217,567	3,240,000	3,240,000					4.006	4.709	MON	2,163	114,173	04/24/2014	10/25/2050
64033L-AD-2	NELNET STUDENT LOAN TRUS-SERIES 2014-2A			4	1FE	8,067,428	100.1874	8,365,645	8,350,000	8,202,337					4.006	5.007	MON	13,469	153,588	11/08/2018	06/25/2041
64033N-AB-2	NELNET STUDENT LOAN TRUS-SERIES 2014-5A			4	1FE	4,384,374	100.5475	4,776,007	4,750,000	4,478,990					4.006	5.572	MON	14,364	166,671	06/13/2014	05/26/2054
64033O-AC-3	NELNET STUDENT LOAN TRUS-SERIES 2015-2A			4	1FE	1,628,752	92.7339	1,715,578	1,850,000	1,698,086					4.006	6.259	MON	61,820	65,173	03/13/2015	05/26/2054
64033T-AB-9	NELNET STUDENT LOAN TRUS-SERIES 2015-3A			4	1FE	1,872,600	99.5454	2,140,225	2,150,000	1,948,127					4.006	5.951	MON	6,502	75,441	05/21/2015	06/25/2054
64034A-AD-5	Nelnet Student Loan Trus-NSLT 2018-3A B			4	1FE	7,385,450	98.5029	7,387,717	7,500,000	7,411,113					3.706	4.568	MON	46,338	66,528	07/17/2018	09/27/2066
64034B-AB-7	Nelnet Student Loan Trus-NSLT 2018-5A B			4	1FE	11,500,000	99.9692	11,496,460	11,500,000	11,500,000					3.837	3.786	MON	23,288	23,288	12/06/2018	02/25/2067
64034D-AB-3	Nelnet Student Loan Trus-NSLT 2018-4 B			4	1FE	11,300,000	100.0357	11,304,031	11,300,000	11,300,000					3.906	3.906	MON	68,400	71,962	08/27/2018	10/25/2066
64034J-AB-0	NELNET PRIVATE EDUCATION-NPELT 2016-A A1			4	1FE	22,762,551	98.7617	22,631,571	22,915,336	22,856,336					3.900	3.741	MON	86,428	786,383	12/15/2016	12/26/2040
64034J-AC-8	NELNET PRIVATE EDUCATION-SERIES 2016-A C			4	1FE	11,819,729	96.8313	11,595,552	11,975,000	11,900,786					5.350	5.482	MON	105,990	640,662	12/15/2016	12/28/2043
65341K-AJ-5	NEXTGEAR FLOORPLAN MASTE-SERIES 2016-1A			4	1FE	4,606,469	100.3653	4,616,802	4,600,000	4,600,000					4.155	4.422	MON	16,024	171,408	06/02/2016	04/15/2021
658262-FX-3	NORTH CAROLINA STATE EDU-SECURED			4	1FE	742,584	99.9440	765,492	765,921	765,757					3.390	4.086	JAJO	8,190	23,659	12/03/2015	07/25/2041
658262-GD-6	NORTH CAROLINA STATE EDU-SERIES 2011-2 C			4	1FE	3,617,125	100.9080	3,834,504	3,800,000	3,750,769					3.290	4.271	JAJO	23,614	114,081	08/05/2015	07/25/2036
66704J-AC-2	NORTHSTAR EDUCATION FINA-SERIES 00-1 CLA			4	1FE	1,676,750	87.3819	1,660,256	1,900,000	1,714,997					2.620	4.443	MON	12,307	59,631	09/18/2017	11/01/2040
66704J-AY-4	NORTHSTAR EDUCATION FINA-SERIES 2004-1 C			4	1FE	24,224,625	90.3629	24,804,616	27,450,000	24,767,880					2.231	4.449	MON	202,435	738,479	09/18/2017	12/01/2044
66704J-BD-9	NORTHSTAR EDUCATION FINA-SERIES 04-2 CLA			4	1FE	18,664,875	89.2640	18,879,336	21,150,000	19,113,458					2.448	4.447	MON	389,149	619,533	09/18/2017	12/28/2044
66704J-BK-3	NORTHSTAR EDUCATION FINA-SERIES 05-1 CLA			4	1FE	16,061,500	88.9860	16,195,454	18,200,000	16,555,191					0.000	4.342	JAJO	426,816	541,804	09/18/2017	10/30/2045
66704J-BW-7	Northstar Education Fina-NEF 2007-1 A4			4	1FE	9,506,188	99.2764	9,704,272	9,775,000	9,548,085					3.563	3.694	MON	155,821	7,126	07/25/2018	01/29/2046
66704J-BX-5	NORTHSTAR ED FIN INC DEL 2007-1 STUDENT			4,5	1FE	328,000	99.2760	397,104	400,000	351,025					4.022	5.294	MON	3,564	12,946	12/02/2013	01/29/2046
66704J-CB-2	NORTHSTAR EDUCATION FINA-SERIES 07-1 CLA			4	1FE	26,298,500	85.0777	25,353,158	29,800,000	27,013,508					2.448	4.417	MON	192,508	906,013	09/18/2017	01/28/2047
66705R-AA-7	NORTHSTAR EDUCATION FINA-NEF 2016-1 A			4	1FE	3,996,130	101.0378	4,228,548	4,185,114	4,145,746					3.756	4.938	MON	96,036	123,574	08/26/2016	05/27/2036
667294-AM-4	NORTHWEST AIR 1999-2 A-FIRST LIEN			2	1FE	15,094	99.0670	14,448	14,584	14,584					7.575	2.717	MS	921	1,105	08/02/2016	03/01/2019
667294-AT-9	Northwest Airlines 2000-2000-1 CLASS G			2	2FE	4,781,741	99.3100	4,370,145	4,400,509	4,400,509					7.150	4.686	AO	78,659	253,245	05/07/2007	10/01/2019
67109Y-AN-4	Oak Hill Credit Partners-SERIES 15-12A C			4	1FE	10,000,000	97.8339	9,783,390	10,000,000	10,000,000					3.777	3.777	JAJO	73,445	125,251	06/06/2018	07/23/2030
68504T-AA-2	ORANGE LAKE TIMESHARE TR-SER 2015-AA CL			4	1FE	3,343,845	98.1699	3,283,187	3,344,391	3,344,176					2.880	2.883	MON	6,154	93,786	10/21/2015	09/08/2027
68784U-AE-2	OSCAR US FUNDING TRUST-OSCAR 2016-2A AA			4	1FE	18,465,046	99.0676	18,297,786	18,470,000	18,483,815					2.990	2.986	MON	24,545	552,253	09/14/2016	12/15/2023
69144Y-AA-5	OXFORD FINANCE FUNDING T-SERIES 2016 1A			4	1FE	7,962,479	100.3098	7,987,146	7,962,479	7,962,479					3.968	3.968	MON	14,042	311,477	06/07/2016	06/17/2024
69338R-AA-6	PENNSYLVANIA HIGHER EDUC-SERIES 2011-1A			4	1FE	581,696	101.5951	599,975	590,555	590,555					3.473	4.256	MJSD	342	19,604	12/30/2015	06/25/2038
69340Q-AB-2	PENNSYLVANIA HIGHER EDUC-SERIES 2015-1A			4	1FE	2,141,361	93.9409	2,329,734	2,480,000	2,392,246					3.815	4.825	MON	1,577	87,312	04/17/2015	04/25/2045
69847R-AA-0	PANHANDLE-PLAINS TX STUD-SERIES 2001-1 C			4,5	1FE	690,375	99.2880	695,016	700,000	697,283					2.100	4.748	MON	4,235	11,955	05/30/2014	12/01/2031
709163-GJ-2	PENNSYLVANIA ST HGR EDU -SERIES 2006 CL			1,5	1FE	1,215,625	98.0560	1,225,700	1,250,000	1,237,441					2.890	6.052	MON	7,478	31,018	05/30/2013	10/25/2042
72349C-AA-0	CROWN CASTLE-SERIES 2009-1CLASS A1			4	1FE	2,483,041	100.3700	2,492,229	2,483,041	2,483,041					6.250	6.250	MON	12,932	133,497	07/17/2009	08/01/2020
72349C-AB-8	CROWN CASTLE-SERIES 2009-1CLASS A2			4	1FE	16,550,000	103.0010	17,046,666	16,550,000												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
78442G-EW-2	SLM STUDENT LOAN TRUST-SERIES 2002-7 CLA			4	1FE	819,405	.99	866,800	867,095	864,025		7,526			2.990	5.766	MON	46,098	27,217	08/22/2011	03/15/2028
78442G-EW-2	SLM STUDENT LOAN TRUST-SERIES 2002-7 CLA			4	1FE	34,095	.99	34,084	34,095	34,095					2.990	5.613	MON	1,813	103	12/02/2013	03/15/2028
78442G-EX-0	SLM STUDENT LOAN TRUST-SERIES 2002-7CLAS			4	1FE	265,975	.99	266,830	267,000	267,000		(1,910)			3.014	3.334	MON	19,247		12/02/2013	03/15/2028
78442G-EX-0	SLM STUDENT LOAN TRUST-SERIES 2002-7CLAS			4	1FE	5,167,588	.99	5,229,664	5,233,000	5,144,010		(40,723)			3.014	3.839	MON	377,220	169,852	08/20/2015	03/15/2028
78442G-FU-5	SLM STUDENT LOAN TRUST-SERIES 2003-2 CLA			4	2AM	3,884,000	102.8304	4,216,047	4,100,000	4,058,558		14,688			2.640	5.770	MON	193,629	109,743	09/15/2011	09/15/2028
78442G-FV-3	SLM STUDENT LOAN TRUST-SERIES 2003-2CLAS			4	2AM	46,375	102.8304	51,415	50,000	49,207		219			1.200	5.901	MON	1,172	690	09/15/2011	09/15/2028
78442G-FW-1	SLM STUDENT LOAN TRUST-SERIES 2003-2 CLA			4	2AM	1,100,625	102.8304	1,182,550	1,150,000	1,140,473		3,173			2.960	5.729	MON	44,782	34,513	09/15/2011	09/15/2028
78442G-GM-2	SLM STUDENT LOAN TRUST 2003-4 LN BKD CTF			4	1AM	2,390,513	.96	2,457,757	2,535,172	2,436,558		27,142			3.438	4.639	MJSD	3,632	57,358	08/01/2018	06/15/2038
78442G-GT-7	SLM STUDENT LOAN TRUST-SERIES 2003-5 CLA			4	2AM	276,000	102.6454	307,936	300,000	294,652		1,541			2.939	5.109	MON	12,246	8,939	09/15/2011	06/15/2030
78442G-GU-4	SLM STUDENT LOAN TRUST-SERIES 2003-5 CLA			4	2AM	99,630	102.7448	102,745	100,000	100,000		49			2.705	4.785	MON	4,478	2,743	12/02/2013	06/15/2030
78442G-GV-2	SLM STUDENT LOAN TRUST-SERIES 2003-5 CLA			4	2AM	138,000	102.6454	153,968	150,000	147,577		806			3.621	5.079	MON	5,023	6,167	09/15/2011	06/17/2030
78442G-GW-0	SLM STUDENT LOAN TRUST-SERIES 2003-5 CLA			4	2AM	300,000	102.6465	307,940	300,000	300,000					2.931	2.932	MON	12,799	9,623	12/02/2013	06/15/2030
78442G-HH-2	SLM STUDENT LOAN TRUST-SERIES 2003-7A CL			4	2AM	393,770	100.5345	395,875	393,770	393,770					3.988	3.626	MJSD	654	13,314	04/28/2015	12/15/2033
78442G-KD-7	SLM STUDENT LOAN TRUST-SERIES 2003-12 CL			4	1AM	1,499,772	.93	1,592,727	1,652,321	1,571,160		25,970			3.378	4.753	MJSD	2,326	45,731	03/31/2015	03/15/2038
78442G-KN-5	SLM STUDENT LOAN TRUST-SERIES 2003-14 CL			4	1FE	2,341,615	.99	2,442,798	2,448,748	2,434,116		24,111			2.790	3.738	JAJO	12,904	60,939	08/14/2015	07/25/2025
78442G-KW-5	SLM STUDENT LOAN TRUST-SERIES 2004-1 CLA			4	1FE	1,820,000	.99	1,995,959	2,000,000	1,899,995		21,447			3.240	4.517	JAJO	12,240	59,029	12/02/2015	07/25/2039
78442G-LJ-3	SLM STUDENT LOAN TRUST-SERIES 2004-3 C			4	1FE	2,540,769	.94	2,829,716	2,980,374	2,713,709		61,480			2.960	5.423	JAJO	16,663	78,246	10/22/2015	10/25/2064
78442G-PD-2	SLM STUDENT LOAN TRUST-SERIES 2005-3 CLA			4	1FE	5,290,594	.92	5,039,955	6,412,841	5,698,687		145,776			2.640	5.486	JAJO	31,977	149,286	07/30/2015	04/25/2040
78442G-PL-4	SLM STUDENT LOAN TRUST-SERIES 2005-4 CLA			4	1FE	10,322,894	.94	10,801,635	11,399,250	10,643,801		202,642			2.670	4.664	JAJO	57,488	266,652	01/26/2017	07/25/2055
78442G-PQ-3	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLA			4	1FE	12,542,155	.99	13,315,340	13,414,069	13,203,891		169,617			2.630	4.016	JAJO	66,635	309,155	09/23/2015	10/25/2028
78442G-PR-1	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLA			4	1FE	1,499,772	.99	1,620,341	1,730,717	1,745,000		19,159			3.240	4.495	JAJO	10,679	51,502	12/02/2016	10/25/2040
78442G-PS-9	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLA			4	1FE	12,180,732	.90	12,532,451	13,810,297	12,784,962		255,689			2.740	4.873	JAJO	71,473	332,219	03/14/2017	10/25/2040
78442G-QA-7	SLM STUDENT LOAN TRUST-SERIES 2005-6 CLA			4	1FE	15,034,715	.95	15,469,911	16,450,723	15,586,143		257,436			2.780	4.509	JAJO	86,381	402,734	04/03/2017	01/25/2044
78442G-QL-3	SLM Student Loan Trust 2-SLMA 2005-7 B			4	1FE	4,783,991	.94	4,740,350	5,029,163	4,804,984		20,933			2.800	4.457	JAJO	26,598	33,998	08/01/2018	01/25/2040
78442G-QT-6	SLM STUDENT LOAN TRUST-SERIES 2005-8 CLA			4	1FE	5,067,437	.95	5,282,211	6,050,672	5,499,313		131,682			2.800	5.375	JAJO	32,000	149,225	07/30/2015	01/25/2055
78442G-RC-2	SLMA 2005-9 STUDENT LN-BKD NT CL B			4	1FE	5,457,202	.95	6,584,183	6,877,702	5,938,666		180,956			2.790	6.163	JAJO	63,034	171,218	08/03/2016	01/25/2041
78442G-RX-6	SLM STUDENT LN TR 2006-2 LN BKD NT CL A-			4	1FE	10,047,683	.97	10,865,113	11,198,922	10,520,898		177,792			2.660	4.447	JAJO	56,266	263,696	07/19/2016	01/25/2041
78442G-RY-4	SLM STUDENT LOAN TRUST-SERIES 2006-2 CLA			4	1FE	2,622,998	.93	2,812,898	2,996,300	2,774,680		52,475			2.710	4.711	JAJO	15,337	71,425	01/30/2015	01/25/2041
78442G-SL-1	SLM Student Loan Trust 2-SERIES 06-4 CLA			4	1FE	5,706,515	.95	5,793,078	6,095,076	5,797,321		88,686			2.690	4.286	JAJO	30,968	143,884	12/01/2017	01/25/2070
78443B-AK-2	SLM STUDENT LOAN TRUST-SERIES 2006-10 CL			4	1FE	1,784,672	.94	1,906,443	2,022,107	1,898,923		36,668			2.710	4.866	MJSD	10,350	48,054	01/29/2015	03/25/2044
78443F-AF-4	SLM STUDENT LOAN TRUST-SERIES 2007-5 CLA			4	1FE	7,945,574	.96	8,918,038	9,226,249	8,460,655		179,672			2.600	4.910	JAJO	45,309	211,562	12/30/2015	01/26/2043
78443G-AG-0	SLM STUDENT LOAN TRUST-SERIES 2006-7 CLA			4	1FE	4,329,250	.99	5,012,733	5,050,000	4,812,011		79,027			1.980	5.422	MON	88,325	135,236	09/15/2011	01/27/2042
78443G-AH-8	SLM STUDENT LOAN TRUST-SERIES 2006-7 CLA			4	1FE	171,000	.99	198,524	200,000	190,907		3,101			1.720	5.392	MON	4,787	3,488	08/27/2009	01/27/2042
78443G-AJ-4	SLM STUDENT LOAN TRUST 2-SERIES 06-7 CLA			4	1FE	10,794,022	.95	11,045,606	11,560,367	10,941,399		139,177			2.690	4.429	JAJO	131,976	212,347	05/10/2018	01/27/2042
78443K-AK-2	SLM STUDENT LOAN TRUST 2-SERIES 06-9 CLA			4	1FE	5,207,794	.95	5,274,308	5,550,642	5,291,202		77,477			2.720	4.308	JAJO	74,935	115,929	11/02/2017	01/25/2041
78444C-AE-3	SLM STUDENT LOAN TRUST-SERIES 07-6 CLASS			4	1FE	8,955,469	.99	9,971,710	10,000,000	9,316,911		145,109			2.980	4.731	JAJO	281,230	268,782	07/19/2016	04/27/2043
78444E-AE-9	SLM Student Loan Trust 2-SERIES 2007-7 C			4	3AM	6,234,375	.93	6,212,822	6,650,000	6,353,811		119,436			3.240	5.481	JAJO	174,492		02/14/2018	10/27/2070
78446C-AB-7	SLM STUDENT LOAN TRUST-SERIES 2013-2 CLA			4	1FE	6,338,632	101.7788	7,104,157	6,980,000	6,659,776		74,427			4.006	5.257	MON	4,661	246,226	12/08/2015	06/25/2043
78446D-AC-3	SLM STUDENT LOAN TRUST-SERIES 2011-A CLA			4	1FE	4,554,411	101.3608	4,567,784	4,506,459	4,566,585		(13,176)			4.955	4.430	MON	9,304	204,245	02/25/2016	01/15/2043
78447M-AD-0	SLM STUDENT LOAN TRUST-SERIES 2013-1 CLA			4	1FE	18,475,620	101.5146	19,552,727	19,261,000	19,261,000					4.306	5.022	MON	13,824	738,034	01/10/2017	11/25/2070
78447Y-AD-4	SLM STUDENT LOAN TRUST-SLMA 2013-3 B			4	1FE	8,745,881	100.0964	8,921,591	8,913,000	8,906,411		68,985			4.006	4.742	MON	5,951	314,080	03/03/2017	09/25/2076
78448A-AD-5	SLM STUDENT LOAN TRUST-SERIES 2013-4 CLA			4	1FE	3,202,004	100.0027	3,200,086	3,200,000	3,200,000					4.006	4.744	MON	2,137	112,883	08/03/2016	12/28/2070
78448B-AD-3	SLM STUDENT LOAN TRUST-SERIES 2013-5 CLA			4	1FE	1,601,486	.95	1,631,739	1,700,000	1,700,000					4.006	4.740	MON	1,135	59,969	09/11/2013	06/27/2044
78448C-AH-2	SLM STUDENT LOAN TRUST-SERIES 2013-6 CLA			4	1FE	1,318,152	.96	1,344,268	1,400,000	1,342,972		14,216			4.006	5.178	MON	10,824	49,386	11/06/2013	07/26/2083
78448P-AD-2	SMB PRIVATE ED LOAN TR 2015-A LN BKD C			4	1FE	5,318,906	102.0255	5,713,427	5,600,000	5,510,181		61,191			3.955	5.105	MON	9,229	197,315	01/27/2016	02/17/2032
78448Q-AD-0	SMB PRIVATE EDUCATION LO-SMB 2015-B A3			4	1FE	11,825,438	102.3915	12,066,837	11,785,000	11,973,198		44,253			4.205	4.481	MON	20,649	145,114	05/18/2016	05/17/2032
78448R-AD-8	SMB PRIVATE ED LN TR 2015-C LN BKD NT CL																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
78490D-AC-8	Sofi Professional Loan P-SERIES 2018 CLA			4	1FE	17,548,257		102,4524	17,980,396	17,577,539			29,281		4.130	4.107	MON	12,080	271,806	08/07/2018	01/25/2048
80284B-AG-9	Santander Drive Auto Rec-SDART 2015-2 D			4	1FE	500,179		99,9357	500,000	500,123			(55)		3.020	2.969	MON	671	2,643	10/04/2018	04/15/2021
80285E-AF-4	Santander Drive Auto Rec-SDART 2016-1 C			4	1FE	963,933		99,9743	962,324	962,572			(484)		3.090	2.837	MON	1,322	4,887	10/04/2018	04/15/2021
80285L-AD-3	Santander Drive Auto Rec-SDART 2017-2 B			4	1FE	1,226,423		99,7248	1,226,615	1,230,000			1,453		2.210	2.755	MON	1,208	4,757	10/04/2018	10/15/2021
80285L-AF-8	Santander Drive Auto Rec-SDART 2017-2 D			4	2AM	199,309		99,4740	198,948	200,000			64		3.490	3.648	MON	310	1,222	10/04/2018	07/17/2023
82652H-AB-7	SIERRA TIMESHARE 2015-2 REC FNDG-LN BKD			4	2AM	1,090,480		98,4449	1,073,755	1,090,717			56		3.020	3.025	MON	3,328	32,821	07/08/2015	06/20/2032
82652J-AA-5	SIERRA RECEIVABLES FUNDI-SERIES 15-3A CL			4	1FE	2,404,743		98,9887	2,380,884	2,405,209			117		2.580	2.584	MON	1,896	60,999	10/14/2015	09/20/2032
82652W-AB-4	SIERRA RECEIVABLES FUNDI-SERIES 16-2A CL			4	2AM	718,372		97,5409	700,746	718,412			12		2.780	2.782	MON	610	19,571	07/11/2016	07/20/2033
82652X-AB-2	SIERRA RECEIVABLES FUNDI-SERIES 16-1A CL			4	3AM	1,047,737		99,7778	1,045,646	1,047,974			(7,748)		3.670	2.946	MON	1,175	37,709	03/15/2016	03/21/2033
83149E-AG-2	SLM STUDENT LN TR 2006-5-NOTE CL B			4	1FE	12,305,723		94,6576	13,544,533	14,308,980			294,116		2.700	5.490	JAJJ	72,973	350,210	09/28/2016	10/25/2040
83149E-AG-2	SLM STUDENT LN TR 2006-5-NOTE CL B			4	1FE	6,018,068		94,6576	6,055,447	6,114,749			79,705		2.700	4.296	JAJJ	32,624	140,221	11/02/2017	10/25/2040
83149F-AD-6	SLMIA 2006 6 NT CL B			4	1FE	5,496,667		94,3961	6,644,321	7,038,771			200,549		2.700	6.422	JAJJ	35,896	166,568	03/09/2016	01/25/2070
83189D-AD-2	SMB PRIVATE EDUCATION LO-SMB 2017-B B			4	1FE	5,322,729		97,5814	5,230,361	5,360,000			1,128		3.500	3.546	MON	8,338	187,600	10/31/2017	12/16/2041
83367E-AB-7	Societe Generale Financi Lease Backed No			2	1	3,889,932		104,9671	3,889,149	3,889,932			3,889,932		6.280	6.277	FA	240,895	252,770	08/21/2007	08/21/2022
834014-AB-8	SOCIAL PROFESSIONAL LOAN-SERIES 2014-B C			4	1FE	580,514		99,3570	576,955	580,688			46		2.550	2.556	MON	1,618	14,675	11/05/2014	08/27/2029
834016-AB-3	SOCIAL PROFESSIONAL LOAN-SERIES 2015-C C			4	1FE	1,368,502		98,5652	1,356,313	1,376,056			122		2.510	2.683	MON	32,786	32,786	07/29/2015	08/25/2033
83401A-AC-2	Sofi Professional Loan P-SOFI 2018-D BFX			4	1FE	11,898,840		102,9000	12,245,101	11,900,000			185		4.140	4.141	MON	8,211	128,639	09/18/2018	02/25/2048
83401L-AA-2	SOCIAL PROFESSIONAL LOAN-SERIES 2015-A C			4	1FE	428,679		100,8112	432,156	428,679					3.706	3.089	MON	7,296	15,038	01/23/2015	03/25/2033
83401L-AB-0	SOCIAL PROFESSIONAL LOAN-SERIES 2015-A C			4	1FE	531,655		99,0160	526,503	531,735			23		2.420	2.424	MON	214	12,726	01/23/2015	03/25/2030
83402D-AD-3	SOCIAL PROFESSIONAL LOAN-SERIES 16-C CLA			4,5	1FE	3,918,731		98,5860	3,864,573	3,920,299			(36)		3.350	3.349	MON	2,189	131,320	08/23/2016	05/25/2037
83402J-AC-2	SOCIAL PROFESSIONAL LOAN-SOFI 2016-B A2B			4	1FE	15,471,204		99,1051	15,334,258	15,472,729			268		2.740	2.742	MON	7,066	422,422	05/20/2016	10/25/2032
83402Q-AA-0	SOFI CONSUMER LOAN PRGR-SCLP 2016-2A A			4	1FE	3,630,062		99,7896	3,622,569	3,630,209			(4,284)		3.090	3.029	MON	1,870	110,354	08/03/2016	10/27/2025
83404Y-AA-1	SOFI CONSUMER LOAN PRGR-SERIES 16-5 CLA			4	1FE	16,918,456		99,4734	16,886,857	16,976,249			1,022		3.060	3.076	MON	8,658	512,853	11/16/2016	09/25/2028
83405P-AA-9	SOFI CONSUMER LOAN PRGR-SERIES CLASS			4	1FE	17,938,485		99,7439	17,922,457	17,968,469			(4,038)		3.280	3.220	MON	9,823	582,213	02/22/2017	02/25/2026
83546D-AD-0	SONIC CAPITAL LLC-SERIES 16-1A CLASS A2			4	2AM	9,948,287		101,4610	10,093,631	9,948,287					4.472	4.556	MON	52,903	446,303	04/12/2016	05/20/2046
83546D-AF-5	Sonic Capital LLC-SERIES 18-1A CLASS A2			4	2AM	3,597,000		98,7660	3,552,613	3,597,000					4.026	4.000	MON	4,425	128,322	01/23/2018	02/20/2048
83715A-AJ-8	SOUTH CAROLINA STUDENT L-SR UNSECURED			4	1FE	1,804,688		100,8020	1,890,038	1,875,000			16,223		3.540	4.332	JAJJ	12,537	61,042	12/03/2015	10/27/2036
83715R-AF-9	SOUTH CAROLINA STUDENT L-SERIES 14-1 CLA			4	1FE	9,566,797		101,2865	10,128,647	10,000,000			107,611		3.349	4.474	MON	26,980	302,226	07/12/2016	01/03/2033
83715R-AG-7	SOUTH CAROLINA STUDENT L-SERIES 2014-1 C			4	1FE	26,376,080		101,5297	27,062,728	26,655,000			117,900		3.849	4.673	MON	82,651	505,087	10/18/2018	08/01/2035
83715R-AH-5	SOUTH CAROLINA STUDENT L-SERIES 15-A CLA			4	1FE	1,884,666		100,7532	2,063,980	1,990,522			29,634		3.060	5.521	MON	5,943	72,133	11/20/2015	01/25/2036
840555-DA-1	SOUTH TX HIGHER ED AUTH REV SER 1 CL A-3			4	1FE	15,774,031		99,9621	16,317,980	16,325,000			16,262,686		3.246	4.093	JAJJ	135,421	502,114	01/22/2016	10/01/2046
84858*AA-5	Spirit Airlines Pass Through Trust 2017-			1	2FE	35,000,000		98,1250	34,343,750	35,000,000					5.110	5.113	AO	675,656	471,965	05/03/2018	04/01/2023
84858D-AA-6	SPIRIT AIR 2015-1 PTT A-SECURED			1	1FE	91,410		98,1800	91,410	91,410					4.100	4.100	AO	937	(6,610)	07/28/2015	04/01/2028
84858E-AA-4	SPIRIT AIR 2015-1 PTT B-SERIES 2015-1 CL			1	2FE	139,037		98,2200	132,456	134,857			138,309		4.450	3.489	AO	1,500	5,626	07/21/2017	04/01/2024
84860Y-AA-6	SPIRIT MASTER FUNDING LL-SERIES 2014-2A			4	1FE	6,990,077		103,1644	7,845,040	7,369,292			93,442		5.760	7.343	MON	110,721	438,466	05/20/2014	03/01/2041
84861C-AA-3	SPIRIT MASTER FUNDING LL-SERIES 2014-4A			4	1FE	7,435,585		99,5473	7,415,573	7,446,366			2,831		3.501	3.542	MON	65,295	260,843	11/21/2014	01/01/2045
84861C-AB-1	SPIRIT MASTER FUNDING LL-SERIES 2014-4A			4	1FE	6,095,077		100,8095	6,159,430	6,115,358			18,588		4.629	4.614	MON	72,706	283,614	11/21/2014	01/01/2045
85172L-AA-4	SPRINGLEAF FUNDING TRUST-SERIES 2015-AA			4	1FE	452,161		99,8621	451,628	452,251			16		3.160	3.166	MON	635	12,398	02/18/2015	11/15/2024
85746*DH-0	State Street Bank and Tr Equipment Note			2	2	105,4295		105,4295	460	436				7.410	0.000	JJ			07/02/2008	01/06/2022	
86212V-AE-4	Store Master Funding I-V-SERIES 18-1A CL			4	1FE	9,463,725		102,7968	9,732,063	9,467,286			103		4.290	4.298	MON	12,410	65,434	10/12/2018	10/20/2048
86212V-AG-9	Store Master Funding I-V-SERIES 18-1A CL			4	1FE	9,391,556		102,4716	9,624,300	9,392,167			54		4.740	4.745	MON	13,603	71,725	10/12/2018	10/20/2048
86213A-AA-7	STORE MASTER FUNDING LLC-SERIES 2013-3A			4	1FE	5,067,956		100,1565	5,049,990	5,052,099			(7,088)		4.240	4.088	MON	8,532	213,656	10/17/2014	11/20/2043
86213B-AA-5	STORE MASTER FUNDING LLC-SERIES 2014-1A			4	1FE	2,960,412		100,4416	2,973,636	2,960,466			38		4.210	4.211	MON	7,482	124,621	04/29/2014	04/20/2044
86365L-AA-9	STRUCTURED RECEIVABLES FIN LLC-SER 2010-			4	1FE	2,008,421		98,1650	1,973,361	2,010,250			87		3.730	3.749	MON	16,904	75,254	07/31/2013	08/15/2036
86386Y-AA-6	NELNET STUDENT LOAN TRUS-SERIES 2010-4A			4	1FE	17,435		100,7243	17,424	17,417			8		3.306	3.330	MON	10	481	12/02/2013	04/25/2046
86745J-AA-5	Helios Issuer LLC-SERIES 2018-1A CLASS A			4	1FE	21,391,438		99,6826	21,328,089	21,396,000			4,562		4.870	5.081	JJ	153,403		10/26/2018	07/20/2048
869507-AA-1	SUTTONPARK STRUCTURED SE-SERIES 17-1A CL			4	1FE	17,813,782		97,2254	17,328,193	17,822,709			641		4.190	4.197	MON	33,190	746,554	02/09/2017	01/15/2071
87342R-AB-0	TACO BELL FUNDING LLC-SERIES 2016-1A CLA			4	3AM	4,020,131		100,8340	4,037,419	4,014,064			(2,109)		4.377	4.312	FIAN	17,526	139,332	05/20/2016	05/25/2046
87342R-AC-8	TACO BELL FUNDING LLC-SERIES 2016-1A CLA			4	2AM	18,222,500		102,7													

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
875110-AE-7	TAMMAC MANU HSG CONTRACT TR 2007-1 CL M			4,5	6FE	647,075	70.5964	940,796	1,332,640	940,796	(68,793)				6.850	14.901	MON	24,074	91,769	02/26/2007	02/01/2030
88576N-AJ-7	321 HENDERSON RECV II LLC-ASSET BKD NT O			4	1FE	2,779,278	95.8959	2,925,162	3,050,351	2,907,069					2.655	4.389	MON	3,375	66,976	11/06/2015	03/15/2042
88576P-AE-3	321 HENDERSON RECEIVABLE-SERIES 05-1A CL			4	1FE	13,704,265	95.2314	13,792,091	14,482,711	14,060,137					2.685	4.285	MON	16,203	319,516	10/28/2016	11/15/2040
88606W-AA-0	Thunderbolt Aircraft Lea-SERIES 17-A CLA			4,5	1FE	8,062,031	101.5482	8,187,193	8,062,372	8,071,998					4.212	4.184	MON	15,093	337,314	04/25/2017	05/17/2032
89566E-AB-4	TRI-STATE-SERIES B PASS-SERIES B NOTE			1	1FE	4,445,000	117.2101	5,209,989	4,445,000	4,445,000					7.144	7.142	JJ	133,195	317,551	10/14/2003	07/31/2033
89655I-AA-4	TRINITY RAIL LEASING L-P-SERIES 2009-1A			4	1FE	371,433	110.7455	373,314	337,091	360,031					6.657	5.254	MON	935	22,408	01/26/2012	11/16/2039
89657A-AB-2	Trinity Rail Leasing LP-TRL 2018-1A A2			4	1FE	37,455,638	102.3730	38,369,408	37,480,000	37,442,821					4.620	4.633	MON	67,339	851,358	06/13/2018	06/17/2048
89679H-AA-3	TRITON CONTAINER FINANCE-SERIES 17-1A CL			4	1FE	26,895,814	98.6527	26,538,292	26,900,726	26,907,653					3.520	3.513	MON	110,163	945,854	06/07/2017	06/20/2042
89690E-AG-2	TRIP RAIL MASTER FUNDING-SERIES 17-1A CL			4	1FE	22,238,967	100.8488	22,428,775	22,240,000	22,188,383					3.736	3.784	MON	36,928	830,886	07/21/2017	08/15/2047
898810-AA-3	TUCSON FBI LEASE-BKD PASS THRU CTF ISSUE			1	1	19,472,996	100.4456	19,559,768	19,472,996	19,472,996					3.700	3.700	MON	32,022	718,643	09/12/2012	02/15/2032
90332U-AP-8	US AIRWAYS 2001-1C PASS-SERIES 2001-1 CL			2	2FE	2,493,794	106.6422	2,395,889	2,246,661	2,419,472					7.346	3.611	MS	46,303	148,384	08/10/2017	03/20/2022
90345W-AA-2	US AIRWAYS 2012-1A PTT-FIRST LIEN			1	1FE	72,814	106.6730	69,873	65,502	70,318					5.900	3.472	AO	966	3,759	12/15/2015	10/01/2024
90345W-AD-6	US AIRWAYS 2012-2A PTT-FIRST LIEN			1	1FE	558,774	103.5866	535,320	516,785	545,672					4.625	2.964	JD	25,760	23,901	10/20/2016	06/03/2025
90346W-AB-9	US AIRWAYS 2013-1B PTT-SERIES 2013-1 CLA			1	2FE	2,601,251	103.0537	2,539,035	2,463,799	2,555,107					5.375	3.703	MN	16,922	124,738	06/26/2017	11/15/2021
90357#-AE-6	U.S. Bank Trust National Equip Note 2005			1	1	237,113	103.6858	245,852	237,113	237,113					5.270	5.270	AO	32,711	13,078	12/29/2005	04/01/2023
90357#-AF-3	U.S. Bank Trust National Equip Note 2005			1	1	43,809	102.9441	45,098	43,809	43,809					5.270	5.270	AO	4,912	2,457	12/29/2005	04/01/2023
90357#-AG-1	U.S. Bank Trust National Equip Note 2005			1	1	413,654	102.6574	424,647	413,654	413,654					5.270	5.270	AO	60,440	23,242	12/29/2005	04/01/2022
90357#-AH-9	US BK TR NATL ASSN SER A BNSF 2005-W EQU			1	1	313,987	103.1661	323,928	313,987	313,987					5.270	5.270	AO	22,461	17,436	12/29/2005	04/01/2023
90357#-AJ-5	US BK TR NATL ASSN SER A BNSF 2005-X EQU			1	1	370,004	104.0199	384,878	370,004	370,004					5.270	5.270	AO	4,875	18,669	12/29/2005	04/01/2023
90357#-AK-2	U.S. Bank Trust National Equip Note 2005			1	1	190,966	102.8376	196,385	190,966	190,966					5.270	5.270	AO	21,268	10,684	12/29/2005	04/01/2022
90357#-AL-0	U.S. Bank Trust National Equip Note 2005			1	1	327,464	102.9686	337,185	327,464	327,464					5.270	5.270	AO	23,581	16,243	12/29/2005	04/01/2022
90357#-AM-8	U.S. Bank Trust National Equip Note 2005			1	1	157,456	103.2398	162,557	157,456	157,456					5.270	5.270	AO	17,527	8,734	12/29/2005	04/01/2023
90357#-AN-6	U.S. Bank Trust National Equip Note 2005			1	1	36,894	101.5741	37,475	36,894	36,894					5.270	5.270	AO	4,660	2,158	12/29/2005	04/01/2021
90357#-AP-1	U.S. Bank Trust National Equip Note 2005			1	1	60,883	101.2091	61,619	60,883	60,883					5.270	5.270	AO	2,406	2,731	12/29/2005	04/01/2020
90357#-AQ-9	U.S. Bank Trust National Equip Note 2005			1	1	52,455	101.2603	53,116	52,455	52,455					5.270	5.270	AO	7,149	3,156	12/29/2005	04/01/2020
90357#-AR-7	US BK TR NATL ASSN SER D BNSF 2005-AA EQ			1	1	93,187	101.9170	94,974	93,187	93,187					5.270	5.270	AO	3,683	4,454	12/29/2005	04/01/2021
90357#-AS-5	U.S. Bank Trust National Equip Note 2005			1	1	34,378	100.8307	34,664	34,378	34,378					5.270	5.270	AO	2,068	2,166	12/29/2005	04/01/2020
90357#-AT-3	U.S. Bank Trust National Equip Note 2005			1	1	364,563	103.6256	377,781	364,563	364,563					5.270	5.270	AO	4,803	18,303	12/29/2005	04/01/2023
90357#-AU-0	U.S. Bank Trust National Equip Note 2005			1	1	92,099	104.0198	95,802	92,099	92,099					5.270	5.270	AO	1,213	4,647	12/29/2005	04/01/2023
90357#-AV-8	U.S. Bank Trust National Equip Note 2005			1	1	358,413	103.5452	371,120	358,413	358,413					5.270	5.270	AO	4,722	17,975	12/29/2005	04/01/2023
907833-AE-7	UNP RR CO 1998 PASS TRST-PASS-THRU CTF			1	1FE	27,471	100.5111	27,612	27,471	27,471					6.700	6.691	FA	654	(1,089)	04/24/1998	02/23/2019
907833-AJ-6	UNP RR CO 2000 PASS TRST-PASS-THRU CTF			1	1FE	843,049	101.1156	846,279	840,252	840,252					8.000	(6.584)	JJ	20,530	24,510	01/01/2013	01/10/2021
90783V-AA-3	UNION PAC RR CO 2005-1 PASS THRU TR CTF			1	1	324,285	105.9365	313,540	295,969	330,791					5.082	5.082	JJ	7,352	11,417	12/28/2018	01/02/2029
90919W-AA-8	UNISON GROUND LEASE FUND-SERIES 2013-1 A			1	1FE	5,400,000	99.3095	5,362,715	5,400,000	5,400,000					2.981	3.000	MON	7,154	160,974	03/12/2013	03/15/2020
909319-AA-3	UNITED AIR 2013-1 A PTT-FIRST LIEN			1	1FE	59,042	102.0992	58,173	56,977	58,470					4.300	3.644	FA	926	2,393	12/15/2015	08/15/2025
90931Q-AA-5	UNITED AIR 2013-1 B PTT-PT CERTS CL B			1	2FE	2,010,469	102.2772	2,014,985	1,970,121	2,000,248					5.375	4.463	FA	40,004	82,546	12/10/2018	08/15/2021
90932N-AA-1	UNITED AIRLINES 2018-1 C-UNT AIR 18-1 B			1	2FE	8,090,000	100.0418	8,093,379	8,090,000	8,090,000					4.600	4.601	MS	124,047	101,304	05/09/2018	03/01/2026
90932P-AA-6	UNITED AIR 2014-1 A PTT-SECURED NOTE			1	1FE	14,631,320	99.6420	13,858,125	13,907,915	14,406,899					4.000	3.112	AO	123,626	547,915	12/22/2015	04/11/2026
90932P-AB-4	UNITED AIR 2014-1 B PTT-SERIES 2014-1 CL			1	2FE	3,516,662	100.2500	3,415,595	3,407,077	3,482,642					4.750	3.578	AO	35,964	137,796	12/11/2018	04/11/2022
90932Q-AA-4	UNITED AIR 2014-2 A PASS THRU TR-1ST LIE			1	1FE	536,056	97.7370	504,986	516,678	529,678					3.750	3.160	MS	6,351	18,326	05/21/2018	09/03/2026
90932Q-AB-2	UNITED AIR 2014-2 B PTT-SERIES 2014-2 CL			1	2FE	1,236,258	99.4700	1,202,993	1,209,402	1,228,263					4.625	3.908	MS	18,334	41,011	12/12/2018	09/03/2022
90933H-AA-3	UNITED AIRLINES 2016-1 C-FIRST LIEN			1	2FE	5,934,491	97.7559	5,934,491	5,934,491	5,934,491					3.650	3.649	JJ	104,694	215,128	10/23/2017	01/07/2026
90933J-AA-9	UNITED AIRLINES 2016-2 C-FIRST LIEN			1	2FE	8,229,167	95.3003	7,842,421	8,229,167	8,229,167					3.650	3.650	AO	70,085	296,066	10/23/2017	10/07/2025
91754R-ZG-5	STATE BOARD OF REGENTS 0-SERIES USBR 201			4	1AM	6,789,609	94.5220	6,970,998	7,375,000	6,964,550					4.006	5.450	MON	26,187	259,068	02/02/2017	01/25/2057
91848#-AA-9	VA LEWISTON LEASE FIN TR-LEASE BACKED CT			1	1	4,844,732	107.9615	5,230,445	4,844,732	4,844,732					4.960	4.960	MON	10,680	239,728	12/15/2011	12/15/2031
91848#-AA-1	VA Bangor Lease Finance Lease Backed CT			1	1	3,767,733	105.5564	3,767,733	3,767,733	3,767,733					4.570	4.570	MON	7,653	171,722	06/24/2011	01/15/2031
91851#-AA-3	VA Billings Lease Financ Lease Backed Pa			2	1	12,246,605	101.7725	12,463,676	12,246,605	12,246,605					3.917	3.917	MON	102,544	478,071	03/13/2014	02/15/2034
92428F-AB-3	Vermont Transco LLC First Mtg Bond			1	1PL	13,065,000	114.4597	14,954,160	13,065,000	13,065,000					5.750	5.750	JAJO	384,028			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
94978#-EF-0	Wells Fargo Bank Northwe Senior Secured			1	2	457,206	102.8879	470,410	457,206	457,206					5.670	5.667	JJ	40,311	77,515	06/29/2006	01/03/2025
94978#-EL-7	Wells Fargo Bank Northwe Senior Secured			1	2	902,680	103.6663	935,775	902,680	902,680					5.670	5.668	JJ	79,037	48,570	06/29/2006	01/03/2029
94978#-EN-3	Wells Fargo Bank Northwe Senior Secured			1	2	1,590,022	103.5502	1,646,471	1,590,022	1,590,022					5.670	5.668	JJ	138,608	145,413	12/21/2006	01/03/2029
94978#-FB-8	Wells Fargo Bank Northwe Senior Secured			1	2	453,920	102.9218	467,182	453,920	453,920					5.670	5.667	JJ	40,089	38,479	12/21/2006	01/03/2029
94978#-GK-7	Wells Fargo Bank Northwe Senior Secured			1	1	1,204,654	106.7040	1,285,414	1,204,654	1,204,654					5.670	5.668	JJ	104,059	60,243	01/30/2007	01/30/2030
94978#-GL-5	Wells Fargo Bank Northwe Senior Secured			1	1	106,159	106.7419	113,316	106,159	106,159					5.670	5.668	JJ	9,066	5,515	01/30/2007	01/30/2030
94978#-GM-3	Wells Fargo Bank Northwe Senior Securite			1	1	819,011	106.4473	871,815	819,011	819,011					5.670	5.668	JJ	70,903	40,759	01/30/2007	01/30/2030
94978#-GN-1	Wells Fargo Bank Northwe Senior Secured			1	1	575,177	107.0765	615,879	575,177	575,177					5.670	5.668	JJ	48,925	30,230	01/30/2007	01/30/2030
94978#-GP-6	Wells Fargo Bank Northwe Senior Secured			1	1	1,585,985	107.7406	1,708,750	1,585,985	1,585,985					5.670	5.668	JJ	135,245	82,721	01/30/2007	01/30/2030
94978#-GQ-4	Wells Fargo Bank Northwe Senior Secured			1	2	1,345,444	104.5690	1,406,917	1,345,444	1,345,444					5.670	5.668	JJ	118,339	68,144	02/07/2007	07/03/2029
94978#-GU-5	Wells Fargo Bank Northwe Senior Secured			2	1	987,632	103.6753	1,023,930	987,632	987,632					5.400	5.396	JJ	82,344	44,838	03/29/2007	01/15/2024
94978#-GV-3	Wells Fargo Bank Northwe Senior Secured			2	1	1,556,678	103.8780	1,617,046	1,556,678	1,556,678					5.400	5.397	JJ	129,660	31,769	06/28/2007	01/15/2024
94978#-HY-6	Wells Fargo Bank Northwe Senior Secured			2	1	2,179,219	103.9713	2,265,762	2,179,219	2,179,219					5.400	5.397	JJ	181,125	100,043	10/30/2007	01/15/2024
95058#-AB-4	WENDYS FUNDING LLC-SERIES 2015-1A CLASS			4	2AM	19,400,000	99.9340	19,387,196	19,400,000	19,400,000					4.080	4.131	MJSD	05,193,248	791,248	05/19/2015	06/15/2045
95058#-AC-2	WENDYS FUNDING LLC-SERIES 2015-1A CLASS			4	2AM	15,520,000	100.1370	15,541,262	15,520,000	15,520,000					4.497	4.514	MJSD	31,019	697,695	05/19/2015	06/15/2045
96033L-AA-0	WESTGATE RESORTS-SERIES 2015-2A CLASS A			4	1FE	2,186,285	99.7696	2,184,149	2,186,285	2,186,285					3.200	3.200	MON	23,857	64,989	11/17/2015	07/01/2028
96042F-AD-6	Westlake Automobile Receivables-SERIES 2018-2A B			4	1FE	818,847	99.7292	817,779	820,000	818,997		150			3.200	3.288	MON	1,166	4,592	10/04/2018	01/16/2024
96928*-AD-9	William Blair & Company, CTL Pass Thru C			1	2	8,275,694	106.6470	8,825,779	8,275,694	8,275,694					6.570	6.570	MON	24,165	541,381	04/29/2005	01/15/2025
96928*-ET-0	William Blair & Company, CTL Pass Thru C			1	6	36,029,527	80.0000	36,029,527	45,036,909	36,029,527	8,696,312		9,007,382		5.150	5.150	MON			05/11/2012	05/15/2042
970631-AA-5	WILLIS ENGINE SECURITIZATION-SERIES 2012-A C			4,5	1FE	5,284,489	99.1548	5,239,824	5,284,489	5,284,489					5.500	5.500	MON	12,918	289,435	09/06/2012	09/15/2037
970630-AA-0	WILLIS ENGINE STRUCTURED-SERIES 17-A CLA			4,5	1FE	24,626,642	99.6411	24,559,172	24,647,625	24,660,546		(876)			4.690	4.681	MON	148,605	1,143,800	07/28/2017	08/15/2042
97064E-AA-6	Willis Engine Structured-WESTF 2018-A A			4,5	1FE	13,960,096	102.5974	14,323,412	13,960,789	14,000,904		40,807			4.750	4.702	MON	84,944	152,890	08/16/2018	09/15/2043
974153-AA-6	Wingstop Funding 2018-1 -WSTOP 2018-1 A2			4	2AM	8,450,000	102.2650	8,641,393	8,450,000	8,450,000					4.970	4.931	MJSD	54,829		11/06/2018	12/05/2048
009088-AC-9	AIR CANADA 2015-2B PTT-3RD LIEN			A	1	291,406	100.0400	280,715	280,603	288,927		(3,244)			5.000	3.804	JD	624	13,918	05/31/2017	12/15/2023
009089-AB-9	AIR CANADA 2013-1B PTT-2ND LIEN			A	2	1,984,664	101.0800	1,906,792	1,886,419	1,982,681		(40,339)			5.375	3.127	MN	12,956	98,600	10/23/2017	05/15/2021
001626-AC-4	ALM XIX Ltd SR SEC'D NT CL A-2			D	4	8,100,000	99.7399	8,078,932	8,100,000	8,100,000					4.636	4.050	JAJO	81,367	358,844	05/10/2016	07/15/2028
00163K-AS-7	ALM LOAN FUNDING-ALM 2013-7RA A2R			D	4	4,250,000	99.7239	4,238,266	4,250,000	4,250,000					4.436	4.281	JAJO	40,851	181,993	12/06/2016	10/15/2028
00164B-BE-6	ALM VII R-2 Ltd-ALM 2013-7RA A1B2			D	4	6,400,000	98.9781	6,334,598	6,400,000	6,400,000					3.836	3.836	JAJO	53,197		09/21/2018	10/15/2027
00191Y-AM-6	APES CLO LTD-SERIES 2015 1-A CLASS A2R			D	4	9,600,000	100.0060	9,600,576	9,600,000	9,600,000					4.701	4.149	MJSD	33,849	397,444	12/14/2016	12/05/2025
00191Y-AP-9	APES CLO LTD-SERIES 2015 1-A CLASS B2R			D	4	3,050,000	98.9896	3,019,183	3,050,000	3,050,000					5.551	5.043	MJSD	152,556		12/14/2016	12/05/2025
00900A-AJ-7	AIMCO-SERIES 14-AA CLASS B1R			D	4	14,800,000	99.0606	14,660,969	14,800,000	14,800,000					4.069	3.609	JAJO	118,770	565,997	05/11/2017	07/20/2026
00900A-AN-8	AIMCO-SERIES 14-AA CLASS C1R			D	4	5,190,000	98.4514	5,109,628	5,190,000	5,190,000					4.719	4.310	JAJO	48,303	232,685	05/11/2017	07/20/2026
00900C-AA-2	AIMCO-AIMCO 2017-AA A			D	4	7,460,000	99.2603	7,404,818	7,460,000	7,460,000					3.729	3.473	JAJO	54,864	259,577	04/21/2017	07/20/2029
00900C-AE-4	AIMCO-AIMCO 2017-AA C			D	4	5,280,000	98.5815	5,205,103	5,280,000	5,280,000					4.919	4.720	JAJO	51,223	247,427	04/21/2017	07/20/2029
00900L-AH-7	AIMCO CLO Series 2015-A-SERIES 15-AA CLA			D	4	6,400,000	97.9237	6,267,117	6,400,000	6,400,000					3.736	3.734	JAJO	100,692	207,910	12/12/2017	01/15/2028
00900L-AJ-3	AIMCO CLO Series 2015-A-SERIES 15-AA CLA			D	4	2,500,000	95.1248	2,378,120	2,500,000	2,500,000					4.136	4.139	JAJO	44,027	90,937	12/12/2017	01/15/2028
00900P-AE-5	AIMCO CLO Series 2018-B-SERIES 18-BA CLA			D	4	8,300,000	100.0000	8,300,000	8,300,000	8,300,000					2.034	2.034	JAJO			12/03/2018	01/15/2032
00900P-AG-0	AIMCO CLO Series 2018-B-SERIES 18-BA CLA			D	4	5,000,000	100.0000	5,000,000	5,000,000	5,000,000					2.484	2.484	JAJO			12/03/2018	01/15/2032
01748R-AE-5	ALLEGRO CLO V LTD-SERIES 17-1A CLASS IMEZ			D	4	5,525,000	96.3755	5,324,746	5,525,000	5,525,000					4.086	3.752	JAJO	48,291	213,960	08/23/2017	10/16/2030
01749B-AB-5	Allegro CLO VI Ltd-ALLEG 2017-2A B			D	4	6,400,000	95.3349	6,101,434	6,400,000	6,400,000					3.949	4.024	JAJO	53,353	230,124	12/12/2017	01/17/2031
01749B-AC-3	Allegro CLO VI Ltd-ALLEG 2017-2A C			D	4	5,800,000	91.7981	5,324,290	5,800,000	5,800,000					4.249	4.249	JAJO	52,024	225,418	12/12/2017	01/17/2031
01750C-AA-1	Allegro CLO VII Ltd-ALLEG 2018-1A A			D	4	34,500,000	98.6608	34,037,976	34,500,000	34,500,000					3.489	3.127	MJSD	675,426		05/02/2018	06/13/2031
020053-AS-3	ALM LOAN FUNDING-SERIES 13-BA CLASS A1R			D	4	4,350,000	100.0007	4,350,030	4,350,000	4,350,000					3.926	3.627	JAJO	37,005	162,886	11/15/2016	10/15/2028
033280-AN-1	ANCHORAGE CAPITAL CLO LT-SERIES 2015-6A			D	4	16,900,000	99.0602	16,741,174	16,900,000	16,900,000					3.706	3.408	JAJO	135,713	589,346	06/27/2017	07/15/2030
03328T-AS-4	ANCHORAGE CAPITAL CLO 7 -ANCHC 2015-7A B			D	4	8,000,000	98.0493	7,843,944	8,000,000	8,000,000					3.736	3.494	JAJO	64,763	281,414	10/03/2017	10/15/2027
03328W-AE-8	ANCHORAGE CAPITAL CLO LT-ANCHC 2016-9A C			D	4	5,000,000	99.9954	4,999,770	5,000,000	5,000,000					5.236	5.095	JAJO	56,727	254,753	11/08/2016	01/15/2029
03328Y-AA-2	ANCHORAGE CAPITAL CLO 1-ANCHC 2018-1RA			D	4	15,184,461	98.6888	15,247,420	15,450,000	15,187,114		2,653			3.426	3.807	JAJO	114,696		12/06/2018	04/13/2031
03328Y-AE-4	Anchorage Capital CLO Lt-ANCHC 2018-1RA			D	4	13,900,000	96.6154														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
03330E-AG-9	ANCHORAGE CREDIT FUNDING-ANCHF 2016-3A D	D	4		2AM	2,500,000	100.1605	2,504,013	2,500,000	2,500,000					7.500	7.293	AO	32,813	187,500	07/22/2016	10/28/2033
03330P-AA-7	ANCHORAGE CREDIT FUNDING-SERIES 18-5A CL	D	4		1FE	14,000,000	99.6518	13,951,252	14,000,000	14,000,000					4.100	4.001	AO	105,233	365,128	01/26/2018	04/25/2036
03331J-AA-0	Anchorage Capital CLO Lt-ANCHC 2018-10A	D	4		1FE	20,000,000	98.6625	19,732,500	20,000,000	20,000,000					3.626	3.283	JAJO	193,401		08/21/2018	10/15/2031
03331J-AJ-1	Anchorage Capital CLO Lt-ANCHC 2018-10A	D	4		1FE	11,050,000	98.0103	10,830,138	11,050,000	11,050,000					4.176	3.801	JAJO	123,060		08/21/2018	10/15/2031
03762Y-AH-0	Apidos Clo XXIV-APID 2016-25A A2R	D	4		1FE	6,800,000	97.9223	6,658,716	6,800,000	6,800,000					4.289	4.329	JAJO	44,561		10/24/2018	10/20/2031
03765H-BC-1	Apollo Credit Funding IV-SERIES 4A CLASS	D	4		1FE	15,000,000	98.4276	14,764,140	15,000,000	15,000,000					3.836	3.836	JAJO	280,590		06/12/2018	07/15/2030
03766G-AE-2	APIDOS CLO-SERIES 17-26A CLASS A2	D	4		1FE	12,240,000	98.5216	12,059,044	12,240,000	12,240,000					4.145	4.021	JAJO	105,686	486,742	04/28/2017	07/18/2029
03766G-AG-7	APIDOS CLO-SERIES 17-26A CLASS B	D	4		1FE	5,295,000	97.8073	5,178,897	5,295,000	5,295,000					4.845	4.754	JAJO	53,442	248,143	04/28/2017	07/18/2029
03767M-AE-8	Apidos CLO-SERIES 18-29A CLASS A1B	D	4		1FE	7,200,000	97.7793	7,040,110	7,200,000	7,200,000					3.692	3.264	JAJO	143,242		05/11/2018	07/25/2030
03767M-AG-3	Apidos CLO-SERIES 18-29A CLASS A2	D	4		1FE	14,750,000	97.3260	14,355,585	14,750,000	14,750,000					3.942	3.496	JAJO	313,318		05/11/2018	07/25/2030
03767M-AJ-7	Apidos CLO-APID 2018-29A B	D	4		1FE	4,500,000	94.0397	4,231,787	4,500,000	4,500,000					4.292	3.822	JAJO	104,076		05/11/2018	07/25/2030
04014W-AL-9	ARES CLO LTD-ARES 2014-1A A2R	D	4		1FE	17,000,000	99.7610	16,959,370	17,000,000	17,000,000					4.049	3.742	JAJO	145,307	650,418	01/27/2017	04/17/2026
04015U-AJ-7	Ares XXXVIII CLO Ltd-SERIES 15-38A CLASS	D	4		1FE	6,700,000	96.0942	6,438,311	6,700,000	6,700,000					0.000	4.314	JAJO			02/20/2018	04/20/2030
04015U-AK-4	Ares XXXVIII CLO Ltd-SERIES 2015-38A CLA	D	4		1FE	2,750,000	92.2588	2,537,117	2,750,000	2,750,000					0.000	4.681	JAJO			02/20/2018	04/20/2030
04016P-AA-6	ARES CLO LTD-ARES 2017-43A A	D	4		1FE	19,500,000	99.2933	19,362,194	19,500,000	19,500,000					3.656	3.455	JAJO	154,479	680,733	04/04/2017	10/15/2029
04016P-AC-2	ARES CLO LTD-SERIES 17-43A CLASS B	D	4		1FE	13,570,000	98.5321	13,370,806	13,570,000	13,570,000					4.186	4.086	JAJO	123,084	541,393	04/04/2017	10/15/2029
04016V-AC-9	ARES XLVII CLO Ltd-SERIES 18-47A CLASS A	D	4		1FE	25,900,000	96.9583	25,112,200	25,900,000	25,900,000					3.586	3.586	FIAM	201,252	457,983	03/13/2018	04/15/2030
04017E-AE-2	ARES XXXIIR CLO LTD-SERIES 14-32RA CLASS	D	4		1FE	13,580,038	96.8712	13,198,701	13,625,000	13,581,262		1,224			3.816	3.869	FIAM	67,882	271,974	04/06/2018	05/15/2030
04017J-AE-1	ARES CLO Ltd-ARES 2018-49A B	D	4		1FE	12,000,000	98.3232	11,798,784	12,000,000	12,000,000					3.993	3.815	JAJO	195,657		07/06/2018	07/22/2030
04017Q-AE-5	ARES CLO Ltd-SERIES 18-28RA CLASS B	D	4		1FE	16,000,000	98.2614	15,721,824	16,000,000	16,000,000					4.071	3.986	JAJO	199,035		08/17/2018	10/17/2030
04017T-AC-3	Ares XXXIR CLO Ltd-SERIES 14-31RA CLASS	D	4		1FE	28,400,000	97.4996	27,689,886	28,400,000	28,400,000					3.989	3.989	FIAM	113,295	531,288	05/16/2018	05/24/2030
04017T-AE-9	Ares XXXIR CLO Ltd-SERIES 14-31RA CLASS	D	4		1FE	20,000,000	97.3465	19,469,300	20,000,000	20,000,000					4.289	4.289	FIAM	85,785	405,147	05/16/2018	05/24/2030
04623T-AA-3	ASSURANT CLO I LTD-ASRNT 2018-1A A	D	4		1FE	16,275,000	98.9141	16,098,270	16,275,000	16,275,000					3.509	3.509	JAJO	112,632	286,697	03/09/2018	04/20/2031
04624W-AC-1	ASSURANT CLO III LTD-SERIES 2018-2A CLAS	D	4		1FE	95,000,000	98.6256	93,694,320	95,000,000	95,000,000					3.389	3.289	JAJO	1,126,710		07/27/2018	10/20/2031
04625A-AC-8	ASSURANT CLO I LTD-SERIES 17-1A CLASS B	D	4		1FE	10,000,000	96.4188	9,641,880	10,000,000	10,000,000					4.169	4.169	JAJO	82,222	443,860	09/29/2017	10/20/2029
04941T-AS-9	Atlas Senior Loan Fund V-SERIES 16-7A CL	D	4		1FE	23,500,000	99.2224	23,317,264	23,500,000	23,500,000					3.987	3.993	FIAM	83,276		11/21/2018	11/27/2031
04941Y-AC-3	Atlas Senior Loan Fund X-SERIES 18-11A C	D	4		1FE	34,912,500	98.6771	34,536,985	35,000,000	34,949,527		37,027			3.436	3.735	JAJO	624,617		06/08/2018	07/26/2031
04941Y-AJ-8	Atlas Senior Loan Fund X-ATOLQ 2018-11A	D	4		1FE	10,000,000	97.6803	9,768,030	10,000,000	10,000,000					3.986	3.595	JAJO	207,031		06/08/2018	07/26/2031
04942J-AE-1	Atlas Senior Loan Fund X-ATOLQ 2018-10A	D	4		1FE	11,600,000	96.9124	11,241,838	11,600,000	11,600,000					3.936	4.403	JAJO	98,933	286,344	02/05/2018	01/15/2031
04943A-AC-3	ATLAS SENIOR LOAN FUND L-SERIES 2017-8A	D	4		1FE	25,300,000	99.3715	25,140,990	25,300,000	25,300,000					3.736	3.736	JAJO	915,015	614,518	06/23/2017	01/16/2030
04943A-AE-9	ATLAS SENIOR LOAN FUND L-SERIES 17-8A CL	D	4		1FE	9,410,000	99.1522	9,330,222	9,410,000	9,410,000					4.286	4.668	JAJO	320,039	216,821	06/23/2017	01/16/2030
04943A-AG-4	ATLAS SENIOR LOAN FUND L-SERIES 17-8A CL	D	4		1FE	3,100,000	97.8302	3,032,736	3,100,000	3,100,000					4.986	4.986	JAJO	126,758	77,112	06/23/2017	01/16/2030
04964H-AN-8	ATRIUM CDO CORP-SERIES 8A CLASS BR	D	4		1FE	8,900,000	100.0008	8,900,071	8,900,000	8,900,000					4.377	4.047	JAJO	75,750	367,054	10/06/2016	10/23/2024
04964H-AQ-1	ATRIUM VIII-DEF NT CL C-R	D	4		1FE	8,200,000	99.0000	8,118,000	8,200,000	8,200,000					4.977	4.688	JAJO	79,359	388,068	10/06/2016	10/23/2024
04964K-AL-5	ATRIUM CDO CORP-SERIES 9A CLASS AR	D	4		1FE	48,000,000	99.3184	47,672,832	48,000,000	48,000,000					3.947	3.475	FIAM	178,922	1,634,816	03/30/2017	05/28/2030
04964K-AN-1	ATRIUM CDO CORP-SERIES 9A CLASS BR	D	4		1FE	18,990,000	99.1159	18,822,109	18,990,000	18,990,000					4.457	4.082	FIAM	79,933	744,794	03/30/2017	05/28/2030
04964K-AS-0	ATRIUM CDO CORP-SERIES 9A CLASS CR	D	4		1FE	13,660,000	98.2010	13,414,257	13,660,000	13,660,000					5.257	4.918	FIAM	67,819	646,547	03/30/2017	05/28/2030
04965F-AG-6	Atrium XV-SERIES 15A CLASS B	D	4		1FE	9,550,000	98.5864	9,415,001	9,550,000	9,550,000					4.526	4.414	JAJO	24,013		11/16/2018	01/23/2031
04965L-AE-8	ATRIUM XIV LLC-ATRM 14A A2A	D	4		1FE	20,000,000	98.7601	19,752,020	20,000,000	20,000,000					3.807	3.689	FIAM	277,055		07/19/2018	08/23/2030
053633-AG-8	AVERY POINT CLO LTD-SERIES 13-3A CLASS A	D	4		1FE	14,039,080	99.7617	14,005,625	14,039,080	14,039,080					3.565	3.115	JAJO	104,257	198,040	04/25/2017	01/18/2025
053633-AH-6	AVERY POINT CLO LTD-SERIES 13-3A CLASS B	D	4		1FE	11,300,000	99.8239	11,280,101	11,300,000	11,300,000					3.995	3.605	JAJO	94,039	444,754	04/25/2017	01/18/2025
05363U-AS-2	AVERY POINT CLO LTD-SERIES 14-1A CLASS A	D	4		1FE	104,754,822	99.7056	104,446,424	104,754,822	104,754,822					3.435	3.083	JAJO	679,746	3,008,203	03/30/2017	04/25/2026
05363U-AU-7	AVERY POINT IV CLO LTD-SERIES 14-1A CLAS	D	4		1FE	32,100,000	99.8501	32,051,882	32,100,000	32,100,000					4.090	3.715	JAJO	247,983	1,224,048	03/30/2017	04/25/2026
05363U-AW-3	AVERY POINT IV CLO LTD-SERIES 14-1A CLAS	D	4		1FE	13,660,000	99.2781	13,561,388	13,660,000	13,660,000					4.840	4.524	JAJO	124,880	624,761	03/30/2017	04/25/2026
05454Y-AA-3	AWAS Aviation Capital Lt Pass Thru Cfs	C	4		2FE	26,026,864	99.3814	25,865,862	26,026,864	26,026,864					4.870	4.870	JAJO	334,510	1,214,832	10/07/2014	10/07/2021
05682B-AC-0	BAIN CAPITAL CREDIT CLO -SERIES BCC 2016	D	4		1FE	12,150,000	99.2268	12,056,056	12,150,000	12,150,000					4.336	4.150	JAJO	114,153	501,310	11/30/2016	01/15/2029
05682Q-AC-0	BAIN CAPITAL CREDIT CLO -SERIES 17-1A CL	D	4																		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22	
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date	
078446-AB-7	BELLE HAVEN ABS CDO LTD-SR SEC2 SER 2004	D	4		6FE			20,547.2	2,000,000						3.182	0.000	FMAN		10,075	55,965	11/24/2004	11/03/2044
08179C-AE-1	BENEFIT STREET PARTNERS -BSP 2017-11A A2	D	4		1FE	15,000,000		98,556.3	15,000,000	15,000,000					4.186	4.058	JAJO		136,055	621,651	03/27/2017	04/15/2029
08179H-AA-8	BENEFIT STREET PARTNERS -SERIES 2017-12A	D	4		1FE	9,675,000		99,280.7	9,675,000	9,675,000					3.686	3.479	JAJO		140,797	310,988	09/19/2017	10/15/2030
08179H-AB-6	BENEFIT STREET PARTNERS -SERIES 2017-12A	D	4		1FE	4,850,000		97,852.5	4,850,000	4,850,000					4.116	4.073	JAJO		153,378	172,470	09/19/2017	10/15/2030
08179H-AC-4	Benefit Street Partners -BSP 2017-12A B	D	4		1FE	2,575,000		94,191.5	2,575,000	2,575,000					4.436	4.436	JAJO		24,751	56,543	04/12/2018	10/15/2030
08179L-AC-5	Benefit Street Partners -SERIES 18-14A C	D	4		1FE	13,400,000		96,583.2	13,400,000	13,400,000					3.619	4.009	JAJO		241,823	122,374	02/23/2018	04/20/2031
08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2	D	4		1FE	4,400,000		97,700.8	4,400,000	4,400,000					3.857	3.751	JAJO		58,449		08/01/2018	07/18/2031
08180X-AQ-5	Benefit Street Partners -BSP 2015-8A A1B	D	4		1FE	6,425,000		96,954.4	6,425,000	6,425,000					3.669	3.943	JAJO		93,902	95,984	01/25/2018	01/20/2031
08180X-AU-6	Benefit Street Partners -BSP 2015-8A BR	D	4		1FE	4,200,000		92,918.7	4,200,000	4,200,000					4.319	4.617	JAJO		73,668	75,181	01/25/2018	01/20/2031
08181B-AS-8	Benefit Street Partners -SERIES 16-9A CL	D	4		1FE	11,200,000		98,006.3	11,200,000	11,200,000					4.219	4.219	JAJO		214,701		07/16/2018	07/20/2031
08181J-AA-0	Benefit Street Partners -SERIES 18-5BA C	D	4		1FE	22,445,000		98,720.6	22,445,000	22,445,000					3.559	3.559	JAJO		475,482		04/19/2018	04/20/2031
08181L-AA-5	BENEFIT STREET PARTNERS -BSP 2016-10A A1	D	4		1FE	5,000,000		100,000.3	5,000,000	5,000,000					3.926	3.650	JAJO		42,535	192,983	11/18/2016	01/15/2029
09228Y-AB-8	Blackbird Capital Aircra-BBIRD 2016-1A A	D	4,5		1FE	3,573,646		101,842.5	3,573,646	3,573,646					4.213	3.925	MON		6,593	148,333	04/17/2017	12/16/2041
09228Y-AB-8	Blackbird Capital Aircra-BBIRD 2016-1A A	D	4,5		1FE	19,241,270		101,842.5	19,241,354	19,290,886		(11,094)			4.213	4.154	MON		36,028	807,056	11/04/2016	12/16/2041
09228Y-AB-8	Blackbird Capital Aircra-BBIRD 2016-1A A	D	4,5		1FE	4,228,026		101,842.5	4,258,024	4,180,990		4,217,071			4.213	4.015	MON		7,829	176,145	04/03/2017	12/16/2041
09228Y-AC-6	Blackbird Capital Aircra-SERIES 2016-1A	D	4,5		3AM	1,745,454		104,945.6	1,743,083	1,690,000		(2,371)			5.682	5.174	MON		4,268	35,743	08/01/2018	12/16/2041
09228Y-AC-6	Blackbird Capital Aircra-SERIES 2016-1A	D	4,5		3AM	4,058,155		104,945.6	4,156,828	3,960,938		4,052,257			5.682	5.301	MON		10,003	30,008	05/29/2018	12/16/2041
09626U-AN-8	BLUEMOUNTAIN CLO LTD-BLUEM 2013-1A A2R	D	4		1FE	12,740,000		99,740.0	12,740,000	12,740,000					4.369	4.148	JAJO		109,776	547,608	12/06/2016	01/20/2029
09626U-AQ-1	BLUEMOUNTAIN CLO LTD-BLUEM 2013-1A BR	D	4		1FE	4,247,063		99,966.2	4,250,000	4,250,000					5.109	5.269	JAJO		42,823	211,147	12/06/2016	01/20/2029
09627X-AG-6	BLUEMOUNTAIN CLO LTD-SR SEC DEF N	D	4		2AM	2,631,976		99,762.1	2,693,577	2,686,671			11,231		6.186	6.516	JAJO		36,190	162,127	11/15/2016	04/13/2027
09627X-AW-1	BLUEMOUNTAIN CLO LTD-SERIES 2015-1A CLAS	D	4		1FE	20,500,000		99,613.4	20,420,747	20,500,000					4.336	4.059	JAJO		192,604	846,451	12/13/2016	04/13/2027
09628F-AE-9	BlueMountain Fuji US Clo-SERIES 2017-3A	D	4		1FE	8,000,000		96,827.0	7,746,160	8,000,000					3.714	3.973	JAJO		263,064	263,064	12/08/2017	01/15/2030
09628J-AN-1	BlueMountain CLO 2015-3 -BLUEM 2015-3A A	D	4		1FE	13,900,000		97,655.3	13,574,087	13,900,000					3.969	3.969	JAJO		255,553	139,643	03/27/2018	04/20/2031
09628N-AQ-5	BlueMountain CLO 2015-4 -SERIES 15-4A CL	D	4		1FE	20,000,000		97,836.4	19,567,280	20,000,000					3.769	3.769	JAJO		148,666	327,320	04/16/2018	04/20/2030
09628W-AC-6	BLUEMOUNTAIN CLO LTD-SERIES 16-2A CLASS	D	4		1FE	14,600,000		99,400.8	14,512,517	14,600,000					4.645	3.968	FMAN		79,111	611,695	07/21/2016	08/20/2028
09628W-AG-7	BLUEMOUNTAIN CLO LTD-BLUEM 2016-2A C	D	4		3AM	1,500,981		99,703.1	1,495,547	1,500,000			3,676		6.745	6.536	FMAN		11,803	96,104	11/15/2016	08/20/2028
09629C-AE-5	BLUEMOUNTAIN CLO LTD-SERIES 17-1A CLASS	D	4		1FE	4,280,000		98,502.8	4,215,920	4,280,000					4.169	3.900	JAJO		111,193	167,832	05/19/2017	07/20/2029
09629L-AE-5	BLUEMOUNTAIN CLO XX111 L-BLUEM 2018-23A	D	4		1FE	10,000,000		98,641.3	10,000,000	10,000,000					4.165	4.036	JAJO		39,332		10/17/2018	10/20/2031
10010Y-AA-0	BOSPHORUS 2015 LLC PASSTRU CTF SER 2015	D	1		3FE	26,406,851		86,380.0	23,529,620	27,239,662			138,988		4.200	4.817	MS		336,864	1,122,734	03/08/2018	03/15/2027
10302V-BC-8	BOWMAN PARK CLO LTD-BOWPK 2014-1A B1R	D	4		1FE	8,920,000		99,755.6	8,998,200	8,920,000					4.227	3.704	FMAN		40,846	333,364	02/03/2017	11/23/2025
10302V-BG-9	BOWMAN PARK CLO LTD-BOWPK 2014-1A CR	D	4		1FE	5,950,000		98,011.7	5,831,696	5,950,000					4.927	4.451	FMAN		31,758	264,596	02/03/2017	11/23/2025
11014P-AB-1	BRISTOL PARK CLO LTD-SERIES 2016-1A CLA	D	4		1FE	13,850,000		99,715.9	13,810,652	13,850,000					4.336	4.222	JAJO		130,125	571,452	11/01/2016	04/15/2029
124166-AE-9	Buttermilk Park CLO Ltd-BMILK 2018-1A B1	D	4		1FE	12,400,000		98,250.4	12,183,050	12,400,000					3.988	3.928	JAJO		141,468		08/27/2018	10/15/2031
12479L-AA-8	CAL FUNDING II LTD-SERIES 2012-1A CLASS	D	4		1FE	881,477		99,393.2	876,316	881,667			28		3.470	3.473	MON		510	30,461	10/10/2012	10/25/2027
12481K-AC-2	CBAM 2017-2 LTD-SERIES 17-2A CLASS B1	D	4		1FE	4,900,000		96,687.2	4,737,673	4,900,000					4.199	4.199	JAJO		43,434	194,903	07/31/2017	10/17/2029
12481Q-AE-5	Cbam 2018-5 Ltd-SERIES 18-5A CLASS B1	D	4		1FE	11,100,000		94,933.2	10,537,585	11,100,000					3.849	4.314	JAJO		320,763		02/23/2018	04/17/2031
12548J-AE-2	CIFC FUNDING LTD-SERIES 17-3A CLASS A2	D	4		1FE	5,400,000		98,198.4	5,302,714	5,400,000					4.269	4.055	JAJO		45,465	217,980	06/02/2017	07/20/2030
12550G-AE-3	CIFC FUNDING LTD-CIFC 2018-5A B	D	4		1FE	5,000,000		95,344.7	4,767,235	5,000,000					4.983	4.532	JAJO		8,998		11/20/2018	01/15/2032
12550Y-AC-8	CIFC FUNDING LTD-CIFC 2017-2A A	D	4		1FE	20,000,000		99,341.1	19,868,220	20,000,000					3.709	3.488	JAJO		146,299	691,861	03/28/2017	04/20/2030
12550Y-AG-9	CIFC FUNDING LTD-CIFC 2017-2A C	D	4		1FE	5,600,000		96,662.1	5,413,078	5,600,000					4.819	4.731	JAJO		53,223	295,386	03/28/2017	04/20/2030
12551J-AE-6	CIFC FUNDING LTD-SERIES 17-4A CLASS A2	D	4		1FE	8,000,000		97,852.4	7,828,192	8,000,000					4.187	3.782	JAJO		212,865	306,333	08/14/2017	10/24/2030
12551J-AG-1	CIFC Funding 2017-IV Ltd-SERIES 17-4A CL	D	4		1FE	9,925,400		95,493.6	9,549,360	10,000,000			219		4.687	4.857	JAJO		89,841		11/27/2018	10/24/2030
12551R-AC-2	CIFC Funding 2018-I Ltd-SERIES 18-1A CLA	D	4		1FE	7,350,000		96,121.1	7,064,901	7,350,000					3.845	4.164	JAJO		58,870	162,346	01/31/2018	04/18/2031
12551R-AE-8	CIFC Funding 2018-I Ltd-SERIES 18-1A CLA	D	4		1FE	4,200,000		92,120.1	3,869,044	4,200,000					4.195	4.522	JAJO		136,531		01/31/2018	04/18/2031
126611-AL-6	CVP CASCADE CLO LTD-CVPC 2014-2A A1R	D	4		1FE	152,910,180		99,582.0	152,271,015	152,910,180					3.645	3.193	JAJO		1,161,022	6,257,175	03/15/2017	07/18/2026
126612-AJ-9	CVP CASCADE CLO LTD-CVPC 2013-CLO1 A1R	D	4		1FE	86,723,664		99,594.1	86,723,664	86,723,664					3.586	3.115	JAJO		665,257	3,307,134	03/15/2017	01/16/2026
12805P-AJ-5	CAL Funding III Ltd-CAI 2018-2A A	D	4		1FE	14,574,613		102,341.1	14,917,487	14,576,250		</										

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
14311D-AY-2	CARLYLE GLOBAL MARKET ST-SERIES 15-1A CL	D	4		1FE	11,800,000		98,6374	11,800,000	11,800,000					3.969	3.422	JAU	92,367	439,304	07/12/2017	04/20/2027
14311D-BC-9	CARLYLE GLOBAL MARKET ST-SERIES 15-1A CL	D	4		2AM	3,450,000		96,0865	3,450,000	3,450,000					5.469	4.939	JAU	37,212	180,909	07/12/2017	04/20/2027
14312L-AN-7	Carlyle Global Market ST-SERIES 2016-2A	D	4		1FE	12,000,000		98,4904	11,818,848	12,000,000					3.936	3.936	JAU	195,764		07/20/2018	07/15/2027
14314B-AC-1	CARLYLE GLOBAL MARKET ST-CGMS 2017-1A A2	D	4		1FE	15,000,000		98,3055	14,745,825	15,000,000					4.119	4.022	JAU	337,371	581,250	03/08/2017	04/20/2031
14314L-AE-5	Carlyle Global Market ST-CGMS 2014-29A A	D	4		1FE	5,000,000		97,9101	4,895,505	5,000,000					3.941	3.941	FIAN	64,691	46,495	05/07/2018	05/15/2031
14315J-AL-3	CARLYLE GLOBAL MARKET ST-SERIES 17-2A CL	D	4		1FE	34,804,000		98,7783	34,572,405	35,000,000			58,498		3.689	3.828	JAU	254,643	1,205,870	05/18/2017	07/20/2031
14315L-AC-8	Carlyle Global Market ST-SERIES 14-3RA C	D	4		1FE	10,500,000		97,7319	10,261,850	10,500,000					3.809	3.809	JAU	208,451		05/23/2018	07/27/2031
14315R-AE-1	Carlyle Global Market ST-SERIES 18-4A C	D	4		1FE	7,000,000		98,9415	6,925,905	7,000,000					4.637	4.142	JAU	12,622		11/30/2018	01/20/2031
14317R-AC-3	CARLYLE US CLO 2018-3 LT-CGMS 2018-3A A1	D	4		1FE	8,000,000		98,6977	7,895,816	8,000,000					0.000	(0.210)	JAU			09/20/2018	10/15/2030
149420-AE-1	CATSKILL PARK CLO LTD.-SERIES 17-1A CLAS	D	4		1FE	11,980,000		98,4992	11,800,204	11,980,000					4.169	4.023	JAU	98,502	477,094	04/27/2017	04/20/2029
14954W-AN-6	BAIN CAPITAL CREDIT CLO -SERIES 17-2A CL	D	4		1FE	11,400,000		99,2875	11,318,775	11,400,000					4.290	4.156	JAU	285,691	457,825	06/30/2017	07/25/2030
14954W-AQ-9	BAIN CAPITAL CREDIT CLO -SERIES 2017-2A	D	4		1FE	2,350,000		98,4943	2,267,616	2,350,000					4.990	4.863	JAU	70,316	111,055	06/30/2017	07/25/2030
150323-AQ-6	CEDAR FUNDING LTD-SERIES 14-4A CLASS BR	D	4		1FE	16,280,000		95,9686	15,623,688	16,280,000					4.077	3.751	JAU	129,066	621,121	04/07/2017	07/23/2030
15032T-AW-6	CEDAR FUNDING LTD-SERIES 13-1A CLASS BR	D	4		1FE	8,500,000		98,1225	8,340,413	8,500,000					4.517	3.732	MJSD	23,464	335,149	06/09/2017	06/09/2030
15033E-AC-2	Cedar Funding IX CLO Ltd-SERIES 18-9A CL	D	4		1FE	19,300,000		97,6738	18,851,043	19,300,000					3.639	3.639	JAU	452,716		03/21/2018	04/20/2031
16409T-AC-3	CHENANGO PARK CLO LTD-SERIES 18-1A CLASS	D	4		1FE	16,200,000		97,8034	15,844,151	16,200,000					3.736	3.736	JAU	131,144	243,509	04/11/2018	04/15/2030
17180W-AC-9	CIFC Funding 2018-1I Ltd-CIFC 2018-2A A2	D	4		1FE	15,000,000		97,4273	14,614,095	15,000,000					4.069	4.069	JAU	339,546		04/24/2018	04/20/2031
17181T-AA-9	CIFC Funding 2018-IV Ltd-SERIES 18-4A CL	D	4		1FE	19,583,281		98,6151	19,328,560	19,600,000		7,487			3.577	3.760	JAU	190,845		08/20/2018	10/17/2031
17181T-AC-5	CIFC Funding 2018-IV Ltd-SERIES 18-4A CL	D	4		1FE	11,200,000		97,6886	10,941,123	11,200,000					4.127	3.746	JAU	125,823		08/20/2018	10/17/2031
17275G-AA-4	CIRUS-2018-1A A	D	4		1FE	50,000,000		101,6779	50,838,950	50,000,000					4.800	4.674	JJ	220,000		11/02/2018	01/25/2037
21623P-AC-1	COOK PARK CLO LTD-COOK 2018-1A A2	D	4		1FE	13,000,000		96,7816	12,581,608	13,000,000					3.569	3.447	JAU	335,867		03/09/2018	04/17/2030
22615E-AE-0	Crestline Denali CLO Ltd-SERIES 2018-1A	D	4		1FE	6,400,000		92,1745	5,899,168	6,400,000					4.319	4.465	JAU	140,534	70,145	01/24/2018	01/20/2030
22615M-AL-6	Crestline Denali CLO XIV-SERIES16-1A CLA	D	4		1FE	23,000,000		99,4475	22,872,925	23,000,000					3.925	3.989	JAU	105,307		11/01/2018	10/23/2031
22616C-AA-1	CRESTLINE DENALI CLO XV -SERIES 17-1A CL	D	4		1FE	20,800,000		99,3404	20,662,803	20,800,000					3.769	3.523	JAU	154,613	737,563	04/05/2017	04/20/2030
22616C-AC-7	CRESTLINE DENALI CLO XV -SERIES 17-1A CL	D	4		1FE	13,570,000		95,9695	13,025,775	13,570,000					4.119	3.976	JAU	110,237	529,420	11/01/2017	04/20/2030
22616C-AE-3	CRESTLINE DENALI CLO XV -SERIES 17-1A CL	D	4		1FE	6,380,000		96,1981	6,137,439	6,380,000					4.919	4.812	JAU	61,895	300,658	04/05/2017	04/20/2030
22616T-AA-4	Crestline Denali CLO XVI-DEM7 2018-1A A	D	4		1FE	42,500,000		98,7393	41,964,203	42,500,000					3.656	3.337	JAU	336,685		09/21/2018	10/15/2031
22616T-AC-0	Crestline Denali CLO XVI-DEM7 2018-1A B	D	4		1FE	15,000,000		98,2449	14,736,735	15,000,000					4.236	3.889	JAU	137,680		09/21/2018	10/15/2031
227170-AG-2	CRONOS CONTAINERS PROGRA-SERIES 2014-2A	D	4		1FE	4,554,141		98,6210	4,492,735	4,555,555		180			3.270	3.274	MCN	5,379	147,870	11/05/2014	11/18/2029
233283-AA-8	DORIC NIMROD 2013-1 CL A-FIRST LIEN	D	1		2FE	755,596		99,2620	720,634	745,493		(11,614)			5.250	3.640	MM	3,282	37,155	06/22/2017	05/30/2023
233283-AB-6	DORIC NIMROD 2013-1 CL B-SERIES 2013-1 C	D	1		2FE	700,946		100,8200	682,137	676,589		(22,730)			6.125	2.884	MM	3,569	36,431	06/07/2017	11/30/2019
24380L-AE-3	DEER CREEK CLO LTD 2017-SERIES 17-1A CL	D	4		1FE	10,000,000		96,0831	9,608,310	10,000,000					4.119	3.979	JAU	224,167	378,589	09/26/2017	10/20/2030
24824T-AQ-3	Denali Capital Clo XII L-DEM2 2016-1A A	D	4		1FE	23,100,000		98,9692	22,861,885	23,100,000					3.486	3.486	JAU	174,490	377,299	04/05/2018	04/15/2031
258257-AA-2	DORIC NIMROD AIR 2012-1B-SERIES 2012 CLA	D	1		2FE	44,929		101,4594	44,150	43,515		(1,239)			6.500	2.933	MM	244	(1,816)	06/07/2017	05/30/2019
258258-AA-0	DORIC NIMROD AIR 2012-1A-FIRST LIEN	D	1		2FE	394,273		103,8092	390,732	387,940		(7,477)			5.125	3.131	MM	1,661	18,815	07/21/2017	11/30/2022
26244Q-AB-9	DRYDEN SENIOR LOAN FUND-SERIES 17-49A CL	D	4		1FE	11,803,300		98,5050	11,623,590	11,800,000			2,784		4.149	4.308	JAU	101,992	458,115	04/12/2018	07/18/2030
26245C-AE-3	DRYDEN SENIOR LOAN FUND-SERIES 2016-43A	D	4		1FE	7,500,000		99,4551	7,459,133	7,500,000					4.469	3.967	JAU	66,104	317,240	07/15/2016	07/20/2029
26245R-AA-8	Dryden 58 Clo Ltd-DRSLF 2018-58A A1	D	4		1FE	21,670,000		97,6238	21,477,236	22,000,000		(1,295)			3.321	3.313	JAU	334,885		12/06/2018	07/17/2031
26249K-AM-3	DRYDEN SENIOR LOAN FUND-SERIES 2014-36A	D	4		1FE	6,350,000		100,0038	6,350,241	6,350,000					5.236	5.127	JAU	72,043	355,296	12/07/2016	01/15/2028
26251B-AN-6	Dryden XXVIII Senior Loa-DRSLF 2013-28A	D	4		1FE	3,552,130		98,5060	3,496,963	3,550,000		2,217			4.266	4.249	FIAN	19,772	102,800	04/12/2018	08/15/2030
26251L-AC-8	DRYDEN 64 CLO LTD-DRSLF 2018-64A A	D	4		1FE	22,850,000		97,5316	22,285,971	22,850,000					3.415	3.415	JAU	506,701		03/20/2018	04/18/2031
26251L-AE-4	Dryden 64 CLO Ltd-DRSLF 2018-64A B	D	4		1FE	13,900,000		96,7371	13,446,457	13,900,000					3.845	3.845	JAU	348,911		03/20/2018	04/18/2031
26441E-AC-5	DUKE FUNDING LTD-SERIES 2005-HG1A CLASS	D	4		6FE			7,1181	177,952	2,500,000					2.923	0.000	JAU	22,049	85,654	01/11/2008	01/06/2045
26441N-AA-9	DUKE FUNDING LTD-SERIES 2006-10A CLASS A	D	4		6FE			0.0100	300	3,000,000					1.615	0.000	JAU			01/11/2008	04/09/2046
26441N-AB-7	DUKE FUNDING LTD-SERIES 2006-10A CLASS A	D	4		6FE			0.0100	200	2,000,000					1.725	0.000	JAU			01/11/2008	04/09/2046
27830B-AQ-7	EATON VANCE CDO LTD-SERIES 2013-1A CLAS	D	4		1FE	12,750,000		99,7299	12,715,562	12,750,000					4.536	4.375	JAU	125,316	558,611	12/08/2016	01/15/2028
27831B-AE-3	Eaton Vance CLO 2018-1 L-EATON 2018-1A B	D	4		1FE	8,000,000		98,9671	7,917,368	8,000,000					4.200	3.835	JAU	62,530		09/21/2018	10/15/2030
282523-AH-2	1828 CLO Ltd-GUGG4 2016-1A A1S1	D	4		1FE	25,000,000		98,8118	24,702,950	25,000,000					3.666	3.666	JAU	198,592		10/05/2018	10/15/2031
282523-AM-1	1828 CLO Ltd-GUGG4 2016-1A A1R1	D	4		1FE	11,500,000															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
36248M-AL-1	GT Loan Financing I Ltd -SERIES 2013-1A	D	4		1FE	7,000,000	98.1848	6,872,936	7,000,000	7,000,000					4.175	3.831	JAU	125,815		07/09/2018	07/28/2031
36361U-AC-4	GALLATIN CLO LTD-SERIES 17-1A CLASS B	D	4		1FE	9,750,000	99.1368	9,665,838	9,750,000	9,750,000					4.086	3.790	JAU	165,311	377,562	09/21/2017	07/15/2027
375415-AA-4	GILBERT PARK CLO LTD-SERIES 17-1A CLASS	D	4		1FE	15,500,000	99.0861	15,358,346	15,500,000	15,500,000					3.626	3.435	JAU	313,178	514,164	09/26/2017	10/15/2030
37890R-AE-5	GLOBAL CONTAINER ASSET L-SERIES 2015-1A	D	4		1FE	5,493,932	98.2657	5,404,829	5,500,220	5,498,966		1,018			3.450	3.466	MON	79,417	191,212	01/23/2015	02/05/2030
37952U-AD-5	GLOBAL SC FINANCE SRL-SER 2014-1A CL A	D	4		1FE	1,674,650	98.7859	1,654,664	1,675,000	1,674,839		.61			3.190	3.194	MON	2,078	53,060	07/23/2014	07/17/2029
37956A-AA-1	GLOBAL SC FINANCE SRL-SEACO 2017-1A A	D	4		1FE	34,532,884	100.1409	34,593,926	34,545,255	34,510,249		3,816			3.850	3.877	MON	51,722	1,359,022	04/18/2017	04/15/2037
38136F-AG-8	Goldentree Loan Managem-GLM 2017-1A B1	D	4		1FE	13,500,000	98.1539	13,250,777	13,500,000	13,500,000					4.019	3.815	JAU	107,006	611,971	03/09/2017	04/20/2029
38136F-AL-7	Goldentree Loan Managem-GLM 2017-1A C	D	4		1FE	6,900,000	97.4913	6,726,900	6,900,000	6,900,000					4.669	4.496	JAU	63,537	370,716	03/09/2017	04/20/2029
38136M-AC-2	GLM 2017-2A A	D	4		1FE	17,949,800	99.2439	17,903,600	18,040,000	17,950,006		206			3.619	3.730	FIAN	128,760		12/04/2018	11/28/2030
38137H-BW-7	Goldentree Loan Opportun-SERIES 2015-11A	D	4		1FE	8,000,000	96.6263	7,730,104	8,000,000	8,000,000					3.795	3.735	JAU	125,610	275,391	12/08/2017	01/18/2031
38137M-AK-3	Goldentree Loan Opportun-GLD12 2016-12A	D	4		1FE	15,000,000	98.4049	14,760,735	15,000,000	15,000,000					3.869	3.869	JAU	167,541		06/29/2018	07/21/2030
38137P-AS-9	Goldentree Loan Opportun-SERIES 2015-10A	D	4		1FE	8,800,000	98.7278	8,688,046	8,800,000	8,800,000					3.919	3.919	JAU	122,312		08/08/2018	07/20/2031
38137P-AU-4	Goldentree Loan Opportun-SERIES 2015-10A	D	4		1FE	13,850,000	98.3423	13,620,409	13,850,000	13,850,000					4.119	4.119	JAU	202,658		08/08/2018	07/20/2031
38138B-AG-5	Goldentree Loan Managem-GLM 2018-3A B1	D	4		1FE	6,000,000	97.4576	5,847,456	6,000,000	6,000,000					4.019	4.019	JAU	47,558	100,322	04/26/2018	04/20/2030
38172X-AG-4	GOLUB CAPITAL PARTNERS C-SERIES 13-16A C	D	4		1FE	30,000,000	100.0540	30,016,200	30,000,000	30,000,000					4.190	3.727	JAU	548,666	1,174,532	06/23/2017	07/25/2029
38176D-AJ-8	Golub Capital Partners C-COCAP 2015-26A	D	4		1FE	27,700,000	96.6841	26,781,496	27,700,000	27,700,000					3.548	3.548	JAU	193,802	513,873	03/29/2018	04/20/2031
39729R-AC-2	Greenwood Park CLO Ltd-SERIES 18-1A CLAS	D	4		1FE	8,800,000	96.7504	8,514,035	8,800,000	8,800,000					3.836	4.140	JAU	259,857		01/29/2018	04/15/2031
398080-AL-5	GREYWOLF CLO LTD-SERIES 2014-2A CLASS A2	D	4		1FE	12,700,000	99.7322	12,665,989	12,700,000	12,700,000					4.169	3.783	JAU	111,770	501,086	06/23/2017	01/17/2027
398080-AN-1	GREYWOLF CLO LTD-SERIES 2014-2A CLASS BR	D	4		1FE	6,800,000	99.9848	6,798,966	6,800,000	6,800,000					4.799	4.439	JAU	68,890	311,733	06/13/2017	01/17/2027
39808P-AL-0	Greywolf CLO V Ltd-GWOLF 2015-1A ATR	D	4		1FE	19,900,000	98.7681	19,654,852	19,900,000	19,900,000					3.650	3.837	JAU	283,335	322,289	01/17/2018	01/27/2031
39808P-AN-6	Greywolf CLO V Ltd-GWOLF 2015-1A A2R	D	4		1FE	8,000,000	97.8264	7,826,112	8,000,000	8,000,000					4.170	4.423	JAU	132,277	150,594	01/17/2018	01/27/2031
39809G-AC-9	GREYWOLF CLO VI Ltd-GWOLF 2018-1A A2	D	4		1FE	9,200,000	97.5105	8,970,966	9,200,000	9,200,000					4.138	4.138	JAU	70,852	188,280	03/27/2018	04/26/2031
39862E-AB-0	GRIPPEN PARK CLO LTD-SERIES 17-1A CLASS	D	4		1FE	14,000,000	98.8470	13,838,580	14,000,000	14,000,000					4.119	3.977	JAU	113,730	544,692	02/22/2017	01/20/2030
40066N-AA-4	GUANAY FINANCE LTD-SECURED NOTE	D	2		3AM	2,181,994	100.6250	2,195,631	2,181,994	2,181,994					6.000	5.999	MJSD	82,895	139,867	11/04/2013	12/15/2020
40436Q-AL-6	HPS Loan Management 9-20-HLM 9A-2016 A1B	D	4		1FE	10,000,000	98.1179	9,811,790	10,000,000	10,000,000					3.742	3.573	JAU	157,993		06/29/2018	07/19/2030
40436Q-AN-2	HPS Loan Management 9-20-HLM 9A-2016 A2R	D	4		1FE	12,750,000	97.6970	12,456,368	12,750,000	12,750,000					4.042	3.859	JAU	217,591		06/29/2018	07/19/2030
40436V-AA-9	HIGHBRIDGE LOAN MANAGEM-HLM 11A-17 A	D	4		1FE	18,100,000	99.3321	17,979,110	18,100,000	18,100,000					3.852	3.505	FIAN	108,466	634,900	04/13/2017	05/06/2030
40436V-AB-7	HIGHBRIDGE LOAN MANAGEM-HLM 11A-17 B	D	4		1FE	13,560,000	97.9814	13,286,278	13,560,000	13,560,000					4.242	3.991	FIAN	262,585	523,151	04/13/2017	05/06/2030
40436V-AC-5	HIGHBRIDGE LOAN MANAGEM-HLM 11A-17 C	D	4		1FE	9,100,000	96.6792	8,797,807	9,100,000	9,100,000					4.942	4.723	FIAN	69,962	419,771	04/13/2017	05/06/2030
40436V-AE-7	HIGHBRIDGE LOAN MANAGEM-SERIES 2014 CLA	D	4		1FE	12,700,000	98.2249	12,474,562	12,700,000	12,700,000					4.145	4.055	JAU	109,658	498,066	06/28/2017	07/18/2029
40436V-AG-2	HIGHBRIDGE LOAN MANAGEM-SERIES 2014 CLA	D	4		1FE	5,900,000	96.8589	5,714,675	5,900,000	5,900,000					4.845	4.762	JAU	59,548	273,259	06/28/2017	07/18/2029
40437L-AE-2	HPS LOAN MANAGEMENT 13-2-HLM 13A-18 A2	D	4		1FE	4,000,000	98.3953	3,935,812	4,000,000	4,000,000					3.886	3.523	JAU	33,681		08/30/2018	10/15/2030
40437L-AG-7	HPS Loan Management 13-2-HLM 13A-18 B	D	4		1FE	10,490,000	97.6425	10,242,698	10,490,000	10,490,000					4.136	3.761	JAU	94,011		08/30/2018	10/15/2030
41154X-AG-0	Harbor Park CLO, Ltd-HAR-HARB 2018-1A B1	D	4		1FE	5,200,000	97.9121	5,091,429	5,200,000	5,200,000					4.539	4.053	JAU	8,523		11/15/2018	01/20/2031
41154X-AL-9	Harbor Park CLO, Ltd-HAR-HARB 2018-1A C	D	4		1FE	4,000,000	93.9166	3,756,664	4,000,000	4,000,000					4.939	4.425	JAU	7,134		11/15/2018	01/20/2031
42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	D	4		1FE	219,780,000	97.7731	215,100,820	220,000,000	219,909,087		129,087			3.589	3.737	JAU	1,557,227	4,359,767	02/22/2018	04/20/2031
42086Q-AA-9	Kingsland VI Ltd-KING 2013-6A AR	D	4		1FE	100,000,000	98.7093	98,709,300	100,000,000	100,000,000					3.509	3.509	JAU	1,510,725	886,941	04/24/2018	04/28/2031
42771L-AB-8	HERO Funding Trust 2017-SERIES 17-2A CL	C	4,5		1FE	4,647,706	100.0417	4,650,251	4,648,312	4,648,312		(25,331)			3.280	3.490	MON	211,158	167,568	07/26/2017	09/20/2048
42771L-AC-6	HERO Funding Trust 2017-SERIES 17-2A CL	C	4,5		1FE	3,832,033	102.6624	3,838,576	3,739,030	3,811,991		(40,523)			4.070	3.744	MON	241,618	170,425	07/26/2017	09/20/2048
44330Q-AE-3	Highbridge Loan Managem-SERIES 4A-2014	D	4		1FE	11,900,000	96.4911	11,482,441	11,900,000	11,900,000					4.009	4.222	JAU	182,890	214,625	01/17/2018	01/28/2030
44330Q-AB-7	Highbridge Loan Managem-SERIES 12A-18 C	D	4		1FE	10,250,000	97.2549	9,968,627	10,250,000	10,250,000					3.622	3.269	JAU	192,862		05/16/2018	07/18/2031
449258-AA-0	IG US CLO 2018-1 LTD-SERIES 2018-1A CLA	D	4		1FE	11,900,000	98.7011	11,745,431	11,900,000	11,900,000					3.529	3.529	JAU	316,126		02/01/2018	04/21/2031
48244X-AA-0	KDAC Aircraft Finance LT-SERIES 17-1A CL	D	4		1FE	16,786,702	100.1313	16,809,328	16,787,279	16,777,797					4.212	4.227	MON	87,044	710,770	12/12/2017	12/15/2042
48244X-AB-8	KDAC AVIATION FIN SR SEC0 NT SER B 2017-	D	4		3AM	1,797,673	103.4877	1,824,870	1,797,292	1,797,292			(8,883)		5.926	5.623	MON	4,644	8,708	11/19/2018	12/15/2042
48249V-AN-1	KKR FINANCIAL CLO LTD-SERIES 13-1A CLASS	D	4		1FE	21,015,000	99.3391	20,876,112	21,015,000	21,015,000					3.726	3.509	JAU	169,668	737,092	04/03/2017	04/15/2029
48249V-AQ-4	KKR FINANCIAL CLO LTD-SERIES 13-1A CLASS	D	4		1FE	13,570,000	97.1002	13,176,497	13,570,000	13,570,000					4.136	4.014	JAU	121,614	532,372	04/03/2017	04/15/2029
48249																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
50184K-AU-2	LCM LTD PARTNERSHIP-SERIES 13A CLASS BR	D	4		1FE	12,750,000	99.7255	12,715,001	12,750,000	12,750,000					4.300	4.132	JAU	112,686	533,406	12/13/2016	07/19/2027
50184K-AW-8	LCM LTD PARTNERSHIP-SERIES 13A CLASS CR	D	4		1FE	4,482,000	99.9998	4,499,991	4,500,000	4,500,000					5.150	5.335	JAU	47,634	228,173	12/13/2016	07/19/2027
50184N-AN-2	LCM LTD PARTNERSHIP-SERIES 15A CLASS BR	D	4		1FE	5,650,000	98.5032	5,565,431	5,650,000	5,650,000					4.169	3.890	JAU	97,274	216,020	05/11/2017	07/20/2030
50184N-AP-7	LCM LTD PARTNERSHIP-SERIES 15A CLASS CR	D	4		1FE	8,950,000	97.7827	8,751,552	8,950,000	8,950,000					4.869	4.727	JAU	182,804	405,711	05/11/2017	07/20/2030
50188G-AT-0	LCM XVIII LP-LCM 18A AIR	D	4		1FE	34,475,000	97.8414	34,244,490	35,000,000	34,479,172		4.172			3.489	3.819	JAU	240,838		12/06/2018	04/20/2031
50188G-AX-1	LCM XVIII LP-LCM 18A A2R	D	4		1FE	18,500,000	97.3447	18,008,770	18,500,000	18,500,000					3.689	3.689	JAU	134,597	314,545	04/12/2018	04/20/2031
50188Q-AC-5	LCM XIX LTD PARTNERSHIP SR NT CL B	D	4		1FE	7,000,000	99.5362	6,967,534	7,000,000	7,000,000					4.436	3.980	JAU	67,284	295,918	06/30/2015	07/15/2027
50188Q-AE-1	LCM XIX LTD PARTNERSHIP DEF MEZZ NT CL C	D	4		1FE	10,000,000	98.4713	9,847,130	10,000,000	10,000,000					5.136	4.719	JAU	111,287	493,712	06/30/2015	07/15/2027
50188Y-AB-0	LCM LTD PARTNERSHIP-LCM 24A B	D	4		1FE	5,000,000	98.6799	4,933,995	5,000,000	5,000,000					4.149	4.012	MJSD	40,914	243,465	03/10/2017	03/20/2030
50189P-AN-2	LCM LTD PARTNERSHIP-SERIES 25A CLASS C2	D	4		1FE	2,500,000	97.1258	2,428,145	2,500,000	2,500,000					4.769	4.479	JAU	23,514	113,283	07/10/2017	07/20/2030
50200F-AE-9	LCM 26 Ltd-SERIES 26A CLASS B	D	4		1FE	11,750,000	96.8207	11,376,432	11,750,000	11,750,000					3.869	3.923	JAU	89,659	397,841	12/18/2017	01/20/2031
50200F-AG-4	LCM 26 Ltd-SERIES 26A CLASS C	D	4		1FE	5,650,000	93.6428	5,290,818	5,650,000	5,650,000					4.269	4.328	JAU	47,570	212,835	12/18/2017	01/20/2031
51817T-AB-8	LATAM AIR 2015-1 PTT A-SECURED	D	1		2FE	1,831,700	99.2500	1,837,225	1,851,108	1,832,489					4.200	4.403	FIAN	9,934	64,066	10/02/2018	11/15/2027
542798-AC-7	Long Point Park CLO Ltd-LNGPT 2017-1A A1	D	4		1FE	23,634,220	97.4473	22,997,563	23,600,000	23,682,857		48.637			3.669	3.740	JAU	565,672	214,466	03/14/2018	01/17/2030
553205-AC-9	MP CLO III LTD-MP3 2013-1A AR	D	4		1FE	14,500,000	99.2723	14,394,484	14,500,000	14,500,000					3.719	3.472	JAU	173,868	492,602	10/06/2017	10/20/2030
55818P-AN-0	MADISON PARK FUNDING LTD-MDPK 2014-12A B	D	4		1FE	17,000,000	99.8492	16,974,364	17,000,000	17,000,000					4.119	3.783	JAU	138,101	658,750	01/12/2017	07/20/2026
55818P-AS-9	MADISON PARK FUNDING LTD-MDPK 2014-12A C	D	4		1FE	12,200,000	98.5579	12,024,064	12,200,000	12,200,000					4.819	4.525	JAU	115,951	559,336	01/12/2017	07/20/2026
55818P-BA-3	Madison Park Funding XIV-MDPK 2014-14A B	D	4		1FE	15,000,000	98.6127	14,791,905	15,000,000	15,000,000					4.169	4.169	JAU	123,333		10/12/2018	10/22/2030
55818P-BC-9	Madison Park Funding XIV-MDPK 2014-14A C	D	4		1FE	12,500,000	96.0889	12,011,113	12,500,000	12,500,000					4.669	4.669	JAU	115,104		10/12/2018	10/22/2030
55818X-AY-9	MADISON PARK FUNDING LTD-SERIES 2015-16A	D	4		1FE	12,740,000	99.6030	12,689,422	12,740,000	12,740,000					4.369	4.077	JAU	109,776	525,968	12/14/2016	04/20/2026
55818X-BA-0	MADISON PARK FUNDING LTD-SERIES 2015-16A	D	4		1FE	7,000,000	100.0092	7,000,644	7,000,000	7,000,000					5.119	4.885	JAU	70,671	342,222	12/14/2016	04/20/2026
55818Y-BA-8	MADISON PARK FUNDING LTD-SERIES 15-17A C	D	4		1FE	21,100,000	99.3035	20,953,039	21,100,000	21,100,000					3.689	3.323	JAU	153,514	723,405	05/23/2017	07/21/2030
55818Y-BE-0	MADISON PARK FUNDING LTD-SERIES 15-17A C	D	4		1FE	12,700,000	99.1128	12,587,326	12,700,000	12,700,000					4.219	3.954	JAU	105,674	504,442	05/23/2017	07/21/2030
55818Y-BG-5	MADISON PARK FUNDING LTD-SERIES 15-17A C	D	4		1FE	3,400,000	97.8245	3,326,033	3,400,000	3,400,000					4.869	4.642	JAU	32,649	157,245	05/23/2017	07/21/2030
55819B-AL-4	MADISON PARK FUNDING XVI-SERIES 15-18A C	D	4		1FE	10,000,000	99.2857	9,928,570	10,000,000	10,000,000					3.659	3.659	JAU	72,164	340,420	09/29/2017	10/21/2030
55819B-AN-0	Madison Park Funding XVI-MDPK 2015-18A B	D	4		1FE	9,825,000	98.1608	9,816,080	10,000,000	9,826,366		1.366			4.069	4.471	JAU	80,250		12/07/2018	10/21/2030
55819D-AE-6	Madison Park Funding XX-MDPK 2018-31A A	D	4		1FE	20,000,000	98.7002	19,740,040	20,000,000	20,000,000					4.276	4.170	JAU	47,510		11/08/2018	01/23/2031
55819T-AU-5	Madison Park Funding XX-SERIES 2016-20A	D	4		1FE	7,500,000	94.0580	7,054,350	7,500,000	7,500,000					4.409	4.409	JAU	166,414		06/15/2018	07/27/2030
55819X-AC-6	Madison Park Funding XXI-MDPK 2016-22A B	D	4		1FE	11,988,000	99.5525	11,946,300	12,000,000	11,987,554		(446)			4.290	4.311	JAU	97,237		12/06/2018	10/25/2029
55820C-AE-5	MADISON PARK FUNDING XXI-MDPK 2018-29A A	D	4		1FE	14,000,000	98.7529	13,825,406	14,000,000	14,000,000					3.698	3.748	JAU	77,660		09/28/2018	10/18/2030
55820C-AG-0	Madison Park Funding XXI-MDPK 2018-29A B	D	4		1FE	10,000,000	98.9550	9,899,500	10,000,000	10,000,000					3.998	4.052	JAU	59,971		09/28/2018	10/18/2030
55820J-AC-4	MADISON PARK FUNDING LTD-SERIES 2016-21A	D	4		1FE	14,300,000	100.0502	14,307,179	14,300,000	14,300,000					4.490	3.999	JAU	121,277	603,287	07/15/2016	07/25/2029
55820N-AE-1	MADISON PARK FUNDING LTD-MDPK 2016-24A C	D	4		1FE	12,840,325	99.9838	12,874,202	12,875,000	12,875,000					5.069	5.227	JAU	128,714	311,042	12/06/2018	01/20/2028
55820R-AC-6	MADISON PARK FUNDING LTD-SERIES 17-25A C	D	4		1FE	14,470,000	99.1351	14,344,849	14,470,000	14,470,000					4.240	3.968	JAU	619,256	352,044	04/12/2017	04/25/2029
55820R-AE-2	MADISON PARK FUNDING LTD-SERIES 17-25A C	D	4		1FE	4,960,000	97.5829	4,840,112	4,960,000	4,960,000					4.840	4.745	JAU	245,334	135,388	04/12/2017	04/25/2029
55820R-AG-7	MADISON PARK FUNDING LTD-SERIES 17-25A C	D	4		2AM	4,450,000	98.4466	4,380,874	4,450,000	4,450,000					6.090	5.935	JAU	393,098	153,407	04/12/2017	04/25/2029
55820T-AC-2	MADISON PARK FUNDING LTD-SERIES 2017-23A	D	4		1FE	8,900,000	98.8241	8,795,345	8,900,000	8,900,000					4.209	4.055	JAU	66,600	333,814	06/30/2017	07/27/2030
55821A-AC-2	Madison Park Funding Ltd-SERIES 18-28A C	D	4		1FE	11,750,000	97.7260	11,482,805	11,750,000	11,750,000					3.896	3.896	JAU	226,225		06/01/2018	07/15/2030
55821A-AE-8	Madison Park Funding Ltd-SERIES 18-28A C	D	4		1FE	9,500,000	98.0364	9,313,458	9,500,000	9,500,000					4.216	4.216	JAU	198,781		06/01/2018	07/15/2030
55821T-AC-1	Madison Park Funding Ltd-SERIES 18-30A C	D	4		1FE	7,400,000	97.0909	7,184,727	7,400,000	7,400,000					3.636	4.081	JAU	193,611		02/23/2018	04/15/2029
55951P-BC-0	Magnetite VII Ltd-MAGNE 2012-7A A2R2	D	4		1FE	8,790,000	97.0706	8,532,506	8,790,000	8,790,000					3.636	3.828	JAU	69,254	203,182	01/29/2018	01/15/2028
55952Y-AR-8	Magnetite VIII Ltd-MAGNE 2014-8A BR2	D	4		1FE	15,000,000	97.9476	14,692,140	15,000,000	15,000,000					3.936	3.936	JAU	127,930	239,852	04/20/2018	04/15/2031
55952Y-AT-4	Magnetite VIII Ltd-MAGNE 2014-8A CR2	D	4		1FE	4,500,000	96.0141	4,320,635	4,500,000	4,500,000					4.286	4.286	JAU	41,792	78,693	04/20/2018	04/15/2031
55953E-AJ-9	MAGNETITE CLO LTD-SERIES 14-11A CLASS A1	D	4		1FE	12,675,000	99.5951	12,623,679	12,675,000	12,675,000					3.565	3.153	JAU	174,543	422,602	04/03/2017	01/18/2027
55953E-AN-0	MAGNETITE CLO LTD-SERIES 14-11A CLASS BR	D	4		1FE	6,830,000	98.1428	6,703,153	6,830,000	6,830,000					4.545	4.309	JAU	125,103	295,585	04/03/2017	01/18/2027
55954K-AC-9	MAGNETITE CLO LTD-SERIES 17-19A CLASS B	D	4		1FE	7,325,000	98.5103	7,215,879	7,325,000	7,325,000					4.106	5.040	JAU	159,239	284,838	06/29/2017	07/17/2030
55954K-AE-5	MAGNETITE CLO LTD-SERIES 2017-19A CLASS	D	4	</																	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
628788-AA-9	NORWEGIAN AIR 16-1 A PTT-SECURED	D	1		3FE	5,191,822	97.7332	5,219,214	5,340,268	5,195,403		7,339			4.875	5.363	MM	36,881	130,188	08/20/2018	05/10/2028
64129J-AQ-3	NEUBERGER BERMAN CLO LTD-NEUB 2013-14A A	D	4		1FE	13,560,000	99.3662	13,474,057	13,560,000	13,560,000					3.759	3.449	JAJO	90,623	468,234	04/19/2017	01/28/2030
64129J-AU-4	NEUBERGER BERMAN CLO LTD-NEUB 2013-14A B	D	4		1FE	5,730,000	98.5669	5,647,883	5,730,000	5,730,000					4.259	4.045	JAJO	43,388	226,908	04/19/2017	01/28/2030
64130H-AA-9	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A A	D	4		1FE	13,560,000	99.3417	13,470,735	13,560,000	13,560,000					3.680	3.448	JAJO	102,564	474,616	03/31/2017	04/19/2030
64130H-AC-5	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A B	D	4		1FE	13,600,000	97.6960	13,286,656	13,600,000	13,600,000					4.050	3.906	JAJO	113,210	527,035	03/31/2017	04/19/2030
64130H-AE-1	NEUBERGER BERMAN CLO LTD-NEUB 2017-24A C	D	4		1FE	4,330,000	97.2745	4,211,986	4,330,000	4,330,000					4.900	4.792	JAJO	43,609	205,115	03/31/2017	04/19/2030
64130P-AE-3	Neuberger Berman CLO Ltd-NEUB 2018-28A B	D	4		1FE	7,000,000	97.4091	6,818,637	7,000,000	7,000,000					4.069	4.069	JAJO	154,952		04/27/2018	04/20/2030
64131Q-AC-4	NEUBERGER BERMAN LOAN AD-SERIES 2017-26A	D	4		1FE	5,850,000	96.9925	5,674,061	5,850,000	5,850,000					3.945	3.815	JAJO	49,014	106,312	10/25/2017	10/18/2030
64131T-AG-9	Neuberger Berman CLO XVII-SERIES 17-16SA	D	4		1FE	7,750,000	94.4557	7,320,317	7,750,000	7,750,000					4.036	4.038	JAJO	132,846	274,370	12/19/2017	01/15/2028
64132M-AC-2	Neuberger Berman CLO Ltd-NEUB 2018-30A A	D	4		1Z	10,000,000	99.0000	9,900,000	10,000,000	10,000,000					0.000	0.000	JAJO			12/07/2018	01/20/2031
669348-AB-0	Norwegian Air Shuttle AS Pass Thur Ctfs	D	1		1Z	26,531,483	97.8973	26,040,515	26,599,830	26,563,450		12,188			4.150	4.199	MJSD	1,505,675	1,178,504	10/20/2014	12/31/2026
67091H-AK-7	QHA LOAN FUNDING LTD-QHALF 2012-1A B1R	D	4		1FE	15,000,000	99.8060	14,970,900	15,000,000	15,000,000					4.327	4.015	JAJO	126,210	615,271	11/18/2016	01/23/2027
67091H-AP-6	QHA LOAN FUNDING LTD-SERIES 2012-1A CLASS	D	4		1FE	4,500,000	100.0065	4,500,293	4,500,000	4,500,000					5.077	4.808	JAJO	44,425	218,800	11/18/2016	01/23/2027
67097Q-AC-9	QCP CLO 2017-14 LTD-SERIES 17-14A CLASS	D	4		1FE	13,100,000	97.1039	12,720,611	13,100,000	13,100,000					3.895	3.601	FIAM	59,521	464,361	11/16/2017	11/20/2030
67097Q-AE-5	QCP CLO 2017-14 LTD-SERIES 17-14A CLASS	D	4		1FE	11,400,000	96.0135	10,945,539	11,400,000	11,400,000					4.145	3.872	FIAM	55,122	434,025	11/16/2017	11/20/2030
67102Q-AK-4	QHA CREDIT PARTNERS LTD-SERIES 2012-7A C	D	4		1FE	12,800,000	98.4723	12,604,454	12,800,000	12,800,000					4.495	4.100	FIAM	67,118	521,688	12/09/2016	11/20/2027
67102Q-AP-3	QHA CREDIT PARTNERS LTD-SERIES 2012-7A C	D	4		1FE	2,974,405	100.0166	2,975,494	2,975,000	2,975,000					5.345	5.337	FIAM	18,550	146,890	12/09/2016	11/20/2027
67104L-AE-7	QHA Loan Funding 2013-2 -QHALF 2013-2A A	D	4		1FE	79,100,000	97.8849	77,426,956	79,100,000	79,100,000					3.717	3.717	JAJO	318,511	1,358,461	05/23/2031	05/23/2031
67104L-AF-4	QHA Loan Funding 2013-2 -QHALF 2013-2A B	D	4		1FE	25,000,000	97.4515	24,382,875	25,000,000	25,000,000					4.227	4.227	FIAM	114,480	494,516	05/11/2018	05/23/2031
67104L-AG-2	QHA Loan Funding 2013-2 -QHALF 2013-2A C	D	4		1FE	8,000,000	94.0066	7,520,528	8,000,000	8,000,000					4.527	4.527	FIAM	39,233	170,512	05/11/2018	05/23/2031
67105V-AH-4	QHA CREDIT PARTNERS LTD-OAKC 2013-9A B1R	D	4		1FE	20,000,000	99.6592	19,931,840	20,000,000	20,000,000					3.929	3.527	JAJO	154,977	736,472	03/29/2017	10/20/2025
67110H-AA-6	OZLM XIV LTD SR SEC NT CL A-1A	D	4		1FE	28,670,400	99.9985	28,799,568	28,800,000	28,800,000			17,904		3.986	4.163	JAJO	248,746	1,086,090	03/31/2016	01/15/2029
67112K-AB-5	QCP CLO Ltd-SERIES 18-15A CLASS A2	D	4		1FE	14,250,000	97.4927	14,250,000	14,250,000	14,250,000					3.733	3.357	JAJO	286,644		05/23/2018	07/20/2031
67112K-AC-3	QCP CLO Ltd-SERIES 18-15A CLASS A3	D	4		1FE	12,000,000	96.0812	11,529,744	12,000,000	12,000,000					4.083	3.685	JAJO	264,018		05/23/2018	07/20/2031
67115W-AE-0	QHA Credit Funding 1 LTD-SERIES 18-1A CL	D	4		1FE	10,400,000	98.7362	10,268,565	10,400,000	10,400,000					4.089	3.676	JAJO	106,324		08/24/2018	10/20/2030
67115W-AG-5	QHA Credit Funding 1 LTD-SERIES 18-1A CL	D	4		1FE	8,000,000	97.9854	7,838,832	8,000,000	8,000,000					4.289	3.863	JAJO	85,788		08/24/2018	10/20/2030
674000-AN-4	OAKTREE CLO LTD-SERIES 14-1A CLASS A1R	D	4		1FE	17,120,000	99.6290	17,056,485	17,120,000	17,120,000					3.908	3.340	FIAM	209,540	595,821	05/04/2017	05/13/2029
674000-AQ-7	OAKTREE CLO LTD-SERIES 14-1A CLASS A2R	D	4		1FE	6,850,000	97.3050	6,665,393	6,850,000	6,850,000					4.468	4.002	FIAM	41,659	277,379	05/04/2017	05/13/2029
674000-AS-3	OAKTREE CLO LTD-SERIES 14-1A CLASS BR	D	4		1FE	3,430,000	98.6925	3,385,153	3,430,000	3,430,000					5.338	4.917	FIAM	24,922	169,147	05/04/2017	05/13/2029
67400F-AE-1	OAKTREE CLO 2018-1 LTD SR SEC NT CL A-2	D	4		1FE	8,650,000	97.6197	8,444,104	8,650,000	8,650,000					4.300	4.177	JAJO	27,893		10/24/2018	10/20/2030
67707B-AB-6	QHA Credit Partners XV L-SERIES 17-15A C	D	4		1FE	13,100,000	96.5731	12,651,076	13,100,000	13,100,000					3.839	3.729	JAJO	334,113	461,272	11/17/2017	01/20/2030
67707C-AE-8	Oak Hill Credit Partners-OAKC 2014-10RA	D	4		1FE	9,900,000	99.3420	9,834,858	9,900,000	9,900,000					4.226	4.226	MJSD			11/20/2018	12/12/2030
67707C-AJ-7	Oak Hill Credit Partners-OAKC 2014-10RA	D	4		1FE	15,000,000	98.9534	14,843,010	15,000,000	15,000,000					4.526	4.526	MJSD			11/20/2018	12/12/2030
69688A-AA-9	Palmer Square CLO 2013-2-SERIES 13-2A CL	D	4		1FE	16,000,000	98.7965	15,807,440	16,000,000	16,000,000					3.649	3.649	JAJO	123,249		09/11/2018	10/17/2031
69688X-AU-5	Palmer Square CLO 2014-1-SERIES 2014-1A	D	4		1FE	9,900,000	96.5868	9,562,093	9,900,000	9,900,000					3.899	3.625	JAJO	161,098	335,622	12/08/2017	01/17/2031
69689A-AN-0	PALMER SQUARE CLO LTD-SERIES 15-1A CLASS	D	4		1FE	5,350,000	98.9984	5,296,414	5,350,000	5,350,000					4.496	4.005	FIAM	27,393	215,898	05/11/2017	05/21/2029
69703P-AC-3	Palmer Square CLO 2018-1-PLMPS 2018-1A A	D	4		1FE	10,000,000	96.4660	9,646,600	10,000,000	10,000,000					3.895	4.368	JAJO	295,764		02/12/2018	04/18/2031
69703P-AE-9	Palmer Square CLO 2018-1-PLMPS 2018-1A B	D	4		1FE	3,900,000	92.2018	3,595,870	3,900,000	3,900,000					4.195	4.687	JAJO	124,708		02/12/2018	04/18/2031
74979V-AE-3	RR Ltd-RRAM 2018-5A A2	D	4		1FE	8,000,000	98.0392	7,843,136	8,000,000	8,000,000					4.084	4.091	JAJO	68,067		09/13/2018	10/15/2031
74982L-AN-0	RACEP 2013-8A	D	4		1FE	21,377,755	99.5326	21,250,210	21,350,000	21,375,328		(2,427)			3.985	3.954	FIAM	99,247		11/26/2018	02/20/2030
74982L-AQ-3	RACE POINT CLO LTD-SERIES 13-8A CLASS BR	D	4		1FE	10,775,000	98.9616	10,663,112	10,775,000	10,775,000					4.345	4.007	FIAM	54,614	418,665	02/09/2017	02/20/2030
74982L-AS-9	RACE POINT CLO LTD-SERIES 13-8A CLASS CR	D	4		1FE	7,550,000	96.4914	7,285,101	7,550,000	7,550,000					5.145	4.847	FIAM	45,314	354,596	02/09/2017	02/20/2030
74988L-AA-2	ALM XIV Ltd-SERIES 14-14A CLASS A1R2	D	4		1FE	15,900,000	98.2159	15,616,328	15,900,000	15,900,000					3.526	3.762	JAJO	234,102	233,119	01/18/2018	01/15/2030
74988L-AC-8	ALM XIV Ltd-SERIES 14-14A CLASS A2R2	D	4		1FE	11,900,000	96.8669	11,527,161	11,900,000	11,900,000					3.836	4.127	JAJO	192,526	191,688	01/18/2018	01/15/2030
74988L-AJ-3	ALM XIV Ltd-SERIES 14-14A CLASS BR2	D	4		1FE	3,800,000	93.6730	3,559,574	3,800,000	3,800,000					4.236	4.552	JAJO	68,614	68,305	01/18/2018	01/15/2030
75102Q-AC-2	RAIT CRE CDO I LTD-3RD PRIORITY SR SEC	D	4		4AM	593,884	99.5802	821,376	824,839	824,839		1,432			2.920	2.811	MON	2,537	19,515	0	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
77342J-AC-7	Rockford Tower CLO 2018--SERIES 18-1A CL	D	4		1FE	7,500,000	.98	7,351,553	7,500,000	7,500,000					4.365	4.365	FMAN	186,528		04/19/2018	05/20/2031
77342K-AA-8	ROCKFORD TOWER CLO 2018--ROCKT 2018-2A A	D	4		1FE	19,976,000	.98	19,723,040	20,000,000	19,986,008			10,008		3.589	3.769	JAJO	219,305		08/06/2018	10/20/2031
77342K-AC-4	Rockford Tower CLO 2018-2 Ltd	D	4		1FE	6,400,000	.98	6,292,141	6,400,000	6,400,000					4.229	3.807	JAJO	82,693		08/06/2018	10/20/2031
78109Q-AE-8	RR 2 LTD-SERIES 17-2A CLASS A2	D	4		1FE	8,500,000	.97	8,324,926	8,500,000	8,500,000					4.036	3.887	JAJO	199,009	316,926	09/15/2017	10/15/2029
79410U-AO-4	SALEM FIELDS CLO LTD SR SEC2 NT CL A-2-R	D	4		1FE	10,000,000	.97	9,730,860	10,000,000	10,000,000					4.190	4.190	JAJO	79,142		10/19/2018	10/25/2028
80306A-AB-6	SAPPHIRE AVIATION FINANC-SERIES 18-1A CL	D	4		3AM	5,103,254	101	5,058,737	4,968,750	5,097,817		(5,437)			5.926	5.486	MON	15,087	101,111	08/15/2018	03/15/2040
80306A-AB-6	SAPPHIRE AVIATION FINANC-SERIES 18-1A CL	D	4		3AM	1,151,631	101	1,145,374	1,125,000	1,150,913		(718)			5.926	5.538	MON	111,235		09/28/2018	03/15/2040
817176-AL-4	SENECA PARK CLO LTD-SPARK 2014-1A AR	D	4		1FE	12,909,487	.99	12,870,733	12,909,487	12,909,487					3.569	3.115	JAJO	97,262		03/29/2017	07/17/2026
817176-AN-0	SENECA PARK CLO LTD-SPARK 2014-1A B1R	D	4		1FE	15,000,000	.99	14,953,875	15,000,000	15,000,000					3.949	3.636	JAJO	125,046	588,375	03/29/2017	07/17/2026
817176-AS-9	SENECA PARK CLO LTD-SPARK 2014-1A CR	D	4		1FE	5,000,000	.97	4,896,745	5,000,000	5,000,000					4.599	4.328	JAJO	48,543	219,076	03/29/2017	07/17/2026
81883A-AC-3	Shackleton 2015-VII-R CL-SERIES 2015-7RA	D	4		1FE	14,000,000	.98	13,814,626	14,000,000	14,000,000					4.189	3.845	JAJO	275,324		07/12/2018	07/15/2031
83609G-AO-9	Sound Point CLO II Ltd-SNDPT 2013-1A A2R	D	4		1FE	8,000,000	.96	7,722,992	8,000,000	8,000,000					3.958	4.182	JAJO	123,691	141,429	01/22/2018	01/26/2031
83609G-AN-5	SOUND POINT CLO IX LTD-SERIES 2015-2A CL	D	4		1FE	8,000,000	.98	7,877,184	8,000,000	8,000,000					3.819	3.537	JAJO	168,157	258,052	10/04/2017	07/20/2027
83609R-AE-1	SOUND POINT CLO LTD-SNDPT 2017-1A C	D	4		1FE	4,000,000	.98	3,921,412	4,000,000	4,000,000					4.977	4.788	JAJO	38,711	191,847	02/02/2017	01/23/2029
83609Y-AC-0	Sounds Point CLO IV-R LT-SERIES 13-3RA C	D	4		1FE	26,000,000	.98	25,658,802	26,000,000	26,000,000					3.595	3.595	JAJO	664,107		04/19/2018	04/18/2031
83609Y-AE-6	Sounds Point CLO IV-R LT-SERIES 13-3RA C	D	4		1FE	10,000,000	.98	9,835,280	10,000,000	10,000,000					4.195	4.195	JAJO	297,592		04/19/2018	04/18/2031
83610K-AA-1	SOUND POINT CLO LTD-SERIES 2017-2A CLAS	D	4		1FE	23,086,463	.99	22,938,531	23,100,000	23,100,000					3.770	3.892	JAJO	164,492	814,856	05/19/2017	07/25/2030
85572R-AB-5	Start Ltd/Bermuda-STARR 2018-1 B	D	4		3AM	3,840,521	101	3,833,333	3,840,253	3,833,333		(267)			5.315	5.311	MON	26,379	53,072	06/20/2018	05/15/2043
85572R-AB-5	Start Ltd/Bermuda-STARR 2018-1 B	D	4		2AM	11,393,050	101	11,680,139	11,500,000	11,398,854		5,805			5.315	5.483	MON	79,134	317	06/19/2018	05/15/2043
858102-AX-4	Steele Creek CLO 2016-1 -SERIES 2016-1A	D	4		1FE	133,500,000	.98	131,733,261	133,500,000	133,500,000					3.908	3.908	MJSD	217,393	2,371,943	05/29/2018	06/15/2031
85816B-CO-1	STEELE CREEK CLO LTD-SERIES 15-1A CLASS	D	4		1FE	8,560,000	.97	8,333,845	8,560,000	8,560,000					4.496	3.994	FMAN	43,823	345,306	05/12/2017	05/21/2029
85816B-CS-7	STEELE CREEK CLO LTD-SERIES 15-1A CLASS	D	4		1FE	4,330,000	.98	4,250,835	4,330,000	4,330,000					5.266	4.803	FMAN	25,968	208,474	05/12/2017	05/21/2029
85816L-AA-6	Steele Creek CLO 2018-2 -SERIES 2018-2A	D	4		1FE	15,968,000	.98	15,783,840	16,000,000	15,981,866		13,866			3.473	3.827	FMAN	194,502		07/27/2018	08/18/2031
85816W-AC-8	Steele Creek CLO 2014-1 -SERIES 14-1RA C	D	4		1FE	130,000,000	.99	128,959,480	130,000,000	130,000,000					3.539	3.918	JAJO	907,360	2,574,325	02/14/2018	04/21/2031
87155M-AC-5	SYMPHONY CLO V LTD-SR SEC2 NT CL A-2 144	D	4		1FE	8,693,000	100	8,650,878	9,650,309	9,690,309		(7,589)			3.936	3.700	JAJO	82,302	359,024	05/29/2013	01/15/2024
87159Q-BG-2	SYMPHONY CLO LTD-SYMP 2014-14A B1R	D	4		1FE	12,800,000	100	12,800,051	12,800,000	12,800,000					4.286	3.988	JAJO	118,874	526,017	01/06/2017	07/14/2026
87230A-AA-4	TCI-FLATIRON CLO 2016-1 LTD SR SEC2 NT C	D	4		1FE	12,964,224	.99	12,999,909	13,000,000	13,107,617					3.999	3.922	JAJO	109,745	490,515	06/02/2016	07/17/2028
87230A-AD-8	TCI-FLATIRON CLO LTD-TFLAT 2016-1A A	D	4		3AM	2,006,420	.99	1,999,956	2,000,000	2,020,710		3,696			3.999	6.801	JAJO	28,706	134,750	11/15/2016	07/17/2028
87231L-AA-9	TCI-CENT CLO 2016-1 LTD -TCENT 2016-1A A	D	4		1FE	8,500,000	.99	8,499,805	8,500,000	8,500,000					4.029	3.734	MJSD	60,886	317,268	12/02/2016	12/21/2029
87231L-AC-5	TCI-CENT CLO 2016-1 LTD -TCENT 2016-1A A	D	4		1FE	6,540,000	100	6,540,052	6,540,000	6,540,000					4.709	4.522	MJSD	54,753	289,199	12/02/2016	12/21/2029
87232A-AE-4	TFLAT 2018-1A B	D	4		1FE	10,000,000	100	10,000,000	10,000,000	10,000,000					0.000	0.000	JAJO			12/19/2018	01/29/2032
87244A-BC-3	WIND RIVER CLO LTD-SERIES 12-1A CLASS BR	D	4		1FE	3,900,000	.99	3,893,085	3,900,000	3,900,000					4.286	3.770	JAJO	36,219	158,937	09/29/2016	01/15/2026
87244A-BE-9	WIND RIVER CLO LTD-WINDR 2012-1A CR	D	4		1FE	6,741,876	.99	6,739,987	6,740,000	6,765,357		8,723			5.086	4.928	JAJO	74,277	329,345	11/15/2016	01/15/2026
87246M-AA-0	TICP CLO LTD-SERIES 2016-6A CLASS A	D	4		1FE	5,600,000	100	5,600,084	5,600,000	5,600,000					3.986	3.712	JAJO	48,367	219,745	10/26/2016	01/15/2029
87246M-AB-8	TICP CLO LTD-SERIES 2016-6A CLASS B	D	4		1FE	8,876,860	.99	8,877,714	8,900,000	8,900,000					4.496	4.681	JAJO	86,704	398,626	10/26/2016	01/15/2029
87248K-AL-8	TICP CLO VI 2016-5 Ltd-TICP 2016-5A BR	D	4		1FE	15,200,000	.96	14,743,164	15,200,000	15,200,000					4.199	4.199	JAJO	134,735	158,719	06/28/2018	07/17/2031
87248K-AS-3	TICP CLO VI 2016-5 Ltd-TICP 2016-5A A2R	D	4		1FE	8,000,000	.98	7,844,248	8,000,000	8,000,000					3.899	3.899	JAJO	65,847	77,402	06/28/2018	07/17/2031
87248T-AE-5	TICP CLO LTD-SERIES 2017 CLASS 7A	D	4		1FE	4,300,000	.98	4,214,602	4,300,000	4,300,000					5.036	4.698	JAJO	46,922	208,505	06/12/2017	07/15/2029
87248W-AC-2	TICP CLO VIII LTD-SERIES 2017-8A CLASS A	D	4		1FE	10,000,000	.97	9,728,430	10,000,000	10,000,000					4.119	3.982	JAJO	107,126	211,505	09/27/2017	10/20/2030
87249C-AC-5	TICP CLO X LTD-SERIES 18-10A CLASS B	D	4		1FE	6,700,000	.95	6,387,847	6,700,000	6,700,000					3.939	3.939	JAJO	189,269		03/05/2018	04/20/2031
87249C-AE-1	TICP CLO X LTD-SERIES 18-10A CLASS C	D	4		1FE	3,600,000	.92	3,324,053	3,600,000	3,600,000					4.369	4.369	JAJO	113,049		03/05/2018	04/20/2031
87249Q-AA-8	TICP CLO Ltd-TICP 2018-11A A	D	4		1FE	25,000,000	.98	24,655,575	25,000,000	25,000,000					3.619	3.267	JAJO	238,761		08/17/2018	10/20/2031
87271L-AJ-1	TIAA CLO I Ltd-TIA 2016-1A AR	D	4		1FE	113,000,000	.98	111,607,501	113,000,000	113,000,000					3.669	3.669	JAJO	817,677	1,046,710	07/18/2018	07/20/2031
873549-AC-3	Taconic Park CLO Ltd 201-SERIES 2016-1A	D	4		1FE	16,100,000	.99	16,053,857	16,100,000	16,100,000					4.339	4.193	JAJO	137,775	678,440	12/13/2016	01/20/2029
87806L-AC-0	TCI-CENT CLO 2016-1 LTD -SERIES 17-1A CL	D	4		1FE	30,000,000	.98	29,681,850	30,000,000	30,000,000					3.760	3.334	JAJO	415,802	1,043,736	06/19/2017	07/25/2030
87806L-AE-6	TCI-CENT CLO 2016-1 LTD -SERIES 17-1A CL	D	4		1FE	13,500,000	.98	13,340,133	13,500,000	13,500,000					4.290	3.952	JAJO	109,392	542,162	06/19/2017	07/25/2030
88315F-AA-9	TEXTAINER MARINE CONTAIN-SERIES 17-1A CL	D	4		1FE	9,235,176	.99	9,207,668	9,235,580	9,237,5											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates			
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22	
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date	
88433R-AE-2	WIND RIVER CLO LTD-SERIES 17-2A CLASS B	D	4		1FE	6,840,000	.98	2,992	6,723,665	6,840,000					4.169	3.825	JAU	182,793	268,323	05/12/2017	07/20/2030	
88433R-AG-7	WIND RIVER CLO LTD-SERIES 17-2A CLASS C1	D	4		1FE	2,590,000	.97	3764	2,522,049	2,590,000					4.919	4.553	JAU	84,971	121,297	05/12/2017	07/20/2030	
88434G-AC-9	THL CREDIT WIND RIVER 20-SERIES 2017-3A	D	4		1FE	6,780,000	.97	8904	6,636,969	6,780,000					4.136	3.818	JAU	60,762	267,764	08/09/2017	10/15/2030	
88434H-AG-3	THL Credit Wind River 20-SERIES 18-2A CL	D	4		1FE	14,400,000	.98	4380	14,175,072	14,400,000					3.561	3.505	JAU	146,715		08/17/2018	07/15/2030	
88434H-AG-8	THL Credit Wind River 20-WINDR 2018-2A B	D	4		1FE	11,600,000	.98	1965	11,390,794	11,600,000					3.861	3.800	JAU	128,144		08/17/2018	07/15/2030	
886065-AB-7	Thunderbolt Aircraft Lea-TBOLT 2018-A B	D	4,5		2AM	7,856,852	.101	2554	7,955,784	7,857,143			(3,502)		5.071	4.958	MON	17,708	157,162	07/19/2018	09/15/2038	
886065-AB-7	Thunderbolt Aircraft Lea-TBOLT 2018-A B	D	4,5		3AM	3,959,572	.101	2554	3,977,892	3,956,314			(3,258)		5.071	4.829	MON	8,854	166,016	07/24/2018	09/15/2038	
89852T-AN-8	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	D	4		1FE	13,085,000	.99	2344	12,984,821	13,085,000					3.686	3.686	JAU	342,504		04/06/2018	04/15/2029	
92557W-AE-3	VIBRANT CLO IV LTD-SR SECD NT CL B 144A	D	4		1FE	6,212,804	100	0002	6,280,013	6,280,000		9,066			4.869	4.827	JAU	60,305	407,050	05/13/2016	07/20/2028	
92558A-AA-8	VIBRANT CLO LTD-SERIES 2016-5A CLASS A	D	4		1FE	4,300,000	100	0147	4,300,632	4,300,000					4.019	3.739	JAU	34,083	195,922	12/07/2016	01/20/2029	
92558V-AC-8	Vibrant CLO Ltd-SERIES 18-9A CLASS A2	D	4		1FE	23,500,000	.95	8008	22,513,188	23,500,000					4.042	3.878	JAU	385,248		07/03/2018	07/20/2031	
92765Y-AA-5	VIRGIN AUST 2013-1A TRST-SECURED	D	1		2FE	837,109	101	2800	808,634	798,414		(24,104)			5.000	2.371	JAU	7,541	33,752	10/20/2016	10/23/2023	
92765Y-AB-3	VIRGIN AUST 2013-1B TRST-SECURED	D	1		3FE	146,288	100	5037	144,142	144,502		(3,076)			6.000	3.585	JAU	1,625	5,454	01/30/2018	10/23/2020	
92912V-AN-5	VOYA CLO LTD-VOYA 2014-2A A1R	D	4		1FE	9,050,000	.99	3347	8,989,790	9,050,000					3.699	3.480	JAU	70,668	313,947	03/31/2017	04/17/2030	
92912V-AQ-8	VOYA CLO LTD-VOYA 2014-2A A2AR	D	4		1FE	18,810,000	.97	6644	18,370,674	18,810,000					4.099	3.984	JAU	162,764	728,809	03/31/2017	04/17/2030	
92912V-AS-4	VOYA CLO LTD-VOYA 2014-2A BR	D	4		1FE	10,020,000	.97	2430	9,743,749	10,020,000					4.899	4.817	JAU	103,626	469,507	03/31/2017	04/17/2030	
92915P-AK-1	VOYA CLO 2014-1 Ltd-INGIM 2014-1A ABR2	D	4		1FE	16,600,000	.97	2747	16,147,600	16,600,000					3.695	3.695	JAU	127,770	303,257	03/29/2018	04/18/2031	
92915Q-AE-3	VOYA CLO LTD-SERIES 2017-3A CLASS A1B	D	4		1FE	6,800,000	.98	0059	6,664,401	6,800,000					3.819	3.513	JAU	148,979	242,639	06/13/2017	07/20/2030	
92915Q-AG-8	VOYA CLO LTD-SERIES 2017-3A CLASS A2	D	4		1FE	7,200,000	.98	5069	7,092,497	7,200,000					4.239	3.977	JAU	180,002	287,572	06/13/2017	07/20/2030	
92916M-AB-7	VOYA CLO LTD-VOYA 2017-1A A2	D	4		1FE	11,500,000	.97	6734	11,232,441	11,500,000					4.049	3.930	JAU	213,202	443,679	03/10/2017	04/17/2030	
92916M-AC-5	VOYA CLO LTD-VOYA 2017-1A B	D	4		1FE	7,400,000	.96	3691	7,131,313	7,400,000					4.749	4.666	JAU	74,187	338,017	03/10/2017	04/17/2030	
92916Q-AC-6	VOYA CLO 2017-4 LTD-SERIES 17-4A CLASS B	D	4		1FE	7,900,000	.96	3575	7,612,243	7,900,000					3.886	3.756	JAU	67,143	142,811	10/30/2017	10/15/2030	
92917A-AA-4	VOYA 2018-1A A1	D	4		1FE	23,601,000	.98	4615	23,630,760	24,000,000		1,823			3.293	3.654	JAU	162,434		12/06/2018	04/19/2031	
92917A-AE-6	VOYA CLO Ltd-SERIES 18-1A CLASS B	D	4		1FE	5,060,000	.92	7075	4,691,000	5,060,000					4.143	4.731	JAU	157,226		02/23/2018	04/19/2031	
92917J-AE-7	VOYA CLO 2018-2 Ltd-VOYA 2018-2A B1	D	4		1FE	12,000,000	.96	7119	11,605,428	12,000,000					3.924	3.543	JAU	253,752		05/17/2018	07/15/2031	
94949J-AA-3	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A1	D	4		1FE	44,941,500	.98	8817	44,496,765	45,000,000		(2,927)			3.638	3.834	JAU	436,580		08/29/2018	10/20/2031	
94949J-AC-9	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A2	D	4		1FE	10,800,000	.96	9642	10,472,134	10,800,000					4.238	3.846	JAU	122,059		08/29/2018	10/20/2031	
94949J-AW-7	Wellfleet CLO 2016-1 Ltd-WELF 2016-1A CR	D	4		1FE	4,000,000	.95	6667	3,826,668	4,000,000					4.469	4.469	JAU	69,640	45,408	04/27/2018	04/20/2028	
94950G-AA-5	WELLFLEET CLO LTD-WELF 2017-1A A1	D	4		1FE	9,250,000	.99	6289	9,215,673	9,250,000					3.789	3.495	JAU	69,123	332,113	03/29/2017	04/20/2029	
94950G-AC-1	WELLFLEET CLO LTD-WELF 2017-1A A2	D	4		1FE	20,000,000	.97	3635	19,472,700	20,000,000					4.169	3.972	JAU	164,444	795,138	03/29/2017	04/20/2029	
94950G-AE-7	WELLFLEET CLO LTD-WELF 2017-1A B	D	4		1FE	6,200,000	.96	9634	6,011,731	6,200,000					4.969	4.820	JAU	60,760	296,782	03/29/2017	04/20/2029	
94950J-AA-9	Wellfleet CLO Ltd-SERIES 18-1A CLASS A	D	4		1FE	60,000,000	.98	6601	59,196,060	60,000,000					3.470	3.134	JAU	1,081,630		05/21/2018	07/17/2031	
94950J-AC-5	Wellfleet CLO Ltd-SERIES 18-1A CLASS B	D	4		1FE	13,500,000	.96	1085	12,974,648	13,500,000					4.020	3.652	JAU	281,935		05/21/2018	07/17/2031	
94951D-AC-7	Wellfleet CLO 2018-3 Ltd-SERIES 18-3A CL	D	4		1FE	8,000,000	.99	3300	7,946,400	8,000,000					4.370	3.946	JAU	11,654		11/16/2018	01/20/2032	
94951D-AJ-2	Wellfleet CLO 2018-3 Ltd-SERIES 18-3A CL	D	4		1FE	7,500,000	.98	6060	7,395,450	7,500,000					4.670	4.226	JAU	11,676		11/16/2018	01/20/2032	
94951M-AC-7	WELLFLEET CLO 2017-2 LTD-SERIES 17-2A CL	D	4		1FE	6,100,000	.96	7165	5,899,707	6,100,000					4.219	4.219	JAU	159,870	237,109	08/14/2017	10/20/2029	
U0567P-AA-4	Turkish Airlines 2015-1-SECURED	D	1		3FE	232,247		227,611	262,961	233,290		1,043			4.200	6.952	MS	3,252	951	10/16/2018	03/15/2027	
3599999. Subtotal - Bonds - Industrial and Miscellaneous (Unaffiliated) - Other Loan-Backed and Structured Securities						10,311,614,955	XXX	10,269,241,356	10,423,391,386	10,343,014,226	8,177,396	11,443,078	9,007,382	XXX	XXX	XXX		104,104,636	257,788,965	XXX	XXX	
3899999. Total - Industrial and Miscellaneous (Unaffiliated) Bonds						69,425,279,581	XXX	68,347,498,545	68,691,725,373	68,883,971,037	424,985	(3,512,506)	45,971,227	(434,256,689)	XXX	XXX	XXX		841,496,926	2,513,735,551	XXX	XXX
01039X-AA-8	ALABAMA POWER CAP TR V-UNSECURED NOTE	2	1,5		1FE	7,471,875	.98	5000	7,387,500	7,500,000		7,475,498			5.496	5.600	JAU	105,340	401,774	01/01/2013	10/01/2042	
020002-AU-5	ALLSTATE CORP-JR SUBORDINATED BOND	1,5			2FE	483,000	104	0000	436,800	420,000		480,820			6.500	5.259	MIN	3,488	27,300	10/20/2016	05/15/2057	
020002-BB-6	ALLSTATE CORP-SUBORDINATED BOND	1,5			2FE	1,161,663	.97	5000	1,111,500	1,140,000		1,158,736		(1,908)	5.750	5.340	FA	24,763	42,342	11/16/2018	08/15/2053	
026874-DM-6	American International G-JR SUBORDINATED	2			2FE	392,500	.87	0000	339,300	390,000		392,360		(140)	5.750	5.664	AO	5,606	11,524	04/20/2018	04/01/2048	
03350F-AA-4	Andeavor Logistics LP-JR SUBORDINATED	2			3FE	427,498	.89	0000	427,379	425,000		427,379		(119)	6.875	6.714	JJ	11,038		10/03/2018	01/01/9999	
05379H-AA-2	AVISTA CAPITAL II-SUBORDINATED BOND	2			2FE	7,000,000	.68	3440	6,834,400	10,000,000		7,510,950			3.613	5.888	MJSD	112,916	305,935	01/01/2013	06/01/2037	
230000-AB-7	CULLEN/FROST CAP TR II-SUBORDINATED NOTE	2			2FE	20,169,941	.89	0252	21,455,070	24,100,000		20,990,792			4.288	5.619	MJSD	83,249	900,058	01/01/2013	03/01/2034	
23330A-AC-4	DPL CAPITAL TRUST II-BOND	1			3FE	410,322	.97	9046	342,666	350,000		391,508		(2,030)	8.125	6.718	MS	9,479	28,438	05/31/2005	09/01/2031	
32080B-AD-0	FIRST MARYLAND CAP I-LIMITED GUARANTEE N	2			2FE	10,530,728	.90	5000	11,765,000	13,000,000		11,430,344			3.436	5.344	JAU	185,422	418,067	01/01/20		

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
744320-AM-4	Prudential Financial Inc-JUNIOR SUBORDIN			1	2FE	968,810	97.9330	930,364	950,000	968,405			(405)		5.625	5.132	JD	2,375	26,719	11/16/2018	06/15/2043
902965-AA-0	USF&G CAPITAL I-JR SUBORDINATED BOND				2FE	65,484	137.1349	61,711	45,000	64,279			(310)		8.500	5.449	JD	170	3,825	09/24/2014	12/15/2045
054536-AA-5	AXA SA-SUBORDINATED				2FE	282,164	123.7090	247,418	200,000	271,878			(4,410)		8.600	4.648	JD	764	17,200	08/02/2016	12/15/2030
05533U-AA-4	BBVA BANCOMER SA TEXAS SUB PFD NT			1	2FE	3,082,164	103.7500	2,953,763	2,847,000	2,954,663			(45,820)		6.500	4.659	MS	57,059	169,964	04/26/2016	03/10/2021
05533U-AC-2	BBVA BANCOMER SA TEXAS-SUBORDINATED			1	2FE	5,337,500	105.3750	5,268,750	5,000,000	5,228,207			(53,733)		6.750	5.385	MS	85,313	337,500	11/22/2016	09/30/2022
05533U-AE-8	BBVA BANCOMER SA TEXAS-SUBORDINATED NOTE				2FE	5,484,120	92.0000	5,060,000	5,500,000	5,485,988			(132)		5.350	5.380	MM	40,051	294,250	01/26/2015	11/12/2029
05946N-AJ-4	BANCO BRADESCO (CAYMAN)-SUBORDINATED NOT			5	4FE	2,863,300	102.8750	2,818,775	2,740,000	2,812,968			(33,414)		5.900	4.519	JJ	74,094	140,027	06/19/2017	01/16/2021
05958A-AL-2	BANCO DO BRASIL (CAYMAN)-PERP JR SUB SEC			2	5FE	4,500,000	101.6380	4,573,710	4,500,000	4,500,000					9.000	9.000	JJ	14,625	405,000	06/11/2014	01/01/9999
05958A-AL-2	BANCO DO BRASIL (CAYMAN)-PERP JR SUB SEC			2	5FE	986,000	101.6380	1,016,380	1,000,000	986,000					9.000	9.000	JJ	3,250	90,000	07/16/2014	01/01/9999
05962G-AH-2	BANCO MERCANTIL DE NORTE-JR SUBORDINATED			2	3FE	200,000	96.7500	193,500	200,000	200,000					6.875	6.875	JAJO	3,247	13,750	06/29/2017	01/01/9999
05962G-AJ-8	BANCO MERCANTIL DE NORTE-JR SUBORDINATED			2	3FE	5,778,800	96.7500	5,514,750	5,700,000	5,778,298			(1,502)		7.625	7.415	JAJO	211,276		10/01/2018	01/01/9999
05962G-AJ-8	BANCO MERCANTIL DE NORTE-JR SUBORDINATED			2	3FE	200,000	96.7500	193,500	200,000	200,000					7.625	7.625	JAJO	3,601	226,526	06/29/2017	01/01/9999
05969B-AB-9	BANCO SANTANDER MEXICO-SUBORDINATED NOTE			2	2FE	14,434,500	99.3760	13,614,512	13,700,000	13,729,686			(170,489)		5.950	3.195	JJ	341,910	795,185	04/13/2016	01/30/2024
05970A-AB-8	BANCO NACIONAL COM EXT-SUBORDINATED			2	3FE	6,630,253	95.5010	6,398,567	6,700,000	6,638,492			(63)		3.800	3.940	FA	99,011	254,600	08/11/2016	08/11/2026
06428J-AA-7	Bank of China Hong Kong -JR SUBORDINATED			2	2FE	10,021,200	100.0997	10,009,970	10,000,000	10,019,808			(1,392)		5.900	5.849	JJ	175,361		10/04/2018	01/01/9999
268317-AM-6	ELECTRICITE DE FRANCE SA-JUNIOR SUBORDIN				2FE	207,800	92.0000	184,000	200,000	206,608			(55)		5.625	4.879	JJ	4,969	11,250	10/06/2014	01/01/9999
404280-AS-8	HSBC HOLDINGS PLC-CONTINGENT CONV PERP N			2	2FE	291,375	93.0000	279,000	300,000	287,593			301		6.375	5.362	JJ	4,888	19,125	08/02/2016	01/01/9999
46556L-AA-2	ITAU UNIBANCO HLDG SA/KY-SUBORDINATED			5	4FE	1,771,313	102.8194	1,722,225	1,675,000	1,708,384			(24,697)		6.200	4.583	AO	21,924	103,850	05/06/2016	04/15/2020
46556L-AJ-3	ITAU UNIBANCO HLDG SA/KY-SUBORDINATED NO				4FE	5,548,125	100.3510	5,519,305	5,500,000	5,526,406			(5,355)		5.125	5.000	MM	37,583	281,875	07/24/2014	05/13/2023
46556M-AJ-1	ITAU UNIBANCO HLDG SA/KY-SUBORDINATED				4FE	254,125	100.3510	250,878	250,000	252,999			(606)		5.125	4.816	MM	8,115	12,813	02/06/2017	05/13/2023
585270-AA-9	MEIJI YASUDA LIFE INSURA-SUBORDINATED			1,5	1FE	611,023	100.2115	551,163	550,000	602,738			(24)		5.200	3.597	AO	5,641	28,600	08/02/2016	10/20/2045
654579-AA-9	NIPPON LIFE INSURANCE-SUBORDINATED			2	1FE	434,156	102.2500	409,000	400,000	427,104			(813)		5.000	3.094	AO	4,056	20,000	10/20/2016	10/18/2042
654579-AD-3	NIPPON LIFE INSURANCE-SUBORDINATED			2	1FE	1,210,525	100.2500	1,102,750	1,100,000	1,194,841			(936)		5.100	3.444	AO	11,688	56,100	10/20/2016	10/16/2044
98105F-AC-8	WOORI BANK-SUBORDINATED				2FE	25,911,450	101.0000	25,250,175	25,000,000	25,564,235			(97,522)		4.750	4.268	AO	201,215	911,340	11/09/2018	04/30/2024
F2893T-AF-3	Electricite de France SA-SUBORDINATED NO			2,5	3FE	982,300	94.5000	897,750	950,000	976,218			(434)		5.250	4.501	JJ	21,058	49,875	10/06/2014	01/01/9999
G01281-AA-1	AHLI UNITED SUKUK LTD-JR SUBORDINATED				1	1,497,720	97.9465	1,469,198	1,500,000	1,497,053			(666)		5.500	3.965	JJ	15,125	82,213	10/16/2018	01/01/9999
G0226H-AC-7	Alfa Bank AO Via Alfa Bo-ALFA BANK				4FE	212,461	89.0000	201,140	226,000	212,457			(4)		8.000	8.510	JAJO	2,913	8,186	10/16/2018	01/01/9999
G2214R-AE-1	CLP POWER HK FINANCE LTD-SUBORDINATED				1FE	8,205,000	100.1183	8,009,464	8,000,000	8,092,136			(32,481)		4.250	2.864	JJ	51,000	340,000	10/19/2015	01/01/9999
G3099P-AA-1	EMIRATES NBD TIER 1-JR SUBORDINATED				2	6,972,962	99.7876	6,869,378	6,884,000	6,909,177			(37,383)		5.750	4.835	JJ	35,185	395,830	10/31/2017	01/01/9999
G3099Q-AA-9	EMIRATES NBD 2014 TIER 1-SUBORDINATED BO				2	2,245,625	101.2700	2,248,575	2,250,000	2,245,673			192		6.375	6.388	JJ	41,438	143,438	09/11/2014	01/01/9999
G3099Q-AA-9	EMIRATES NBD 2014 TIER 1-SUBORDINATED BO				2	1,577,250	101.2700	1,519,050	1,500,000	1,548,681			(15,709)		6.375	4.381	JJ	27,625	95,625	05/30/2017	01/01/9999
G5485F-AD-4	LI & FUNG LTD-SUBORDINATED				3FE	3,700,000	64.4922	2,386,211	3,700,000	3,700,000					5.250	5.250	JJ	31,296	177,334	10/27/2016	01/01/9999
G7305Z-AA-0	QATAR REINSURANCE CO LTD-SUBORDINATED				2FE	3,673,350	94.7540	3,529,587	3,725,000	3,673,362			66		4.950	5.019	JJ	55,316	184,388	10/27/2017	01/01/9999
G7305Z-AA-0	QATAR REINSURANCE CO LTD-SUBORDINATED				2FE	3,632,013	94.7540	3,477,472	3,670,000	3,632,082			29		4.950	5.003	JJ	54,500	181,665	06/09/2017	01/01/9999
G7305Z-AA-0	QATAR REINSURANCE CO LTD-SUBORDINATED				2FE	300,150	94.7540	284,262	300,000	300,116			(19)		4.950	4.936	JJ	4,455	14,850	06/05/2017	01/01/9999
G7305Z-AA-0	QATAR REINSURANCE CO LTD-SUBORDINATED				2FE	4,800,000	94.7540	4,548,192	4,800,000	4,800,000					4.950	4.950	JJ	71,280	237,600	03/06/2017	01/01/9999
G7305Z-AA-0	QATAR REINSURANCE CO LTD-SUBORDINATED				2FE	3,494,500	94.7540	3,316,390	3,500,000	3,494,510			128		4.950	4.957	JJ	51,975	173,250	08/21/2017	01/01/9999
G8961F-AA-7	TOWNSG FINANCE LTD-SUBORDINATED				1FE	2,080,000	100.0144	2,000,288	2,000,000	2,005,286			(32,375)		4.750	1.202	JJ	40,375	95,000	10/20/2015	01/01/9999
M0000P-AA-8	AHLI UNITED BANK-JR SUBORDINATED				2	6,000,000	99.5000	5,970,000	6,000,000	6,000,000					6.875	6.875	JJ	71,042	412,500	04/22/2015	01/01/9999
M7301X-AA-2	NBK TIER 1 FNC LTD-JUNIOR SUBORDINATED				2FE	20,805,796	100.7500	20,768,605	20,614,000	20,747,751			(8,659)		5.750	5.440	JJ	269,986	1,182,011	04/11/2016	01/01/9999
P1400B-AE-9	Banco Mercantil del Nort-JR SUBORDINATED				3FE	424,274	96.7500	404,415	418,000	424,177			(97)		7.625	7.399	JAJO	7,525	886	10/16/2018	01/01/9999
P16259-AH-9	BBVA BANCOMER SA TEXAS-SUBORDINATED			1	2FE	547,500	105.3750	526,875	500,000	532,884			(7,842)		6.750	4.808	MS	8,531	33,750	02/06/2017	09/30/2022
P4949B-AN-4	Grupo Bimbo SAB de CV-SUBORDINATED				3FE	252,255	97.0400	243,570	251,000	252,222			(33)		5.950	5.822	JJ	6,803	3,693	10/16/2018	01/01/9999
P5R60P-AA-8	Itau Unibanco Holding SA-JR SUBORDINATED				4FE	331,148	93.7500	324,375	346,000	331,168			20		6.125	6.399	JJ	2,118	17,896	10/16/2018	01/01/9999
Y1R019-AA-9	CHINA LIFE INSURANCE-SUBORDINATED				1FE	12,569,020	93.3000	11,712,882	12,554,000	12,563,289			(5,731)		4.000	3.949	JJ	248,290	507,104	01/08/2018	07/03/2075
Y1R019-AA-9	CHINA LIFE INSURANCE-SUBORDINATED				1FE	3,644,500	93.3000	3,452,100	3,700,000	3,644,846			(27)		4.000	4.068	JJ	73,178	148,000	11/24/2016	07/03/2075
Y1R70D-AB-1	CRCC Yupeng Ltd-SENIOR UNSECURED BOND			2,5	1FE	4,000,000	99.6500	3,986,000	4,000,000	4,000,000					3.950	3.950	JJ	65,833	158,000	07/24/2014	01/01/9999
Y81636-AD-7	STATE BK OF INDIA/DUBAI-SB11N 5 1/2 09/2				3FE	16,000,000	98.5800	15,772,800	16,000,000	16,000,000			</								

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest					Dates	
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
576326-AS-3	MASSMUTUAL HOLDING LLC PROMISSORY NOTE				2FE	325,000,000	99.8296	324,446,320	325,000,000	325,000,000					3.750	3.806	MJSD	3,114,583	12,356,771	12/31/2014	12/15/2020
576326-AT-1	MASSMUTUAL HOLDING LLC PROMISSORY NOTE				2FE	500,000,000	99.1828	495,914,059	500,000,000	500,000,000					3.500	3.550	MJSD	4,472,222	17,743,056	03/31/2015	03/31/2021
576326-AU-8	MASSMUTUAL HOLDING LLC PROMISSORY NOTE				2FE	19,984,138	99.5800	231,352,635	232,328,313	232,328,313					3.500	3.500	MJSD	2,032,873	8,131,491	12/15/2014	12/16/2019
576326-AW-4	MASSMUTUAL HLDG LLC PROMISSORY NOTE				2FE	47,511,842	99.7632	256,465,914	257,074,723	257,074,723					4.000	4.056	MJSD	2,627,875	10,425,808	06/30/2015	06/30/2022
576326-AY-0	MASSMUTUAL HOLDING LLC REFINANCE NOTE				2Z	380,058,363	100.0846	380,380,003	380,058,363	380,058,363					4.300	4.359	MJSD	771,730		12/15/2018	12/15/2023
72403*-AK-8	PIONEERS GATE LLC 2017-2 GSOF 2011-2A-1	2			1PL	30,168,931	103.3800	31,168,641	30,168,931	30,168,931					3.755	3.811	MON	47,202	1,187,840	02/17/2017	12/17/2021
72403*-AL-6	PIONEERS GATE LLC 2016-4 Solar Tetriss Wa	2			2PL	43,367,175	100.0000	43,367,175	43,367,175	43,367,175					5.805	5.890	MON	111,798	1,311,456	12/15/2018	11/16/2046
72403*-AM-4	PIONEERS GATE LLC 2017-1 FNBM	2			1PL	150,000,000	103.4100	155,115,000	150,000,000	150,000,000					3.950	4.007	MON	82,292	6,007,292	02/07/2017	02/07/2022
72403*-AN-2	PIONEERS GATE LLC 2017-4 Alkali Term Loa	2			1PL	20,203,465	101.9300	20,593,392	20,203,465	20,203,465					4.356	4.419	MON	17,156	777,879	06/23/2017	06/25/2021
72403*-AO-5	PIONEERS GATE LLC 2017-7 FNBM	2			1PL	50,000,000	103.0500	51,525,000	50,000,000	50,000,000					3.955	4.012	MON	32,958	1,682,083	09/01/2017	09/01/2022
72403*-AR-3	PIONEERS GATE LLC 2017-3 AEF (Amur)	2			1PL	2,002,606	100.1400	2,005,409	2,002,606	2,002,606					1.600	1.623	MON	2,960	1,247,137	10/05/2018	08/09/2026
72403*-AT-9	PIONEERS GATE LLC 2017-8 DT Warehouse Cl	2			1PL	63,420,000	102.1600	64,789,872	63,420,000	63,420,000					4.435	4.491	MON	117,198	2,338,620	12/27/2017	12/27/2020
72403*-AU-6	PIONEERS GATE LLC 2017-9 DT Warehouse Cl	2			2PL	11,580,000	103.3500	11,967,930	11,580,000	11,580,000					6.085	6.162	MON	29,361	580,449	12/27/2017	12/27/2020
72403*-AV-4	PIONEERS GATE LLC 2018-2 ONDK Note	2			1PL	100,000,000	101.2600	101,260,000	100,000,000	100,000,000					4.055	4.113	MON	167,043	1,976,097	12/26/2018	10/13/2022
72403*-AW-2	PIONEERS GATE LLC 2018-3 BIKKey Note	2			1PL	51,345,914	100.2700	51,484,548	51,345,914	51,345,914					4.286	4.349	JAJO	470,751	974,581	04/25/2018	10/16/2023
72403*-AX-0	PIONEERS GATE LLC 2018-1 MPOF Note	2			1PL	72,870,968	100.2900	72,870,968	72,870,968	72,870,968					4.586	4.653	MJSD	673,523	2,239,813	12/26/2018	03/28/2023
72403*-AY-8	PIONEERS GATE LLC 2018-4 CSIN Lev II	2			1PL	75,520,000	99.6100	75,225,472	75,520,000	75,520,000					4.547	4.618	FMAN	684,065	573,656	12/24/2018	08/02/2025
72403*-AZ-5	PIONEERS GATE LLC 2018-5 OPTN (E11ington	2			1FE	41,866,083	100.4100	42,037,734	41,866,083	41,866,083					4.021	4.076	MON	146,813	14,981	12/28/2018	12/10/2019
N7516*-AA-1	ROCKALL CLO BV EURO CL VF-1 SR SEC0 VAR	B			1Z	11,148,009	100.0000	11,857,295	11,857,295	11,857,295					1.189	1.207	MJSD	654,156	1,899,532	11/20/2017	06/15/2020
N7516*-AB-9	ROCKALL CLO BV Variable Funding Note- US	D			1FE	7,110,000	100.0000	7,110,000	7,110,000	7,110,000					4.288	4.351	MJSD	66,992	79,066	10/31/2018	06/15/2020
N7516*-AC-7	ROCKALL CLO BV Variable Funding Note- G	B			1FE	27,953,783	100.0000	24,907,385	24,907,385	24,907,385					2.508	2.408	MJSD	138,906	439,769	12/17/2018	06/15/2020
4999999	Subtotal - Bonds - Parent, Subsidiaries and Affiliates - Issuer Obligations					6,043,666,334	XXX	6,429,591,288	6,463,236,278	6,463,236,278				(2,056,298)	XXX	XXX	XXX	29,421,803	154,662,335	XXX	XXX
79549K-XQ-6	SALOMON BROTHERS MORTGAG-SERIES 1997-HLD	4,5			2FML	20,260	62.0374	18,448	29,737	27,153		947	1,098		7.000	11.295	MON	173		12/20/2011	07/01/2024
79549K-XQ-6	SALOMON BROTHERS MORTGAG-SERIES 1997-HLD	4,5			1FML	334,850	62.0374	249,048	401,448	340,072		12,410	73,032		7.000	15.111	MON	2,342	23,336	10/07/2008	07/01/2024
79549A-RE-1	SALOMON BROTHERS MORTGAG-SERIES 2002-HYB	4,5			1FML	41,101	100.8439	41,369	41,023	42,341		135			4.232	4.734	MON	255	1,563	10/31/2008	09/01/2032
79549A-RU-5	Salomon Bros Mtg Secs VI-SERIES 2003-CB1	4,5			1FML	9,952	100.5004	18,184	18,094	13,774		938			3.950	15.007	MON	258	722	02/19/2009	01/01/2033
79549A-SM-2	SALOMON BROTHERS MORTGAG-SERIES 2003-UP1	4,5			1FML	158,224	99.7947	176,742	177,105	164,189		7,535			5.460	9.598	MON	2,669	9,200	03/28/2003	04/01/2032
79549A-SN-0	SALOMON BROTHERS MORTGAG-SERIES 2003-UP1	4,5			1FML	1,710	102.7242	26,670	25,963	698		37			5.655	241.200	MON	247	1,487	03/28/2003	04/01/2032
79549A-XZ-7	SALOMON BROTHERS MORTGAG-SERIES 2003-UP2	4			1FML	205,032	98.1264	263,100	268,123	214,983		7,866			7.000	12.611	MON	1,564	18,520	08/29/2003	06/01/2033
79549A-YA-1	SALOMON BROTHERS MORTGAG-SERIES 2003-UP2	4			1FML	163,390	96.7351	207,622	214,629	95,542		19,157			7.000	34.989	MON	1,252	14,825	08/29/2003	06/01/2033
79549A-YB-9	SALOMON BROTHERS MORTGAG-SERIES 2003-UP2	4			1FML	8,056	72.1999	22,746	31,504	8,063		3,084			7.000	64.444	MON	717	2,176	08/29/2003	06/01/2033
5099999	Subtotal - Bonds - Parent, Subsidiaries and Affiliates - Residential Mortgage-Backed Securities					942,575	XXX	1,023,929	1,207,626	906,815		52,109	74,130		XXX	XXX	XXX	9,477	73,911	XXX	XXX
08161C-AR-2	BENCHMARK 2018-B2 Mortga-SERIES 2018-B2	4,5			1FML	38,914,923	96.8750	44,186,363	50,862,000	39,626,286		711,363			4.203	7.686	MON	1,446,971	546,215	02/09/2018	02/01/2051
08161C-AT-8	BENCHMARK 2018-B2 Mortga-SERIES 2018-B2	4,5			1FML	9,855,424	69.7380	13,136,547	18,837,000	10,260,160		404,736			4.203	12.796	MON	536,032	202,293	02/09/2018	02/01/2051
08161C-AV-3	BENCHMARK 2018-B2 Mortga-SERIES 2018-B2	4,5			1FML	7,750,933	48.1660	9,073,511	18,838,000	8,161,405		410,473			4.203	16.276	MON	536,060	202,304	02/09/2018	02/01/2051
08161C-AX-9	BENCHMARK 2018-B2 Mortga-SERIES 2018-B2	4,5			5G1	19,376,224	27.4150	15,493,011	56,512,898	18,562,013		(814,211)			4.203	7.626	MON	1,609,823	606,900	02/09/2018	02/01/2051
08161H-AS-9	BENCHMARK 2018-B4-BMARK 2018-B4 ERR	4,5			1FML	27,917,033	88.4420	30,887,484	34,924,000	28,135,473		218,440			4.564	7.451	MON	809,831		06/29/2018	07/01/2051
08161H-AU-4	BENCHMARK 2018-B4-BMARK 2018-B4 FRR	4,5			1FML	11,665,874	67.8850	14,745,301	21,721,000	11,901,953		236,078			4.564	12.860	MON	503,675		06/28/2018	07/01/2051
08161H-AW-0	BENCHMARK 2018-B4-BMARK 2018-B4 GFR	4,5			1FML	4,785,148	40.4880	4,490,535	11,585,000	4,909,112		123,964			4.564	16.597	MON	268,638		06/28/2018	07/01/2051
08161H-AY-6	BENCHMARK 2018-B4-BMARK 2018-B4 HRR	4,5			5G1	14,053,844	27.6930	11,228,758	40,547,279	13,576,044		(477,799)			4.564	6.172	MON	940,226		06/28/2018	07/01/2051
08162U-AE-0	BMARK 2018-B8	4,5			1AM	20,556,193	89.7886	20,556,193	22,894,000	20,558,396		2,203			4.875	6.383	MON	93,007		12/10/2018	01/01/2052
08162U-AG-5	BMARK 2018-B8	4,5			1AM	12,450,741	55.8530	12,450,741	22,292,000	12,459,497		8,756			4.875	15.045	MON	90,562		12/10/2018	01/01/2052
08162U-AJ-9	BMARK 2018-B8	4,5			1AM	4,749,109	45.2727	4,749,109	10,490,000	4,754,153		5,044			4.875	20.318	MON	42,616		12/10/2018	01/01/2052
08162U-AL-4	BMARK 2018-B8	4,5			5Z	16,044,579	39.4706	16,044,579	40,649,462	16,066,078		21,500			4.875	24.408	MON	165,139		12/10/2018	01/01/2052
46590L-BG-5	JPMDB COMMERCIAL MORTGAG-JPMDB 2017-C5 E	4,5			1FML	24,497,230	90.0860	27,024,899	29,999,000	25,193,646		407,861			4.571	7.216	MON	583,630	1,392,345	03/17/2017	03/01/2050
46590L-BE-1	JPMDB COMMERCIAL MORTGAG-JPMDB 2017-C5 F	4,5			1FML	9,981,251	73.7280	15,386,296	20,869,000	10,938,204		575,868			4.571	14.554	MON	570,642	968,594	03/17/2017	03/01/2050

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest					Dates					
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22				
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date				
79549A-GY-9	SALOMON BROTHERS MORTGAG-SERIES 2001-MM		4,5		1FM	1,767,139		92,4980	3,525,989	3,811,964		3,348,254			269,353				6.500	16.167	MON	20,648	247,778	10/28/2005	02/01/2034
5199999. Subtotal - Bonds - Parent, Subsidiaries and Affiliates - Commercial Mortgage-Backed Securities						292,923,083	XXX	317,297,705	558,934,934	295,555,416	(1,573,096)	2,391,148			XXX	XXX	XXX		14,509,293	11,157,987	XXX	XXX			
056162-AL-4	Babson CLO Ltd 2015-1-BABS 2015-1A XR	D	4		1FE	150,000		99,9989	149,998	150,000		150,000			3,019	3,200	JAU	893	2,779	02/07/2018	01/20/2031				
056162-AN-0	Babson CLO Ltd 2015-1-BABS 2015-1A AR	D	4		1FE	12,575,000		97,7166	12,287,862	12,575,000		12,575,000			3,459	3,856	JAU	85,786	270,154	02/07/2018	01/20/2031				
056162-AQ-3	Babson CLO Ltd 2015-1-BABS 2015-1A BR	D	4		1FE	2,045,000		96,8540	1,980,664	2,045,000		2,045,000			3,869	4,311	JAU	15,604	49,570	02/07/2018	01/20/2031				
056162-AS-9	Babson CLO Ltd 2015-1-BABS 2015-1A CR	D	4		1FE	9,095,000		93,4344	8,497,859	9,095,000		9,095,000			4,219	4,678	JAU	317,535		02/07/2018	01/20/2031				
056162-AU-4	Babson CLO Ltd 2015-1-SERIES 2015-1A CLA	D	4		2AM	400,000		91,3504	365,402	400,000		400,000			5,069	5,548	JAU	16,284		02/07/2018	01/20/2031				
05616J-AE-3	BABSON CLO LTD 2015-1 SUB NT	D	4		6*	5,682,815		51,1003	4,721,668	9,240,648		3,794,648			0,000	0,000	JAU			02/07/2018	04/20/2027				
05616J-AL-7	Babson CLO Ltd 2015-1-SERIES 15-1A CLASS	D	4		3AM	755,000		89,2395	673,758	755,000		755,000			7,969	8,494	JAU	25,661	24,112	02/07/2018	01/20/2031				
05616J-AN-3	Babson CLO Ltd 2015-1-SERIES 15-1A CLASS	D	4		4AM	150,000		88,2593	132,389	150,000		150,000			9,769	9,519	JAU	6,313	5,923	02/07/2018	01/20/2031				
05616M-AE-6	BABSON CLO LTD 2015-11 SUB NT	D	4,5		6*	12,717,032		63,3040	9,970,380	15,750,000		9,970,380			0,000	0,000	JAU		663,227	07/23/2015	10/20/2030				
05618B-AA-6	BABSON CLO LTD 2013-1 SUB NT	D	4		6*	5,964,454		45,4169	5,801,581	12,774,057		5,801,581			0,000	0,000	JAU		191	12/06/2017	04/21/2025				
05618C-AE-6	BABSON CLO LTD 2013-11 SUB NT	D	4		6*	1,852,955		0,0000	4,457,463						0,000	0,000	JAU			11/22/2013	01/18/2025				
05618D-AL-8	BABSON CLO LTD-BABS 2014-1A A2R	D	4		1FE	23,500,000		99,7020	23,429,970	23,500,000		23,500,000			3,969	3,618	JAU	183,952	882,384	03/07/2017	07/20/2025				
05618D-AN-4	BABSON CLO LTD-BABS 2014-1A BR	D	4		1FE	7,000,000		99,9851	6,998,957	7,000,000		7,000,000			4,669	4,385	JAU	64,458	312,518	03/07/2017	07/20/2025				
05618G-AC-1	BABSON EURO CLO 2014-1 BV EURO SUB NT	B	4,5		6*	3,872,907		85,0772	4,871,520	5,726,000		3,887,479			0,000	0,000	JAU		990,640	03/13/2014	04/15/2027				
05618H-AE-5	BABSON CLO LTD 2014-1 SUB NT	D	4		6*	3,052,275		41,3489	2,067,445	5,000,000		1,515,622			0,000	0,000	JAU			05/09/2014	07/20/2025				
05618J-AE-1	BABSON CLO LTD 2014-111-SUB NT 144A	D	4		6*	4,796,175		41,7136	4,010,763	9,615,000		3,578,531			0,000	0,000	JAU			06/08/2018	01/15/2026				
05618K-AC-2	BABSON CLO LTD 2014-111-SUB NT 144A	D	4		6*	10,109,073		14,5369	2,191,438	15,075,000		2,191,438			0,000	0,000	JAU			08/15/2014	10/17/2026				
05618N-AA-0	BABSON EURO CLO 2014-2 BV-SUB NT 144A	B	4,5		6*	6,242,104		78,4738	7,728,665	9,848,720		4,340,886			0,000	0,000	FMAN			10/07/2014	11/26/2027				
05618R-AC-7	BABSON CLO LTD 2016-1 SUB NT	D	4,5		6*	9,000,872		71,6102	8,235,173	11,500,000		6,703,578			0,000	0,000	JAU			01/22/2016	04/23/2027				
05619F-AC-2	BABSON CLO LTD-BABS 2016-2A SUB	D	4,5		6*	20,608,000		75,1072	16,824,013	22,400,000		15,286,449			0,000	0,000	JAU			07/29/2016	07/20/2028				
06759F-AA-4	BABSON CLO LTD 2015-11-SERIES 15-2A CLAS	D	4		1FE	11,250		100,0204	11,252	11,250		11,250			3,119	2,621	JAU	69	276	10/12/2017	10/20/2030				
06759F-AB-2	BABSON CLO LTD 2015-11-SERIES 15-2A CLAS	D	4		1FE	14,200,000		98,7534	14,022,983	14,200,000		14,200,000			3,659	3,420	JAU	102,472	484,023	10/12/2017	10/20/2030				
06759F-AC-0	BABSON CLO LTD 2015-11-SERIES 15-2A CLAS	D	4		1FE	78,283		98,1455	78,283	78,283		78,283			4,059	3,901	JAU	627	2,986	10/12/2017	10/20/2030				
06759F-AD-8	BABSON CLO LTD 2015-11-SERIES 15-2A CLAS	D	4		1FE	496,718		98,1455	487,506	496,718		496,718			4,059	3,901	JAU	3,976	18,946	10/12/2017	10/20/2030				
06759F-AE-6	BABSON CLO LTD 2015-11-SERIES 15-2A CLAS	D	4		1FE	196,970		94,8195	186,766	196,970		196,970			4,419	4,290	JAU	1,717	8,232	10/12/2017	10/20/2030				
06759F-AF-3	BABSON CLO LTD 2015-11-SERIES 15-2A CLAS	D	4		1FE	53,031		94,8195	50,284	53,031		53,031			4,419	4,290	JAU	462	2,216	10/12/2017	10/20/2030				
06759F-AG-1	BABSON CLO LTD 2015-11-SERIES 15-2A CLAS	D	4		2AM	312,500		94,0864	294,020	312,500		312,500			5,419	5,316	JAU		16,228	10/12/2017	10/20/2030				
06759M-AE-1	Babson CLO Ltd 2016-1-BABS 2016-1A A2R	D	4		1FE	7,200,000		98,7226	7,108,027	7,200,000		7,200,000			3,927	3,927	JAU	54,981	46,726	07/25/2018	07/23/2030				
06759Y-AA-3	BARINGS CLO LTD-BABS 2016-3A A1	D	4		1FE	14,100,000		99,9999	14,099,986	14,100,000		14,100,000			3,866	3,614	JAU	118,116	512,827	10/28/2016	01/15/2028				
06759Y-AC-9	BARINGS CLO LTD-BABS 2016-3A A2	D	4		1FE	7,500,000		99,7296	7,479,720	7,500,000		7,500,000			3,058	4,169	JAU	223,011	239,168	10/28/2016	01/15/2028				
06759Y-AE-5	BARINGS CLO LTD-BABS 2016-3A B	D	4		1FE	7,516,250		99,9915	7,515,611	7,516,250		7,516,250			4,936	4,814	JAU	80,389	355,845	10/28/2016	01/15/2028				
06759Y-AG-0	BARINGS CLO LTD-BABS 2016-3A C	D	4		2AM	467,926		99,7071	473,609	475,000		474,027			6,386	6,639	JAU	6,573	29,471	10/28/2016	01/15/2028				
06760B-AC-6	BABSON CLO LTD-SERIES 17-1A CLASS A2	D	4		1FE	6,700,000		98,4570	6,596,619	6,700,000		6,700,000			3,795	3,525	JAU	52,966	238,037	06/23/2017	07/18/2029				
06760B-AE-2	BABSON CLO LTD-SERIES 17-1A CLASS B1	D	4		1FE	13,500,000		98,5153	13,299,566	13,500,000		13,500,000			4,145	3,887	JAU	308,229	529,993	06/23/2017	07/18/2029				
06760B-AJ-1	BABSON CLO LTD-SERIES 17-1A CLASS C	D	4		1FE	5,100,000		97,8337	4,989,519	5,100,000		5,100,000			4,845	4,605	JAU	140,440	236,416	06/23/2017	07/18/2029				
06760C-AE-0	Barings CLO Ltd 2017-1-SERIES 2017-1 CLA	D	4,5		6*	26,622,616		69,0045	20,425,332	29,600,000		20,425,332			0,000	0,327	JAU			06/23/2017	07/18/2029				
06760E-AA-4	Babson CLO Ltd 2013-1-SERIES 2013-1A CLA	D	4		1FE	14,425,000		98,3843	14,191,935	14,425,000		14,425,000			3,269	3,189	JAU	185,789	394,069	12/06/2017	01/20/2028				
06760E-AC-0	Babson CLO Ltd 2013-1-SERIES 2013-1S CLA	D	4		1FE	1,995,000		97,6142	1,947,403	1,995,000		1,995,000			3,719	3,675	JAU	29,735	63,079	12/06/2017	01/20/2028				
06760E-AE-6	Babson CLO Ltd 2013-1-SERIES 2013-1A CLA	D	4		1FE	9,050,000		94,6067	8,561,906	9,050,000		9,050,000			3,969	3,929	JAU	145,068	307,767	12/06/2017	01/20/2028				
06760E-AG-1	Babson CLO Ltd 2013-1-SERIES 2013-1A CLA	D	4		2AM	1,425,000		93,7174	1,335,473	1,425,000		1,425,000			5,019	4,994	JAU	29,575	62,758	12/06/2017	01/20/2028				
06760E-AJ-5	Babson CLO Ltd 2013-1-SERIES 2013-1A CLA	D	4		3AM	1,089,000		93,2897	1,026,187	1,100,000		1,092,925			7,669	7,996	JAU	35,948	76,299	12/06/2017	01/20/2028				
06760E-AL-0	Babson CLO Ltd 2013-1-SERIES 2013-1A CLA	D	4		4AM	379,275		89,1673	347,752	390,000		381,395			9,219	9,851	JAU	15,465	32,828	12/06/2017	01/20/2028				
06760G-AA-9	Barings CLO Ltd 2018-1-SERIES 18-1A CLAS	D	4		1FE	16,475,000		97,4157	16,049,237	16,475,000		16,475,000			3,386	3,822	JAU	273,557	136,979	02/23/2018	04/15/2031				
06760G-AB-7	Barings CLO Ltd 2018-1-SERIES 18-1A CLAS	D	4		1FE	20,100,000		96,3930	19,374,993	20,100,000		20,100,000			3,786	4,265	JAU	373,948	187,442	02/23/2018	04/15/2031				
06760G-AC-5	Barings CLO Ltd 2018-1-SERIES 18-1A CLAS	D	4		1FE	8,050,000		93,1397	7,497,746	8,050,000		8,050,000			4,186	4,681	JAU	165,865	83,210	02/23/2018	04/15/2031				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates				
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22		
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date		
06760Y-AC-6	Barings CLO Ltd 2018-IV-SERIES 18-4A CLA	D	4,5	6*		9,443,000		8,120,000	10,000,000	8,120,000	(1,336,510)	13,510			0.000	7.593	JAJO		12,923		10/26/2018	10/15/2030	
06761N-AC-3	Babson CLO Ltd 2016-11-BABSN 2016-2A BR	D	4	1FE		10,000,000		9,922,940	10,000,000	10,000,000					4.229	4.419	JAJO				12/07/2018	07/20/2028	
06761N-AE-5	Barings Middle Market CL-BMM 2018-11 COM	D	4,5	2AM		110,000,000		95,540,000	110,000,000	110,000,000					0.000	(0.202)	JAJO				11/13/2018	01/15/2031	
26410N-AF-5	DUCHESS VII CLO EURO ISSUE BOND	B	4,5	6*		226,177		36,431,000	10,306,800	1,145,187		469,640		(50,391)	4.050	4.050	FMAN	251,206	227,799		01/28/2011	02/28/2023	
46616K-AE-4	JFIN CLO 2013 LTD SR SEC DEF NT CL B	D	4	1FE		9,544,392		100,024,100	9,900,000	10,025,949		(30,011)			5.469	4.973	JAJO	106,782	519,131		03/14/2013	01/20/2025	
46617N-AQ-0	JFIN CLO LTD-SERIES 14-2A CLASS A1AR	D	4	1FE		67,256,197		99,516,000	66,930,677	67,256,197					3.639	3.001	JAJO	1,416,007	2,285,968		06/23/2017	07/20/2026	
77277L-AB-3	ROCKALL CLO BV EURO SR SEC NT CL A-1	B	4	6*		63,748,674		99,370,000	57,456,875	57,821,148	(327,854)			(2,877,930)	3.171	3.171	MJSD	76,112	1,919,908		06/16/2006	06/15/2020	
77277L-AF-4	ROCKALL CLO BV-PFD SUB NT CL E-1A EURO	B	4	6*		20,753,717		92,190,000	38,957,540	42,257,880		1,413,776		(869,293)	4.671	4.671	MJSD	81,900	2,065,811		06/16/2006	06/15/2055	
77277L-AG-2	ROCKALL CLO BV-SUB NT CL E-1B EURO	B	4	6*		1		32,150,000	13,585,908	42,257,880				2.669	2.669	MJSD	346,610	64,975		06/16/2006	06/15/2055		
77277L-AH-0	ROCKALL CLO BV-SUB NT CL E-2 EURO	B	4	6*		1,046,874		62,170,000	2,563,095	4,122,720		71,285		2.669	2.669	MJSD	4,319	79,865		06/16/2006	06/15/2055		
77277L-AJ-6	ROCKALL CLO BV-PFD SUB NT CL E-3A EURO	B	4	6*		14,824,559		92,190,000	24,514,744	26,591,544	12,251,631		1,009,227	(476,154)	4.671	4.671	MJSD	51,537	1,299,949		09/14/2007	09/15/2055	
77277L-AK-3	ROCKALL CLO BV-SUB NT CL E-3B EURO	B	4,5	6*				32,150,000	8,549,181	26,591,544				0.000	0.000	MJSD		(274,907)		10/07/2008	06/15/2055		
96254E-AA-8	WHATELY CDO LTD-SUB INCOME NOTE CLASS C	D	4	6*				0.0100	250	2,500,000				0.000	0.000	MJSD				12/15/2010	06/09/2044		
93684F-AA-4	FUGU CREDIT PLC EURO CL A SER 1 UNSECD L	B	5	6*		506		495,080,000	7,126	1,439	457			(23)	0.000	0.000	FMAN				01/17/2008	08/31/2056	
93684F-AC-0	FUGU CREDIT PLC VAR RT EUR CL A SER 3	B	5	6*		394		472,160,000	5,532	1,172	354			(18)	0.000	0.000	FMAN				10/31/2006	08/31/2056	
93684F-AD-8	FUGU CR PLC EURO CL A SER 4 UNSECD LN NT	B	5	6*		404		456,730,000	5,438	1,191	349			(17)	0.000	0.000	FMAN				11/30/2006	08/31/2056	
93684F-AE-6	FUGU CR PLC EURO CL A SER 8 UNSECD LN	B	5	6*		365		482,000,000	4,590	952	294			(15)	0.000	0.000	FMAN				09/28/2007	08/31/2056	
93684F-AF-3	FUGU Credit PLC-Class A Ser 9 Loan Note	B	5	6*		355		460,300,000	4,385	953	281			(14)	0.000	0.000	FMAN				10/31/2007	08/31/2056	
93684F-AG-1	FUGU CREDIT PLC EURO CL A SER 10 UNSECD	B	5	6*		381		487,030,000	4,639	952	297			(15)	0.000	0.000	FMAN				11/30/2007	08/31/2056	
93685F-AA-3	FUGU CR PLC VAR RT CLASS & SERIES 1	B	5	6*		1,046		724,870,000	12,318	1,699	789			(39)	0.000	0.000	FMAN				02/29/2008	08/31/2056	
93685F-AA-3	FUGU CREDIT PLC VAR RT CL SERIES 1	B	5	6*		49		724,690,000	552	35	35			(2)	0.000	0.000	FMAN				03/31/2008	08/31/2056	
93685F-AA-3	FUGU CREDIT PLC VAR RT CL SERIES 1	B	5	6*		74		659,970,000	855	130	55			(3)	0.000	0.000	FMAN				05/30/2008	08/31/2056	
N0804Q-AZ-8	BABSON EURO CLO 2015-1 BV SHORT TERM NT	B	4,5	6*		4,066,338		79,930,000	4,576,803	5,726,000	3,142,464			(239,588)	0.000	0.000	JAJO		456,938		07/27/2015	10/25/2029	
N0804R-BN-2	BABSON EURO CLO-BABSE 2016-1A SUB	B	4,5	6*		7,149,870		91,707,100	7,351,608	8,016,400	4,794,753			(380,866)	0.000	0.000	JAJO				06/07/2016	07/27/2030	
N2874A-AB-7	DUCHESS VII CLO BV-SR SEC CL F REGS	B	4,5	6*		10,495		36,431,000	166,883	458,080	50,897			(2,240)	4.050	4.050	FMAN	11,165	12,813		02/02/2011	02/28/2023	
5299999	Subtotal - Bonds - Parent, Subsidiaries and Affiliates - Other Loan-Backed and Structured Securities					813,620,073	XXX	822,193,916	971,310,999	766,318,615	(13,647,292)	2,070,742	2,494,288	(5,149,207)	XXX	XXX	XXX		6,106,967	16,130,411	XXX	XXX	
5599999	Total - Parent, Subsidiaries and Affiliates Bonds					7,151,152,065	XXX	7,570,106,838	7,994,689,837	7,526,017,124	(15,220,388)	4,513,999	2,568,418	(7,205,505)	XXX	XXX	XXX		50,047,540	182,024,644	XXX	XXX	
464287-24-2	1SHARES IBOX \$ INVESTME-ETF				2	9,965,389		115,440,000	10,043,280	87,000	10,043,280	(77,891)			0.000	0.000	N/A					05/02/2018	
5899999	Subtotal - Bonds - SVO Identified Funds - Exchange Traded Funds - as Identified by the SVO					9,965,389	XXX	10,043,280	87,000	10,043,280		(77,891)			XXX	XXX	XXX				XXX	XXX	
6099999	Subtotal - SVO Identified Funds					9,965,389	XXX	10,043,280	87,000	10,043,280		(77,891)			XXX	XXX	XXX				XXX	XXX	
05368H-AE-7	Aviation Technical Services, Inc	2		4		4,751,033		97,890,000	4,782,299	4,885,381	4,752,576			7.136	7.136	MJSD		91,999	345,587		09/06/2016	09/30/2021	
41152F-AA-4	Harbor Hydro I, LLC - Term Loan	2		3		18,159,602		100,000,000	18,436,144	18,436,144	18,162,161			7.030	7.030	FMAN		223,210	1,211,738		08/18/2016	02/21/2023	
42980F-AA-4	High Ridge 1ST Lien Initial Term Ln	2		4Z		11,093,094		98,120,000	11,221,179	11,436,179	11,105,101			7.636	7.636	MJSD		534,030	844,542		06/30/2016	06/30/2022	
46662E-AA-8	JLL XDD, INC.-1st Lien Term Loan	2		5		12,368,490		94,250,000	11,986,943	12,718,241	12,368,490			7.136	7.136	MJSD		239,503	638,760		12/11/2017	12/22/2023	
81608F-AC-6	SEKO Worldwide, LLC DDTL	2		4Z		967,075		97,428,000	942,202	967,075	967,075			0.000	0.000	MON		6,067			12/07/2018	07/13/2023	
000000-00-0	Avoca WH 4 07/02/19 Class B	B		1Z		9,508,079		99,920,000	8,601,888	8,601,888	8,601,888			(906,191)	4.285	4.367	MON		55,540			08/09/2018	02/07/2019
000000-00-0	Avoca WH 4 07/02/19 Class C	B		1Z		4,550,898		99,970,000	4,118,174	4,118,174				(432,724)	5.185	5.284	MON		32,131			08/09/2018	02/07/2019
62885F-AA-7	DUBLIN WASTE TO ENERGY GROUP-Tranche A	B	2	5G1		21,224,827		100,000,000	20,663,668	20,663,668	20,663,668			(1,028,492)	4.175	4.175	JD		147,513	972,265		12/14/2017	12/24/2032
62959F-AA-8	A2 Dominion Housing Group Limited	B	2	1		42,783,300		100,000,000	40,149,900	40,149,900	40,149,900			(2,633,400)	2.743	2.743	MN		535,935			05/03/2018	05/10/2027
Q0569F-AA-9	Aspire Schools Financing Services (QLD)	B	2	1Z		37,488,876		100,000,000	33,703,619	33,703,619	33,703,619			(3,785,257)	4.393	4.393	MJSD		372,066	1,205,428		02/23/2018	12/31/2038
05425F-AA-2	KIWINANA WTE FIN CO Tranche A Fac	B	2	3Z		2,416,509		100,000,000	2,354,899	2,354,899	2,354,899			(61,610)	4.900	4.865	MON		16,989	224,498		12/10/2018	10/17/2023
6399999	Subtotal - Bonds - Bank Loans - Issued					165,311,783	XXX	156,960,915	158,035,169	156,947,551				(8,847,674)	XXX	XXX	XXX		1,866,521	5,979,104	XXX	XXX	
00118E-AF-4	AEP Hldgs Initial Term Ln	2		5		10,903,902		97,814,000	10,805,932	11,047,338	10,903,902			8.543	8.543	JAJO		128,172	892,113		07/21/2017	08/31/2021	
00118E-AG-2	Arrowhead Electrical Pro Term Loan EUR	2		4Z		11,209,321		97,814,000	10,797,918	10,928,753	10,797,918			(280,567)	8.511	8.511	MON		199,469	244,902		07/06/2018	08/31/2021
00190N-AJ-8	PODS LLC	2		4FE		1,852,117		95,583,000	1,773,270	1,852,215	1,852,117			5.182	5.182	MJSD		4,284	47,559		06/08/2018	12/06/2024	
00226F-AA-2	AQA Acq Hldg 2nd Lien Term Ln	2		4Z		20,491,198		96,351,000	20,249,850	21,016,613	20,491,198			10.797	10.797	MJSD		455,185			10/01/2018	05/24/2024	
00453E-AA-8	Accurus Aerospace Corporation	2		4Z		24,625,000		97,251,000	24,312,943	25,000,000	24,625,000			7.008	7.008	JAJO		311,467			10/26/2018	10/31/2024	
00488F-AK-1	Acisure, LLC TL B (Increment	2		4FE		2,007,469		94,250,000	1,880,288	1,995,000	2,007,469												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
020746-AA-3	Alpha Guardian (fka Cann First-Out DDTL	2			6*	279,569		96,8234	406,012	419,333		279,569		139,764	9.750	9.750	JAUO	5,125		11/19/2018	07/31/2023
02083J-AC-8	Ascend Learning, LLC Term Loan B	2			4FE	677,216		94,2500	641,483	680,619		677,216			5.522	5.522	MON	2,938	34,308	07/27/2017	07/12/2024
02337N-AB-5	Trimark Inc. 1st Lien Term L	2			4FE	866,205		91,5000	794,564	868,376		866,205			6.030	6.030	MON	4,103	47,710	03/06/2018	09/13/2024
02535F-AJ-5	AMERICAN DENTAL PARTNERS	2			4FE	7,191,714		96,4800	6,947,055	7,200,513		7,191,714			6.770	6.695	MON	62,991	10,971	11/14/2018	03/24/2023
03759D-AD-0	Apex Tool Group LLC - 2018 Term Loan B	2			4FE	1,160,610		96,2000	1,117,199	1,161,330		1,160,610			6.272	6.272	MON	5,738	60,563	02/26/2018	02/01/2022
03759D-AD-0	Apex Tool Group LLC - 2018 Term Loan B	2			4FE	1,969,783		96,2000	1,885,504	1,969,983		1,969,783			6.272	6.272	MON	9,684	56,617	09/05/2018	02/01/2022
03765V-AH-3	Prime Security Services Borrower LLC	2			3FE	5,488,841		95,1000	5,185,384	5,452,559		5,488,841			5.272	5.272	MON	22,433	261,042	02/22/2017	12/30/2026
03766E-AB-3	Apollo Aviation Securitization Equity Tr	2			1FE	27,474,907		98,2500	26,994,928	27,475,754		27,474,908			4.212	4.212	MON	45,005	1,143,875	12/01/2016	11/15/2041
03827F-AX-9	Applied Systems Inc. 1st Lien TL	2			4FE	2,518,125		95,0830	2,394,309	2,518,125		2,518,125			5.522	5.522	MON	28,328	128,314	09/21/2017	09/13/2024
03879R-AB-8	Arbor Pharmaceuticals In TL B	2			4FE	2,247,188		89,0000	2,127,656	2,390,625		2,250,394			7.803	7.803	MJSD	14,836	173,545	07/19/2016	07/05/2023
04014*-AA-4	ARES CRE LENDER LLC Term Loan	2			1FE	97,877,500		100,0000	97,877,500	97,877,500		97,877,500			4.332	4.396	MON	223,800	154,328	12/17/2018	11/19/2023
042688-A*-2	Arpad Solar Borrower LLC Term Loan	2			2FE	45,945,301		103,6929	47,642,015	45,945,301		45,945,301			5.250	5.250	JAUO	495,643	2,391,627	09/08/2016	08/30/2034
04542N-B*-6	Asset Intl inc Second Lien Term Loan	2			5	16,617,500		93,6113	15,913,927	17,000,000		16,617,500			11.636	11.636	MJSD	412,113	1,464,771	12/29/2017	12/21/2024
04546D-AB-0	Associated Asphalt Partn Term Loan B due	2			5FE	2,494,660		96,3330	2,415,258	2,507,196		2,494,660			7.772	7.772	MON	15,339	183,502	04/10/2017	03/21/2024
04621H-AK-9	AssuredPartners Capital, 1st Lien TL	2			4FE	1,991,489		94,1880	1,873,664	1,989,281		1,991,489			5.772	5.772	MON	8,991	25,344	09/12/2018	10/22/2024
04626*-AA-4	ASTORIA ENERGY II LLC ACQUISITION TER	2			2	3,287,868		100,0000	3,287,868	3,287,868		3,287,868			4.030	4.030	MON	10,226	116,640	08/31/2024	08/31/2024
04626*-AB-2	ASTORIA ENERGY II LLC PROJECT TERM LO	2			2	261,319		100,0000	261,319	261,319		261,319			4.030	4.030	MON	813	9,270	10/28/2014	08/31/2024
04626*-AC-0	ASTORIA ENERGY II LLC TERM LOAN	2			2	52,727,910		100,0000	52,776,910	52,776,910		52,776,910			4.030	4.030	MON	164,149	1,872,736	10/30/2014	08/31/2024
050726-AC-4	Audio Precision Inc Term Loan	2			4Z	8,274,830		96,7646	8,170,516	8,443,704		8,274,830			7.803	7.803	MJSD	104,156		10/31/2018	07/27/2024
05549D-AB-4	Epic Health Services, In First Lien TL	2			4FE	2,480,321		93,0000	2,329,999	2,505,375		2,480,321			6.772	6.772	MON	13,343	158,331	03/22/2017	03/08/2024
05604X-AP-1	BWAY Holding Company New Term Loan B	2			4FE	4,165,319		93,8330	3,928,084	4,186,250		4,165,319			5.658	5.658	JAUO	49,471	226,537	05/12/2017	04/03/2024
086582-A*-4	BESTOP, INC. TERM LOAN	2			4	5,402,954		90,0000	4,966,965	5,518,850		5,415,630			8.065	8.065	MON	34,875	413,648	01/19/2016	07/30/2021
08887*-AA-5	BICENT POWER LLC FLOATING RATE T	2			2	5,726,429		100,0000	5,755,205	5,755,205		5,732,143			5.022	5.022	MON	22,794	258,836	08/13/2014	02/07/2024
08948*-AA-2	Big River Steel LLC Senior Secured	2			4	959,888		98,7500	957,464	969,584		959,888			7.803	7.803	MJSD	14,958	67,094	08/31/2017	08/23/2023
09238F-AK-7	Blackhawk Network Holdin Term Loan B	2			4FE	1,583,639		94,9830	1,507,243	1,587,608		1,583,639			5.522	5.522	MON	17,859	22,579	06/20/2018	05/18/2025
09522U-AD-5	Blucora Inc.	2			4FE	1,522,094		96,8750	1,469,927	1,522,094		1,522,094			5.522	5.522	MON	6,533	77,226	11/28/2017	05/22/2024
09578*-AA-7	Blue Ocean Inc Fd Registered Note	2			2FE	23,405,374		100,0000	23,405,374	23,405,374		23,405,374			6.000	6.004	MS	377,051		12/24/2018	09/25/2028
098588-AF-9	Boomerang Tube LLC Term A Ln	2			5Z	135,930		100,0000	135,930	135,930		135,930			7.522	7.522	MON	804	827	11/01/2018	06/30/2022
10138*-AA-8	Bottom Line Systems, Inc Term Loan 12/16	2			4	7,393,641		100,0000	7,425,036	7,425,036		7,393,641			10.022	10.022	MON	116,265	770,823	02/13/2017	01/06/2023
10330J-AU-2	Boyd Gaming Corporation Repriced TL B2	2			3FE	1,678,028		96,1250	1,678,028	1,678,028		1,678,028			4.666	4.666	MON	435	72,661	04/12/2017	09/15/2023
117028-AA-4	Brunswick Asset Financing LLC - Term A L	2			1Z	10,853,659		100,0000	10,853,659	10,853,659		10,853,659			5.750	5.752	JJ	312,043		12/10/2018	07/02/2028
12508K-AD-9	CD&R Buyer/STS Op First Lien Term Loan	2			4FE	1,594,392		97,0000	1,554,392	1,602,404		1,594,392			6.772	6.772	MON	8,534	95,858	12/14/2017	12/06/2024
126026-AA-3	CFS FUNDING TRUST I Floating Rate V	2			2FE	62,249,002		100,0000	62,830,252	62,830,252		62,249,002			6.705	6.705	MON	668,450	1,161,335	12/21/2018	04/09/2043
12632B-AG-1	CPI International Inc. First Lien Term	2			4FE			96,5800							0.000	0.000	JUL	(358)		08/10/2017	07/26/2024
12644H-AJ-8	CTI FOODS HLDG CO LLC 1ST LIEN TERM L	2			5FE	1,496,153		74,3330	1,360,410	1,830,156		1,496,153		328,671	0.000	0.000	MS	28,307	102,842	08/26/2013	06/30/2020
127388-AB-8	Cadence Aerospace, LLC Incremental TL	2			5G1	3,293,791		97,5985	3,247,161	3,293,791		3,293,791			8.910	8.910	JAUO	61,653	75,440	07/05/2018	11/14/2023
12764H-AB-9	Caelus Energy Alaska 03 2nd Lien	2			5	830,763		88,6670	1,636,916	1,846,139		913,375			10.304	10.304	MJSD	5,284	183,028	02/04/2016	04/15/2020
128068-AB-5	CAITHNESS BROOKHAVEN, LL TERM LOAN	2			3	17,449,774		100,0000	17,626,035	17,474,495		17,474,495			7.027	7.027	JJ	258,024	857,915	08/11/2015	08/11/2022
13134N-AG-6	Calpine Construction Finance Company L.P	2			3FE	2,028,871		94,3500	1,916,151	2,030,897		2,028,871			5.022	5.022	MON	7,946	92,092	12/15/2017	01/15/2025
13345*-AA-5	CAMERON LNG CONSTRUCTION FA	2			1	55,333,017		100,0000	55,670,517	55,670,517		55,348,843			3.638	3.814	JJ	914,909	1,872,257	11/28/2018	07/15/2030
13905*-AA-3	Canyon Companies S.A.R.L USD TLB (Jul '17	2			4	1,509,945		95,9000	1,451,667	1,513,730		1,509,945			5.553	5.553	MJSD	14,725	81,169	08/22/2017	06/16/2023
14314*-AA-6	Carlyle US QLO 2017-2 Ri Term Loan	2			1FE	23,007,143		99,0330	22,784,664	23,007,143		23,007,143			4.392	4.392	JAUO	209,928	722,806	06/28/2017	07/18/2031
14314*-AA-0	Carlyle US QLO 2013-1 Re Term Loan	2			1FE	22,550,000		98,8500	22,290,675	22,550,000		22,550,000			4.462	4.462	FMAN	365,191	667,014	08/14/2017	08/15/2030
14314*-AA-8	Carlyle US QLO 2017-3 Ri Term Loan	2			1FE	22,800,000		98,7100	22,505,880	22,800,000		22,800,000			4.277	4.277	JAUO	202,540	870,716	08/02/2017	07/20/2029
14315*-AA-5	Carlyle US QLO 2017-1 Ri Term Loan	2			1FE	22,850,000		99,0940	22,642,979	22,850,000		22,850,000			4.401	4.401	JAUO	187,159	698,687	04/19/2017	04/20/2031
14315*-AA-9	Carlyle US QLO 2015-1 Ri Term Loan	2			1FE	24,425,000		99,2000	24,229,600	24,425,000		24,425,000			4.005	4.005	JAUO	203,134	694,574	07/20/2017	04/20/2027
14315*-AA-7	Carlyle US QLO 2013-2 Re Term Loan	2			1FE	21,032,568		99,1700	20,857,998	21,032,568		21,032,568			3.810	3.810	JAUO	554,364	895,794	12/07/2017	01/19/2029
14316*-AA-4	Carlyle US QLO 2013-3 Re Term Loan	2			1FE	19,075,000		98,0400	18,701,130	19,075,000		19,075,000			4.071	4.071	JAUO	159,633	561,922	12/06/2017	10/16/2030
14316*-AA-8	Carlyle US QLO 2017-4 Ri Term Loan	2			1FE																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest					Dates	
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
180656-VZ-9	Claritas LLC			2	4Z	26,803,624	97.1830	26,716,490	27,490,896	26,803,624					8.479	8.479	MON	51,801		12/21/2018	12/21/2023
208248-AA-8	ROI Solutions Senior Term Loa			2	4Z	2,344,807	96.6846	2,313,334	2,392,660	2,344,807					7.803	7.803	MJSD	36,867	28,987	08/01/2018	07/31/2024
21119#-AA-8	Continental Cafe Term Loan			2	4	4,217,581	96.5649	4,155,821	4,303,654	4,217,581					8.272	8.272	MON	28,135	336,212	01/30/2017	01/27/2023
21751#-AA-1	COPPER MOUNTAIN SOLAR 3 CONSTRUCTION FA			2	2	18,229,095	100.0000	18,452,295	18,452,295	18,217,701					4.135	4.135	JD	405,155	724,335	05/29/2015	06/30/2025
21775#-AC-9	CORA Health Services, In Mezzanine Term			2	5	15,092,480	98.4713	14,861,763	15,092,480	15,092,480					11.000	11.000	MJSD	372,281	702,998	09/30/2018	05/02/2025
22412#-AA-2	CPV MARYLAND, LLC CONSTRUCTION FA			2	4	26,517,391	100.0000	26,760,391	26,760,391	26,517,391					5.880	5.779	MON	415,232	1,588,738	02/28/2017	12/31/2021
22834K-AB-7	Crown Finance US, Inc. USD TLB (Feb'18)			2	4FE	1,984,601	94.3330	1,877,202	1,989,974	1,984,601					5.022	5.022	MON	7,786	18,227	10/11/2018	02/28/2025
22904T-AC-1	Cryolife Inc. TL B			2	4FE	1,730,338	97.5000	1,695,557	1,739,033	1,730,338					6.053	6.053	MJSD	20,871	101,357	12/06/2017	12/01/2024
23248R-AB-0	Cvent, Inc. Re-priced TL B			2	4FE	2,530,907	95.5000	2,423,074	2,537,250	2,530,907					6.095	6.095	MON	12,457	140,907	12/12/2017	11/14/2024
23361*-AA-3	DRB Systems, LLC First Lien TL			2	2PL	960,234	96.5649	951,025	984,856	960,234					8.386	8.386	MJSD	114,299	36,950	10/06/2017	10/06/2023
24001Q-AL-5	Dayton Power & Light Co. TL B			2	1FE	1,786,579	98.3750	1,766,379	1,795,557	1,786,579					4.510	4.510	MON	6,308	72,710	09/07/2016	08/18/2022
24344#-AA-1	Decision Resources, Inc. Senior Term Loa			2	5	19,241,091	98.7412	19,386,617	19,633,766	19,255,705					0.000	0.000	MON	114,204	1,338,293	08/05/2016	09/30/2020
24380#-AA-6	Deer District LLC Senior Secured			2	2		0.0000								0.000	0.000	MAY	123,304	334,675	11/13/2018	05/17/2021
24702N-AZ-3	Dell Inc			2	2FE	3,063,555	95.9170	2,934,392	3,059,303	3,063,555					4.530	4.530	MON	10,720	123,359	10/20/2017	09/07/2023
247361*-B-6	DELTA AIR LINES INC DEL N809W			2	1FE	6,541,592	100.0000	6,591,024	6,591,024	6,560,687					4.036	4.036	MJSD	55,421	221,323	09/30/2014	09/30/2019
247361*-C-4	DELTA AIR LINES INC DEL N816NW			2	1FE	7,524,650	100.0000	7,581,512	7,581,512	7,546,603					4.036	4.036	MJSD	63,750	254,583	09/30/2014	09/30/2019
247361*-D-2	DELTA AIR LINES INC DEL N858NW			2	1FE	6,268,339	100.0000	6,315,707	6,315,707	6,286,637					4.036	4.036	MJSD	53,106	212,078	09/30/2014	09/30/2019
247361*-E-0	DELTA AIR LINES INC AIRBUS A330-200 N856			2	1FE	10,720,233	100.0000	10,801,242	10,751,509	10,751,509					4.036	4.036	MJSD	90,823	362,700	09/30/2014	09/30/2019
25213Y-AK-1	DexKo Global Inc.			2	4FE	1,022,392	96.4170	977,509	1,013,835	1,022,392					6.022	6.022	MON	4,785	48,883	01/25/2018	07/24/2024
25463#-AA-1	Direct Travel, Inc. Term Loan			2	5	4,060,760	97.6045	4,044,374	4,143,633	4,060,760					9.305	9.305	MJSD	76,879	382,854	10/18/2016	12/01/2021
25463#-AA-1	Direct Travel, Inc. Term Loan			2	5	4,678,955	97.6045	4,654,198	4,768,424	4,678,955					9.305	9.305	MJSD	88,471	341,055	03/22/2018	12/01/2021
25463E-AD-8	Direct Travel, Inc. Delayed Draw B			2	4Z	336,092	97.9791	329,300	336,092	336,092					9.122	9.122	JAJJ	6,229	10,134	07/05/2018	06/01/2021
25471Y-AC-6	DiscoverOrg Holdings, In Sr. Term Loan			2	4	5,958,693	99.5000	5,988,788	6,018,882	5,958,693					6.850	6.850	MON	35,639	397,139	08/31/2017	08/11/2023
26376M-AH-5	DuBois Chemicals, Inc. Second Lien Ter			2	5FE	14,091,729	98.0000	13,949,389	14,234,070	14,091,729					10.522	10.522	MON	129,104	132,857	09/19/2018	08/31/2025
26581P-AB-2	Dunn Paper, Inc. Term Loan - Sec			2	5FE	5,540,489	100.5000	5,681,828	5,653,561	5,540,489					11.095	11.095	MON	50,528	614,717	10/14/2016	08/26/2023
26830*-AA-9	EAIV 2017 Delta MSN 15146			2	1FE	3,759,695	89.2572	3,355,798	3,759,695	3,759,695					3.351	3.351	AO	21,000	127,513	04/13/2017	10/15/2023
26830*-AB-7	EAIV Delta MSN 15147			2	1FE	3,759,546	91.1863	3,428,191	3,759,546	3,759,546					3.351	3.351	AO	20,300	121,081	04/13/2017	10/31/2022
26830*-AC-5	EAIV Delta MSN 15153			2	1FE	3,750,239	91.1240	3,417,368	3,750,239	3,750,239					3.374	3.374	JD	28,529	87,492	04/13/2017	12/19/2022
26830*-AD-3	EAIV Delta MSN 15161			2	1FE	4,057,609	90.9544	3,690,574	4,057,609	4,057,609					3.381	3.381	JJ	28,201	96,441	04/13/2017	01/31/2023
26830*-AE-1	EAIV Delta MSN 15162			2	1FE	4,057,609	90.9544	3,690,574	4,057,609	4,057,609					3.381	3.381	JJ	28,201	96,441	04/13/2017	01/31/2023
26830*-AF-8	EAIV Delta MSN 15166			2	1FE	4,071,125	90.2789	3,675,367	4,071,125	4,071,125					3.412	3.412	AO	28,555	127,712	04/13/2017	04/04/2023
26830*-AG-6	EAIV Delta MSN 15170			2	1FE	4,043,143	90.2789	3,650,105	4,043,143	4,043,143					3.402	3.402	MS	28,273	123,215	04/13/2017	03/27/2023
26830*-AH-4	EAIV Delta MSN 15176			2	1FE	4,136,747	90.2789	3,734,610	4,136,747	4,136,747					3.386	3.386	AO	23,348	141,528	04/13/2017	04/29/2023
26830*-AJ-0	EAIV Delta MSN 15181			2	1FE	4,145,899	90.1130	3,735,994	4,145,899	4,145,899					3.397	3.397	MM	30,657	87,027	04/13/2017	05/29/2023
26830*-AK-7	EAIV Delta MSN 15186			2	1FE	4,617,933	89.7783	4,145,902	4,617,933	4,617,933					3.420	3.420	JJ	32,463	109,074	04/13/2017	07/24/2023
26830*-AL-5	EAIV Delta MSN 15187			2	1FE	4,629,278	89.7783	4,156,087	4,629,278	4,629,278					3.420	3.420	JJ	32,543	109,341	04/13/2017	07/24/2023
26830*-AM-3	EAIV Delta MSN 15200			2	1FE	4,281,733	89.1118	3,815,529	4,281,733	4,281,733					3.437	3.437	JD	32,593	100,859	04/13/2017	11/11/2023
26835*-AA-4	Avatar Purchaser, Inc 1st Lien TL			2	5G1	2,518,221	94.7500	2,398,004	2,530,875	2,518,221					6.407	6.407	JAJJ	32,450	155,138	11/22/2017	09/06/2024
26844H-AE-7	Linden Cogen Holdings LL TL B			2	3FE	3,606,103	97.6250	3,556,019	3,642,529	3,607,132					5.640	5.640	MJSD	42,800	189,471	07/08/2016	06/28/2023
26869E-AB-0	EMG UTICA LLC NEW TERM LOAN D			2	4FE	1,163,942	98.2500	1,213,989	1,235,613	1,166,083					6.251	6.251	JD	16,090	69,496	08/19/2016	03/31/2020
27005#-AA-2	EMERALD US INC. TERM LOAN B1			2	4	2,407,521	98.0830	2,385,221	2,431,840	2,414,513					6.803	6.803	MJSD	34,378	145,910	07/08/2014	05/16/2021
27031*-AB-2	EARTHOLOR INC TERM LOAN			2	6*		0.0000		5,218,798				588,321	15,500	15,500	MJSD		402,808	06/29/2018	08/17/2050	
28249G-AC-0	EIF Channelview Cogenera TL B			2	4FE	862,370	98.6880	855,333	866,704	862,370					6.600	6.600	MON	4,608	29,180	05/24/2018	04/11/2025
28488#-ZZ-4	Electric Power Systems Senior Term Loa			2	4Z	5,294,014	98.1636	5,275,932	5,374,634	5,294,014					7.479	7.479	JAJJ			12/28/2018	12/21/2024
29373U-AC-5	Envision Healthcare Corp TL due 2025			2	4FE	2,992,500	92.9640	2,788,920	3,000,000	2,992,500					6.273	6.273	MON	14,729	15,130	09/28/2018	09/14/2025
30204K-AB-2	ExGen Renewables IV, LLC TL B			2	3FE	1,143,989	94.5000	1,083,779	1,146,856	1,143,989					5.710	5.710	FMAN	13,071	38,791	12/01/2017	11/07/2024
302550-AB-7	FLNG LIQUIFICATION 2 LLC TERM LOAN			2	2	9,784,118	100.0000	9,784,118	9,784,118	9,784,118					4.421	4.421	JAJJ	61,448	251,459	12/21/2018	11/19/2021
31659#-AB-1	Fieldwood Energy LLC Exit 1st Lien TL			2	4FE	1,010,000	93.1880	931,880	1,010,000	1,010,000					7.772	7.772	MON	6,118	37,189	09/21/2018	04/11/2022
31659#-AB-1	Fieldwood Energy LLC Exit 1st Lien TL			2	4FE	3,013,420	93.1880	2,904,275	3,116,576	3,013,4											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
339716-AA-2	FLNG LIQUEFACTION 3, LLC CONSTRUCTION LO	2			2	9,866,225	96.6287	9,533,605	9,866,225	9,866,225					3.992	3.992	MJSD	35,260	161,658	12/21/2018	04/28/2022
36165Y-AD-2	BBB Industries LLC Second Lien TL	2			5FE	24,250,000	97.0000	24,250,000	25,000,000	24,250,000					10.879	10.879	MON	181,315	884,018	08/08/2018	07/24/2026
36194B-AA-6	GCS Acq Corp/Global Claims Term Loan A	2			5G1	3,173,524	97.8823	3,145,639	3,213,696	3,173,524					7.636	7.636	MJSD	51,125	235,673	09/20/2017	09/19/2022
36249V-AG-1	GYP Holdings III 2018 Incrm Term Loan	2			4FE	1,568,015	94.0000	1,474,262	1,568,364	1,568,015					5.272	5.272	MON	6,437	36,843	06/14/2018	05/16/2025
36250L-AP-9	GTT Communications, Inc. USD TL B (Apr'1	2			4FE	2,524,564	93.9170	2,382,909	2,537,250	2,524,564					5.270	5.270	MON	10,430	60,921	06/07/2018	04/25/2025
36254E-AC-0	Paya Inc	2			2PL	10,936,650	98.5000	10,936,650	11,103,198	10,936,650					7.686	3.843	FIAN			12/17/2018	08/01/2024
365556-AM-1	Gardner Denver Inc 2017 USD Term Loan B	2			3FE	2,824,593	96.3440	2,728,146	2,831,672	2,824,593					5.272	5.272	MON	12,515	129,884	08/17/2017	07/30/2024
36740U-AP-7	Gates Global LLC 2017 Term Ln B	2			4FE	1,696,125	94.7810	1,603,147	1,691,423	1,696,125					5.272	5.272	MON	6,959	84,472	11/22/2017	04/01/2024
36877#-AA-8	Spring Renewables Investments LLC	2			2Z	97,890,000	102.4198	100,258,742	97,890,000	97,890,000					4.827	4.827	MJSD	39,376		12/26/2018	10/31/2039
37958Y-AK-5	GlobalTranz 2nd Lien Term Loan	2			4Z	12,443,452	97.3194	12,294,310	12,632,946	12,443,452					10.522	10.522	MON	105,273	129,533	10/25/2018	10/16/2026
38017B-AN-6	Go Daddy Term Loan B-1	2			3FE	2,514,658	95.3000	2,391,089	2,509,012	2,514,658					4.772	4.772	MON	9,310	107,407	11/30/2017	02/15/2024
38133U-AC-7	Golden West Packaging Gr Term Loan	2			4	6,043,147	99.5000	6,062,429	6,092,894	6,043,147					7.595	7.595	MON	37,276	425,430	02/16/2018	06/20/2023
38268P-AC-5	Convergint Technologies DD First Lien T	2			4FE	24,135	94.0000	22,687	24,135	24,135					0.000	0.000	MON		245	09/28/2018	01/24/2025
38870#-AA-1	GraphPad Software, Inc. Unitranche	2			5G1	15,795,768	96.8669	15,613,138	16,118,131	15,795,768					8.813	8.813	MJSD		1,448,453	12/21/2017	12/15/2023
39808C-A8-4	GRIDIRON FDG LLC Term Facility	2			2	4,104,415	100.0000	4,166,919	4,166,919	4,104,415					4.850	4.850	MON	16,280	210,424	06/07/2017	05/15/2024
39808C-A8-4	GRIDIRON FDG LLC Term Facility	2			2	33,679,665	100.0000	34,367,005	34,367,005	33,679,665					4.850	4.850	MON	134,270	1,451,615	05/15/2017	05/15/2024
40227U-AB-2	Gulf Finance, LLC TL B	2			5FE	4,577,083	75.8750	3,567,861	4,702,288	4,578,080					7.640	7.640	MJSD	74,845	335,946	05/03/2017	08/25/2023
40416V-AB-1	CD&R Plumb Buyer, LLC Term Loan B	2			4FE	820,734	96.4170	793,310	822,791	820,734					5.721	5.721	MJSD	9,258		08/07/2017	07/19/2024
41049#-XX-6	Hanley Wood LLC	2			4Z	26,812,500	99.0000	27,225,000	27,500,000	26,812,500					9.017	9.017	MJSD	130,874		12/10/2018	10/31/2024
41151P-AM-7	Harbor Freight Tools USA Inc.	2			3FE	9,300,325	94.0940	8,729,224	9,277,132	9,300,325					5.022	5.022	MON	36,205	357,358	01/24/2018	08/18/2023
421300-AG-9	Hayward Industries, Inc. First Lien TL	2			4FE		0.0000								0.000	0.000	AUG	6,625	9,109	10/03/2018	08/02/2024
42330E-AB-8	Helix Gen Funding, LLC TL B	2			3FE	918,511	93.3440	861,683	923,127	918,511					6.272	6.272	MON	5,248	41,934	06/08/2017	06/03/2024
42804V-AS-0	HTZ TL B1 TL USD	2			3FE	2,448,239	95.9290	2,354,457	2,454,375	2,448,424					5.272	5.272	MON	10,136	117,577	07/05/2016	06/30/2023
42806D-A*-0	Hertz Vehicle Financing Series 2013-A V	2			2FE	42,500,000	100.0000	42,500,000	42,500,000	42,500,000					5.955	5.955	MON	84,364	1,638,113	03/09/2018	03/31/2020
42958#-AB-6	Higginbotham Insurance A 1st Lien TL	2			5G1	2,176,367	96.5000	2,110,747	2,187,303	2,176,367					6.256	6.256	MON	10,766	104,957	02/02/2018	12/29/2024
43110E-AF-3	Highline Aftermarket Acq TL B	2			4FE	2,648,687	98.3750	2,607,682	2,650,756	2,648,687					6.063	6.063	MON	25,319	73,317	05/16/2018	04/25/2025
43128#-AA-3	HOUGHTON INTERNATIONAL I TERM LOAN B USD	2			4FE	1,808,421	99.0000	1,795,850	1,813,989	1,811,086					5.772	5.772	MON	8,197	95,881	05/22/2013	12/20/2019
43129#-AA-4	The Hilb Group, LLC Term Loan - Las	2			5	6,968,974	97.4962	6,891,911	7,068,900	6,974,984					11.725	11.725	MJSD	172,678	766,232	06/27/2018	06/24/2021
43129#-AB-2	The Hilb Group, LLC DDTL - Last Out	2			5	747,623	97.4962	728,904	747,623	747,623					12.124	12.124	MJSD	9,706	17,066	12/03/2018	06/24/2021
43455J-AT-5	Hoffmaster Group Inc. Repriced 1st Li	2			4FE	2,004,772	98.0000	1,950,051	1,989,848	2,004,772					6.522	6.522	MON	23,156	23,156	10/16/2018	11/23/2023
43534#-AB-7	Hollander Sleep Products Term Loan	2			5	19,611,062	89.1619	17,888,081	20,062,468	19,611,062					10.803	10.803	MJSD	434,107	1,908,882	06/09/2017	06/09/2023
43534#-AB-1	Hollandia Produce LP Equipment Term	2			4Z	323,956	98.9864	320,672	323,956	323,956					10.349	10.349	MON	2,608	18,515	04/09/2018	12/12/2020
43534#-AC-9	Hollandia Produce LP Equipment Acqui	2			4Z	37,750	98.9864	37,367	37,750	37,750					10.349	10.349	MON	304	9,491	04/09/2018	12/12/2020
43534#-AD-7	Hollandia Produce LP Real Estate Ter	2			4Z	483,018	98.9864	478,122	483,018	483,018					10.349	10.349	MON	3,888	27,845	04/09/2018	12/11/2020
44332E-AP-1	Hub International Limite USD TL B (Apr'1	2			4FE	2,773,773	94.2190	2,610,159	2,770,311	2,773,773					5.240	5.240	JAJO	26,664	20,939	09/04/2018	04/25/2025
44908X-AT-5	Hyland Software Inc. TL B (add-on)	2			4FE	1,282,243	96.7000	1,237,657	1,279,893	1,282,243					6.022	6.022	MON	6,041	5,427	11/06/2018	07/01/2024
44969C-BF-6	Quintiles IMS Term Loan B-1	2			3FE	2,305,297	96.8250	2,219,608	2,292,391	2,305,297					4.803	4.803	MJSD	20,947	79,980	03/07/2017	03/01/2024
45249#-AA-0	Image Intl Holdco Initial Term Ln	2			4Z	16,598,162	96.8426	16,360,397	16,893,803	16,598,162					8.303	8.303	MJSD	347,071	338,872	07/10/2018	07/10/2023
45607R-AB-8	INDUSTRIAL DYNAMICS COMP TERM LOAN	2			5G1	6,588,276	98.5310	6,671,628	6,771,097	6,641,647					10.500	10.500	MJSD	187,521	596,565	10/22/2015	12/31/2025
45672L-AE-5	Infor (US), Inc. Extended USD Te	2			4FE	6,631,983	95.6720	6,351,972	6,639,322	6,631,983					5.272	5.272	MON	71,043	304,188	02/13/2017	02/01/2022
45790L-AD-4	Integrity Marketing Acquisition, LLC	2			4Z	5,230,070	95.9100	5,041,367	5,256,352	5,230,070					6.957	6.957	FIAN	32,504	4,912	11/29/2018	11/30/2025
47214D-AC-8	JAZZ ACQUISITION INC 1ST LIEN TERM L	2			4FE	437,278	93.7500	410,976	438,374	437,595					6.303	6.303	MJSD	5,389	23,992	07/03/2014	06/19/2021
47579S-AT-7	Jeld-Wen Inc. Amended TL B	2			3FE	1,247,394	94.9170	1,183,989	1,247,394	1,247,394					4.803	4.803	MJSD	11,427	38,259	01/03/2018	12/06/2024
47777M-AF-0	JOERNS HEALTHCARE LLC 2020 TERM LOAN	2			5G1	1,446,083	89.1250	1,301,840	1,460,690	1,451,178					8.707	8.707	FIAN	10,512	120,262	06/02/2014	05/09/2020
48252#-AA-8	KKR Eagle Asset Term Loan A	2			1FE	59,311,054	100.0000	59,311,054	59,311,054	59,311,054					5.500	5.499	JD	2,424,354		11/29/2018	12/29/2027
48268J-AC-8	KSLB HLDGS LLC Term Loan	2			3PL	11,846,864	97.7500	11,846,864	12,119,554	11,846,864					7.022	7.022	MON	66,824	276,375	07/30/2018	07/31/2024
48275#-AA-3	KREF Lending VII 2018-1 Term Loan	2			1FE	94,283,261	100.0000	94,283,261	94,283,261	94,283,261					3.855	3.908	MON	151,442	2,270,081	04/13/2018	04/12/2023
48275#-AB-1	KREF Lending VII 2018-2 Term Loan	2			1FE	160,161,134	100.0000	160,161,134	160,161,134	160,161,134					3.855	3.907	MON	257,259	3,145,769	05/31/2018	04/26/2023
48275#-AC-9	KREF Lending VII 2018-3 Term Loan	2			1FE	137,776,691	100.0000	137,776,691	137,776,691	137,776,691											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
50219N-AD-3	Dohmen Life Science Serv Second Lien Ter			2	5FE	12,114,057	.97	12,098,955	12,375,602	12,114,057					10.865	10.865	FMAN	54,615	1,066,708	05/16/2018	03/16/2026
50219N-AF-8	Dohmen Life Science Serv Second Lien DDT			2	5FE	2,335,841	.99	2,314,238	2,337,614	2,335,841					10.957	10.957	FMAN	20,632	148,695	05/22/2018	03/16/2026
50546@-AA-2	LAC INTER LLC Term Loan			2	5Z	10,785,807	.96	10,655,046	11,034,074	10,785,807					8.053	8.053	MJSD	176,204		10/01/2018	09/30/2024
51187G-AC-6	Lakeland Tours, LLC TL B due 2024			2	4FE	649,021	.97	632,105	650,535	649,021					6.788	6.788	MJSD	8,475	26,837	06/15/2018	12/15/2024
529897-AF-7	LIBBEY GLASS INC TERM LOAN B			2	4FE	1,129,382	.95	1,079,372	1,132,212	1,130,295					5.387	5.387	MON	3,219	57,079	04/17/2014	03/26/2021
53186*-AA-3	Life Extension Institute Term Loan B			2	5	7,452,805	100	7,558,472	7,558,472	7,460,072					9.303	9.303	MJSD	140,814	570,032	07/27/2018	02/19/2022
53227*-AA-0	Lightspeed Systems, Inc. Senior Term Loa			2	5	7,411,842	.95	7,308,775	7,641,074	7,411,842					7.495	7.495	MON	46,251	504,703	02/02/2018	01/31/2023
54047*-AA-6	Loftware, Inc. First Lien Term			2	4Z	7,440,773	.96	7,335,827	7,592,625	7,440,773					8.047	8.047	MJSD	121,092	329,769	03/02/2018	02/28/2023
56282C-AB-2	MAG DS Corp - 1st Lien Term Loan			2	4	13,266,669	.94	12,623,437	13,400,676	13,266,669					7.130	7.130	MON	164,037	356,042	06/01/2018	10/31/2025
56368*-AE-0	MSHC Inc (HVAC Holdings/ 2L Term Loan			2	5	4,508,036	.97	4,442,446	4,553,571	4,508,036					10.636	10.636	MJSD	100,901	458,719	07/31/2017	07/31/2024
56368*-AG-5	MSHC Inc (HVAC Holdings/ 2L DDTL			2	5	101,190	.97	98,721	101,190	101,190					10.636	10.636	MJSD	2,242	4,807	03/23/2018	07/31/2024
56368*-AG-5	MSHC Inc (HVAC Holdings/ 2L DDTL			2	5	2,934,524	.97	2,862,910	2,934,524	2,934,524					10.636	10.636	MJSD	65,025	102,164	06/28/2018	07/31/2024
56368*-AH-3	MSHC Inc (HVAC Holdings/ Second Lien DDT			2	4Z	4,285,570	.97	4,180,985	4,285,570	4,285,570					10.817	10.817	JAJO	55,289	115,823	08/30/2018	07/31/2024
56371*-AA-3	MRI Software LLC Delayed Draw Te			2	3PL	291,274	.97	284,794	291,274	291,274					8.065	8.015	JAJO	3,596	17,289	10/09/2018	07/05/2023
56371*-AC-9	MRI Software LLC Unitranch			2	3PL	2,282,270	.97	2,254,031	2,305,323	2,282,270					7.890	7.890	MJSD	37,894	176,901	06/30/2017	07/05/2023
56371*-AE-5	MRI Software LLC Incremental Ter			2	3PL	5,429,978	.99	5,429,978	5,484,826	5,429,978					7.890	7.890	MJSD	90,157	420,937	10/05/2017	06/30/2023
56371*-AF-2	MRI Software LLC Second Incremen			2	3PL	693,339	.97	684,760	700,342	693,339					7.890	7.890	MJSD	11,512	42,311	12/13/2017	06/30/2023
56371*-AG-0	MRI Software LLC Third Incremen			2	3PL	142,813	.97	141,046	144,255	142,813					7.890	7.890	MJSD	2,371	6,553	03/07/2018	06/30/2023
56371*-AH-8	MRI Software LLC June '18 Increm			2	4Z	696,640	.97	688,021	703,677	696,640					7.890	7.890	MJSD	11,567	13,332	07/03/2018	06/30/2023
56371*-AK-1	MRI Software SIXTH AMENDMENT LIN			2	4Z	279,140	.97	275,687	281,960	279,140					7.890	7.890	MJSD	3,213		11/07/2018	06/30/2023
56377V-AK-6	MTS Sys Corp New Tranche B Term Loan			2	4FE	2,179,657	.96	2,082,302	2,163,431	2,179,657					5.710	5.710	MON	12,831	100,985	07/06/2017	07/05/2023
56356X-AE-9	Welbilt Inc Term Loan B			2	4FE	2,029,173	.95	1,925,394	2,024,962	2,029,173					5.022	5.022	MON	8,226	9,955	10/23/2018	10/19/2025
58506P-AH-4	MedPlast Holdings, Inc. Second Lien TL			2	5FE	20,825,000	.97	20,612,500	21,250,000	20,825,000					10.148	10.148	MJSD	449,277	440,623	07/20/2018	06/29/2026
59408B-AQ-9	Michaels Stores Term Loan B			2	3FE	5,991,088	.95	5,722,756	6,000,269	5,991,088					5.008	5.008	MON	28,308	138,053	05/23/2018	01/28/2023
59801E-AC-0	Midnite Air			2	4Z	11,096,540	.96	10,982,962	11,323,000	11,096,540					8.750	8.750	MJSD	63,983		12/05/2018	06/28/2024
60749K-AB-1	Moda Midstream TLB			2	4FE	0	.0000	0	0	0					0.000	0.000	SEP	2,832	5,382	10/10/2018	09/29/2025
60787*-AA-7	Moelis Steele Creek TERM LIN			2	1FE	16,987,500	.98	16,689,200	16,987,500	16,987,500					4.326	4.326	JAJO	242,954	557,086	12/14/2017	10/16/2030
62871N-AK-1	NAB Higgs 2018 Refi Term Loan			2	4FE	651,026	.94	616,501	649,804	651,026					5.803	5.803	MJSD	7,310	24,769	01/03/2018	07/01/2024
62877U-A@-8	NAS, LLC 1ST LIEN TERM L			2	5	4,113,820	.99	4,168,201	4,177,686	4,120,339					7.277	7.277	JAJO	49,821	291,940	11/03/2017	06/01/2021
64072U-AE-2	Neptune Finco TLB			2	3FE	1,498,098	.94	1,425,075	1,505,626	1,498,098					4.705	4.705	MON	12,884	63,638	05/02/2017	07/17/2025
64072U-AG-7	CSC Holdings LLC TL B (Jan'18)			2	3FE	1,665,626	.95	1,602,148	1,673,996	1,665,626					4.955	4.955	MON	42,044	25,261	02/05/2018	01/12/2026
64108@-AA-3	Net Health Systems, Inc. Unitranch			2	4	14,054,793	.97	13,961,218	14,341,625	14,054,793					7.845	7.845	MON	90,629	1,002,243	12/21/2017	12/15/2023
64108@-AC-9	Net Health Systems, Inc. Incremental TL			2	4Z	2,561,000	.97	2,531,036	2,600,000	2,561,000					7.845	7.845	MON	16,430	46,847	09/07/2018	12/21/2023
64755*-AB-5	New Mountain Learning, L DDTL			2	5Z	848,405	.93	791,682	848,405	848,405					7.886	7.886	MON	16,858	7,664	08/31/2018	03/15/2024
65340M-AQ-6	Niacet Corporation Second Lien Ter			2	5	7,411,182	.97	7,955,487	8,129,630	7,967,038				(396,543)	9.750	9.750	MON	129,388	761,460	02/16/2017	02/01/2022
65341*-AC-1	NextCare Inc - Term Loan			2	4Z	6,193,437	.95	5,981,359	6,255,997	6,193,437					7.050	7.050	MON	110,046	267,328	02/21/2018	02/27/2023
65684*-AA-4	North American Dental Gr Term Loan			2	4Z	2,571,345	.98	2,519,918	2,571,345	2,571,345					7.948	7.948	FMAN	28,991	29,616	10/26/2018	07/07/2023
65684*-AB-2	North American Dental Gr Delayed Draw Te			2	4	568,161	.96	549,850	568,161	568,161					8.302	8.302	JAJO	6,025	(87,428)	10/31/2018	07/07/2023
65684*-AB-2	North American Dental Group LLC			2	4	896,365	.96	867,477	896,365	896,365					8.302	8.302	JAJO	2,683		11/27/2018	07/07/2023
67090U-AB-9	OL SP 2018-B, LLC Class A Term Lo			2	1PL	24,005,671	102	24,574,657	24,011,304	24,005,671					4.160	4.160	MON	62,426	487,467	06/07/2018	02/09/2030
67090U-AC-7	OL SP 2018-B, LLC Class B Term Lo			2	2PL	16,007,292	100	16,062,869	16,007,292	16,007,292					4.610	4.610	MON	46,119	388,624	06/07/2018	02/09/2030
67611Y-AF-2	Odyssey Logistics 2018 1st Lien Term Loa			2	4FE	1,950,635	.96	1,865,613	1,943,347	1,950,635					5.845	5.845	MON	9,150	64,434	05/09/2018	10/12/2024
68285@-AB-7	ONICON INC. TERM LOAN			2	5	9,393,077	.97	9,297,471	9,542,961	9,405,758					7.886	7.886	MJSD	125,511	268,026	12/13/2018	04/21/2020
68285@-ZZ-7	Onicon Incorporated			2	4Z	8,247,058	.97	8,253,132	8,471,047	8,322,803					6.500	6.500	MJSD	24,048		12/13/2018	04/21/2022
68287*-AA-9	1A Smart Start, Inc. Second Lien Ter			2	5	24,990,000	.96	24,708,708	25,500,000	24,990,000					10.595	10.595	MON	217,631	2,538,101	12/22/2017	12/22/2022
68489*-AA-1	ORANGE GROVE ENERGY, L.P DELAYED DRAW TE			2	2	14,377,180	.95	14,083,805	14,689,328	14,404,434					3.515	3.515	MJSD	107,569	457,995	12/09/2014	06/30/2035
69306@-AA-2	P&L Development Holdings Term Loan			2	5	6,559,392	.95	6,303,982	6,625,649	6,559,392					10.797	10.797	MJSD	143,501	655,092	05/17/2017	05/12/2022
69398*-AA-3	Professional Datasolutio First Lien Term			2	5	27,316,077	.97	26,858,322	27,617,310	27,316,077					7.218	7.218	JAJO	390,987	1,731,224	04/11/2018	08/25/2023
69946E-AT-8	PAREXEL International Co TL B			2	4FE	1,316,240	.90	1,192,223	1,322,855	1,316,240					5.272	5.272	MON	5,443	63,394	10/04/2017	09/27/2024
70469E-AA-3	Peak 10, Inc. First Lien Term			2	4FE	1,566,971	.90	1,427,865	1,574,845	1,566,971					6.313	6.313	MJSD	19			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest					Dates	
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
74274N-AC-7	Proampac PG Borrower LLC - 2016 1st Lien	2			4FE	3,493,660		3,327,711	3,493,660	3,493,660					6.053	6.053	JAU	20,500	190,403	05/15/2018	11/18/2023
74339D-AB-4	PROJECT ALPHA TERM LOAN B	2			4FE	2,499,191		2,411,280	2,511,750	2,499,191					5.940	5.940	JAU	31,162	145,159	05/09/2017	04/26/2024
74839X-AF-6	Quikrete Holdings, Inc. TLB due 2023	2			4FE	2,458,668		2,336,713	2,458,068	2,458,068					5.272	5.272	MON	10,088	117,737	06/12/2017	11/15/2023
74950N-AB-0	Worldwide Express Second Lien Ter	2			5FE	25,879,804		25,915,646	26,370,994	25,879,804					10.863	10.863	MON	374,731	1,042,523	11/16/2018	02/03/2025
74979X-AC-3	RPX Corp 2018 Term Loan	2			4FE	9,253,550		9,519,318	9,664,282	9,253,550					8.345	8.345	MON	64,964	358,944	06/19/2018	06/19/2024
75972J-AB-0	Renaissance Learning, In Term Loan B	2			4FE	1,799,665		1,669,999	1,804,176	1,799,665					5.772	5.772	MON	8,151	48,665	06/07/2018	05/08/2025
75972J-AE-4	Renaissance Learning, In 2nd Lien TL	2			5FE	20,825,000		19,479,238	21,250,000	20,825,000					9.522	9.522	MON	159,962	957,470	06/08/2018	05/08/2026
76027E-AA-5	REP HS ACO/HEMASOURCE INCRIMTL TERM LN	2			4	9,877,870		9,774,889	10,028,295	9,877,870					7.099	7.099	MON	57,351	691,238	07/19/2017	07/14/2023
76086#-AB-9	RESA Power, LLC Sr. Secured Ter	2			5	4,425,584		4,007,146	4,515,902	4,425,584					7.522	7.522	MON	26,718	318,681	11/09/2017	10/25/2022
76086#-AC-7	RESA Power, LLC DDTL	2			5	296,731		263,302	296,731	296,731					7.522	7.522	MON	1,756	19,226	12/29/2017	10/25/2022
76155#-AC-7	RevSpring, Inc. Second Lien	2			4Z	6,645,830		6,566,177	6,851,371	6,645,830					10.595	10.595	MON	58,473	100,270	10/11/2018	10/11/2026
76761#-AA-7	Rock-it Cargo 2018 Term Loan	2			4Z	8,187,089		8,246,779	8,397,014	8,187,089					7.553	7.553	MON	98,520	152,196	07/31/2018	06/22/2024
78411E-AE-8	SpecialtyCare, Inc. Second Lien Ter	2			5FE	10,098,000		9,953,690	10,200,000	10,098,000					10.726	10.726	JAU	226,247	571,184	03/23/2018	09/09/2023
78466Y-AL-2	SRS Distribution, Inc. Term Loan B	2			4FE	1,747,587		1,747,053	1,877,280	1,747,587					5.772	5.772	MON	8,461	51,251	06/05/2018	08/25/2022
78488C-AG-5	SeaWorld Parks Term Loan B-5	2			4FE	6,303,134		6,039,610	6,340,798	6,303,134					5.522	5.522	MON	55,456	326,995	03/31/2017	02/24/2024
78648E-AF-7	SambaSafety, Inc. 2018 Incrementa	2			4Z	873,017		862,394	897,704	873,017					8.146	8.146	MJSD	15,235	50,511	01/17/2018	04/29/2022
78648E-A*-1	SAFETY HOLDINGS INC-INITIAL TERM LOAN	2			5	7,900,603		7,840,446	8,020,917	7,900,603					8.553	8.553	MJSD	136,471	618,327	04/29/2016	04/29/2022
78648E-AB-9	SambaSafety, Inc. Incremental Ter	2			5	672,009		672,009	687,477	672,009					8.553	8.553	MJSD	11,692	52,947	02/24/2017	04/29/2022
80386#-AA-0	SASOL CHEMICALS (USA) LL TERM LOAN	2			2Z	17,264,226		16,607,708	17,574,294	17,316,316					5.038	5.038	MJSD	166,486	724,045	01/02/2018	12/15/2021
81753#-AA-3	Risk Retention Equity	2			6*	1,777,778		1,777,778	1,777,778	1,777,778					0.000	0.000	FIAN			03/22/2018	02/28/2030
82888#-AA-9	Simpli.fi, Inc. Incremental Ter	2			4Z	4,850,288		4,773,897	4,924,151	4,850,288					8.022	8.022	MON	31,196	226,435	04/26/2018	09/28/2022
83401#-AA-9	SoFi Funding IX LLC Class B Warehou	2			1PL	45,116,764		45,116,764	45,116,764	45,116,764					5.685	5.685	FIAN	421,896	195,768	12/27/2018	07/03/2020
84130D-AD-0	SOUTHCROSS ENERGY PARTNE 1ST LIEN TERM L	2			5FE	934,989		836,322	939,687	934,989					6.636	6.636	MJSD	12,991	58,229	08/22/2014	07/15/2021
84148D-AB-4	SOUTHEAST POWERGEN, LLC TERM LOAN B	2			4FE	940,848		913,925	950,352	940,848					6.006	6.006	MON	4,479	42,315	12/11/2014	11/05/2021
84763N-AB-6	PPC Industries Inc. First Lien Term	2			4FE	363,779		346,022	363,779	363,779					5.772	5.772	MON	1,646	15,797	02/05/2018	01/17/2025
84986E-AB-7	Spring Renewables Invest Senior Term Loa	2			2FE	121,770,000		124,577,352	123,000,000	121,770,000					4.700	4.700	JJ	947,442	1,641,605	04/04/2018	03/30/2038
85235E-AA-4	Cannon Safe, Inc. Term Loan	2			5G1	1,730,126		1,780,793	2,648,020	1,730,126			864,933		7.386	7.386	MJSD	57,985	196,615	07/31/2017	07/31/2023
855031-AP-5	Staples Inc. First Lien TL B	2			4FE	4,170,462		4,011,883	4,193,591	4,170,462					6.541	6.541	FIAN	44,193	261,799	09/22/2017	09/12/2024
86614H-AJ-8	Summit Midstream Partner TL B	2			4FE	1,914,413		1,890,241	1,933,750	1,914,413					8.345	8.345	MON	12,999	155,018	03/24/2017	03/06/2022
87164G-AM-5	Syniverse Holdings, Inc. Term Loan B	2			4FE	1,977,538		1,774,401	1,989,975	1,977,538					7.455	7.455	MON	17,105	27,480	09/14/2018	03/09/2023
87289B-AJ-3	TOP DLF VIII 2018 CLO Combo Note	2			2FE	14,666,667		14,666,667	14,666,667	14,666,667					9.763	9.905	FIAN	692,055		12/07/2018	02/28/2030
87290D-AB-3	TRC Companies, Inc. First Lien Term	2			4FE	1,117,819		1,098,159	1,123,436	1,117,819					6.022	6.022	MON	5,303	62,354	06/29/2017	06/21/2024
88651B-AK-8	TierPoint, LLC 1st Lien TL	2			4FE	2,239,297		2,096,987	2,250,550	2,239,297					6.095	6.095	MON	11,049	130,545	05/17/2017	05/05/2024
89071#-AA-1	Toppo International, Inc. - 1st Lien T	2			5	6,897,540		7,176,787	7,272,050	6,897,540					5.310	5.310	MON	67,873	449,322	11/04/2016	08/26/2021
89078P-AG-9	The Topps Company, Inc.-1st Lien Term Lo	2			4FE	8,459,108		8,431,902	8,501,616	8,459,108					8.373	8.373	JAU	183,884	701,169	09/21/2016	10/31/2020
89158E-AA-9	Total Military Managemen Term Loan	2			4	3,856,797		3,824,280	3,922,815	3,856,797					7.751	7.751	MJSD	20,271	379,530	09/05/2017	09/05/2022
89364M-BL-7	TransDigm Group Incorpor Repriced TL F	2			4FE	3,497,179		3,295,840	3,501,556	3,497,179					5.022	5.022	MON	13,700	38,065	09/19/2018	06/09/2023
89616E-AA-5	Trident (former US Joine Unitranche	2			4	24,801,619		24,410,637	25,372,500	24,801,619					8.303	8.303	MJSD	417,903	634,627	06/04/2018	04/30/2024
903203-BT-3	UPC Financing Partnershi USD TL AR (Oct'	2			3FE	6,995,612		6,648,895	7,004,367	6,995,612					4.955	4.955	MON	39,625	315,578	10/23/2017	01/31/2026
90322#-AA-0	UroGPO, LLC Term Loan	2			4Z	3,406,512		3,358,935	3,476,033	3,406,512					7.444	7.444	MON	31,626	189,122	02/15/2018	02/15/2024
90331B-YY-6	U.S. Legal Support Inc - Term Loan	2			4Z	5,191,536		5,133,666	5,297,486	5,191,536					8.457	8.457	FIAN	36,088		11/30/2018	11/12/2024
90343K-AR-3	U.S. Silica Company TLB due Apr 202	2			4FE	1,024,716		897,270	1,029,866	1,024,716					6.563	6.563	MON	7,878	34,717	05/22/2018	05/01/2025
90350D-AE-8	US Farathane Term Loan B-4	2			4FE	3,539,214		3,367,322	3,525,992	3,539,214					6.303	6.303	MJSD	87,046	234,810	09/20/2017	12/31/2021
90351N-AE-5	USI Inc Term Loan B	2			4FE	4,185,501		3,950,309	4,196,875	4,185,501					5.803	5.803	MJSD	47,213	209,765	11/30/2017	05/16/2024
90372F-AB-3	Ubeo LLC Term Ln 2nd Amend	2			4Z	8,152,368		8,060,941	8,152,368	8,152,368					11.000	11.000	MON	132,176	42,782	11/07/2018	10/03/2024
91490B-AX-6	Univision Communications New TL C5	2			4FE	4,148,423		3,755,082	4,148,423	4,148,423					5.272	5.272	MON	17,068	199,143	03/22/2017	03/07/2024
91746#-AA-2	U.S. Retirement & Benefi Second Lien	2			5G1	19,992,000		19,717,847	20,400,000	19,992,000					11.553	11.553	MJSD	466,344	1,203,793	03/29/2018	02/14/2023
91746#-AB-0	USRP HLDGS INC 2nd Lien DD Term Loan	2			5G1	2,040,000		1,971,785	2,040,000	2,040,000					11.527	11.527	MJSD	34,963	79,224	07/02/2018	09/29/2025
91746#-AB-0	USRP HLDGS INC 2nd Lien DD Term Loan	2			5G1	1,326,000		1,281,660	1,326,000	1,326,000					11.527	11.527	MJSD	22,726	91,461	12/03/2018	09/29/2025
91759U-AM-7	UTEX INDUSTRIES INC 1ST LIEN TERM L	2			5FE	1,103,425		1,010,549	1,108,970	1,103,425					6.522	6.522	MON	5,6			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
92535M-AA-3	Verscend Holding Corp. TL B	2			4Z	1,797,388	96.5000	1,747,586	1,810,970	1,797,388					6.845	6.845	MON	9,985	28,394	09/07/2018	08/09/2025
92565E-AB-9	VICI Properties Inc. First Lien TL B	2			3FE	1,223,544	95.2660	1,168,543	1,226,611	1,223,544					4.504	4.504	MON	5,022	44,481	12/29/2017	12/13/2024
92849F-AA-6	Vitalyst, LLC Term Loan	2			4	6,605,248	98.5910	6,662,075	6,757,287	6,605,248					9.303	9.303	MJSD	164,718	575,243	08/31/2017	08/31/2022
93208P-AN-9	Wall Street Sys Term Loan	2			4FE	1,145,427	92.8330	1,062,272	1,144,283	1,145,427					5.522	5.522	MON	13,010	56,329	11/21/2017	11/30/2024
95081H-AR-5	WESCO AIRCRAFT HARDWARE TERM LOAN B	2			4FE	2,059,189	95.6880	1,975,335	2,064,350	2,060,946					5.022	5.022	MON	8,065	96,289	03/07/2014	02/26/2021
97246F-AF-3	Wilsonart, LLC Term Loan B	2			4FE	2,209,257	95.4380	2,108,470	2,209,257	2,209,257					6.060	6.060	MJSD	26,025	115,764	10/17/2017	12/19/2023
97382T-AB-6	WINEBOW GROUP INC 1ST LIEN TERM L	2			5FE	394,292	86.0830	341,124	396,273	394,854					6.272	6.272	MON	1,951	22,987	07/09/2014	06/25/2021
98141*-AA-2	WORLD 50, INC. TERM LOAN B	2			4	5,602,204	98.6007	5,582,905	5,662,135	5,610,698					8.095	8.095	MON	36,921	454,534	03/01/2016	12/11/2020
98141*-ZZ-0	World 50 Inc.	2			4Z	2,644,053	98.3295	2,632,793	2,677,522	2,644,053					8.522	8.522	MON	5,045		12/21/2018	12/11/2020
98705P-AC-0	YORK RISK SERVICES HOLDI TERM LOAN B	2			4FE	3,410,556	93.1070	3,205,442	3,442,751	3,410,510					6.272	6.272	MON	16,947	199,704	04/26/2017	10/01/2021
98948G-AE-3	ZeroChaos, LLC Second Lien	2			5	12,662,826	97.8934	12,616,866	12,888,372	12,662,826					10.761	10.761	MON	100,169	1,352,057	11/29/2017	10/31/2023
F6813F-AC-8	OPALE GROUP Category B Bond	2			5G1	5,501,639	96.6846	5,455,628	5,642,707	5,501,639					7.386	7.386	MJSD	191,437		05/31/2018	05/28/2024
G1093*-AA-7	BIIF Bidco Limited GBP Term Loan	2			1FE	62,928,511	99.2870	53,501,372	53,885,576	53,885,576				(3,289,109)	2.788	2.788	JD		1,030,297	12/21/2015	12/02/2025
G4250*-AA-6	Halo Technology Bidco LI Term Loan B	2			5G1	9,560,881	96.2090	9,482,919	9,856,579	9,560,881					8.313	8.313	MJSD	162,055	718,333	11/14/2017	10/01/2024
G4700H-AE-0	I-Logic Technologies Bidco Limited	2			4FE	2,331,429	97.5000	2,273,143	2,331,429	2,331,429					5.862	5.862	MON	22,078		10/15/2018	12/21/2024
G7553*-AA-3	Rock-it Cargo 2018 Term Loan	2			4Z	11,670,750	98.2109	11,755,839	11,970,000	11,670,750					7.362	7.362	MON	140,441	216,956	07/31/2018	06/22/2024
G8766*-AA-4	Textainer Marine Contain Series 2018-I C	2			1FE	49,871,975	100.5200	50,131,310	49,871,975	49,871,975					4.755	4.755	MON	269,984	1,932,749	02/15/2018	02/15/2028
V3845*-AA-3	Graftech International L Term Loan B due	2			4Z	1,964,625	94.5000	1,842,750	1,950,000	1,964,625					6.022	6.022	MON	9,299	28,753	08/29/2018	02/12/2025
68620*-AA-1	Original Cakerie US TERM LN	2			5	2,150,526	96.8447	2,098,657	2,167,034	2,150,526					7.507	7.507	MON	26,362	118,420	02/23/2018	07/20/2021
74275*-AA-1	PROCERA NETWORKS 2nd Lien Term Ln	A			4Z	22,700,925	96.3516	22,433,550	23,283,000	22,700,925					10.522	10.522	MON	174,028	206,645	11/02/2018	11/02/2026
C1539*-AA-9	Canadian Hospital Specia Second Lien Ter	2			4	10,256,418	96.8196	9,147,895	9,448,391	9,259,423				(996,995)	11.054	11.054	MJSD	467,285	418,635	01/31/2018	07/31/2024
C2968*-AB-5	Deluxe Toronto LTD. Term Loan	A			4	5,653,167	98.5498	5,627,460	5,710,270	5,653,167					7.932	7.932	MON	20,132	414,636	12/22/2017	12/01/2020
C4796*-AA-1	INTRANSIT BC FINANCE LTD CONSTRUCTION FA	2			2	9,046,960	100.0000	8,316,081	8,316,081	7,856,376				(667,351)	3.054	3.054	MJSD	67,307	244,775	01/05/2015	06/30/2033
C6901L-AE-7	1011778 B.C. Unlimited 2017 Term Loan B	2			4FE	5,659,219	95.8030	5,381,492	5,659,784	5,659,219					4.772	4.772	MON	20,957	243,547	03/30/2017	02/14/2024
C7077U-AD-5	PH Vitres Autos Term Loan	2			5G1	3,440,654	97.1166	3,159,561	3,253,368	3,204,568				(236,086)	7.046	7.046	MJSD	102,370	81,765	02/22/2018	01/23/2024
C9413P-AZ-6	Valeant Pharm Initial Term Loan	2			3FE	986,980	95.3060	939,712	985,994	986,980					5.379	5.379	MON	3,536	32,411	06/01/2018	05/31/2025
C9413P-AZ-6	Valeant Pharm Initial Term Loan	2			3FE	1,948,831	95.3060	1,845,816	1,936,726	1,948,831					5.379	5.379	MON	5,945	29,002	09/25/2018	05/31/2025
008065-AB-3	AEROVIAS DE MEXICO SA USD TERM LN	C			1FE	73,517,964	100.0561	74,075,187	74,033,654	73,517,964					5.595	5.595	MON	333,654	3,653,982	06/06/2018	10/27/2021
01983*-AA-3	Allnex (Luxembourg) & Cy USD Term B-3 du	C			4FE	1,551,870	97.7500	1,516,953	1,551,870	1,551,870					5.956	5.956	FMAN	8,494	84,267	09/27/2016	09/14/2023
069721-DB-1	Questel Acquisition Fac	B			5G1	6,634,171	96.7346	6,259,038	6,470,323	6,470,323				(163,849)	6.500	6.500	MJSD	87,535	244,775	09/21/2018	06/28/2025
20676*-AA-5	CONDOR BORROWER LLC Term Loan	C			5G1	8,393,600	97.6406	8,341,537	8,543,104	8,393,600					7.095	7.095	MON	58,967	520,002	10/27/2017	10/20/2024
44890C-A*-5	HVVA GLOBAL B.V. TERM LOAN A	D			5	21,679,500	99.3548	22,205,795	22,350,000	21,811,262					6.116	6.116	FMAN	167,072	1,273,973	09/09/2015	07/24/2020
583919-NF-6	National Fostering Agenc PIK Note	B			5G1	10,771,040	97.2912	10,469,859	10,761,366	10,645,288				(125,752)	5.947	5.947	FMAN	325,196		11/30/2018	08/31/2026
70454F-ZZ-6	PCB Creation SAS Senior Term Loa	B			5G1	6,520,050	96.8569	6,291,823	6,495,997	6,346,589				(315,889)	5.250	5.250	JD	138,583	808,237	12/15/2017	12/21/2024
70545F-YY-0	PCB Creation SAS Senior Term Loa	B			5G1	12,729,623	96.8569	12,284,036	12,682,661	12,390,960				(616,735)	5.250	5.250	JD	370,007		12/15/2017	12/21/2024
81172U-AB-1	SEADRILL PARTNERS FINCO TERM LOAN B	C			5FE	3,687,111	78.0630	2,907,343	3,724,354	3,689,571					8.822	8.822	MJSD	65,248	279,214	03/11/2014	02/21/2021
863921-LR-1	Technicis (NIKITA) Unitranche	2			5G1	7,910,115	96.8371	7,740,671	7,773,675	7,773,675				(136,440)	7.000	7.000	MJSD	116,460		07/18/2018	07/18/2025
863922-FB-1	Technicis (NIKITA) Incremental fac	B			5G1	324,893	96.8371	321,604	332,108	322,975				(1,918)	7.000	7.000	MJSD	4,581	9,085	10/19/2018	07/18/2025
89705D-AD-4	Tronox Ltd. TL B-1	2			3FE	1,151,802	96.8570	1,121,207	1,157,590	1,151,802					5.522	5.522	MON	4,996	59,703	10/12/2017	09/13/2024
89705D-AE-2	Tronox Ltd. TL B-2	2			3FE	499,114	96.8570	485,856	501,622	499,114					5.522	5.522	MON	2,165	25,871	10/12/2017	09/13/2024
B5326*-AA-8	Isolstar Hldg Euro Fac C Loan	B			5G1	17,779,727	96.1415	17,060,735	17,745,435	17,213,072				(856,746)	5.250	5.250	MJSD	192,305	1,258,721	12/19/2017	06/19/2025
000000-00-0	PRETORIA ENERGY COMPANY HOLDINGS LIMITED	3			3Z	28,266,750	100.0000	28,678,500	28,678,500	28,678,500				411,750	4.287	4.275	JD	83,941		12/10/2018	12/10/2028
D1200Y-AN-7	Springer Science+Business Term B13	C			4FE	1,058,401	97.6250	1,030,040	1,055,099	1,058,401					6.016	6.016	MON	12,991	43,834	11/30/2017	08/15/2022
D1638*-AA-8	Cordenka GmbH Term Loan B1	B			4	8,128,486	96.3828	7,929,962	8,227,574	7,980,746				(397,225)	6.250	6.250	JD	108,812	417,192	07/27/2017	07/14/2023
D1638*-AB-6	Cordenka GmbH Term Loan B2	B			4	883,531	96.3828	861,952	894,301	867,472				(43,177)	6.250	6.250	JD	41,548	46,299	07/27/2017	07/14/2023
D1676*-AA-1	UNA 306 EURO FAC B TERM LN	B			5G1	18,570,907	98.5454	18,138,794	18,406,527	17,900,348				(890,953)	6.250	6.250	FMAN	92,583	1,230,869	08/31/2017	08/31/2024
D2501*-AA-4	DAVASO HLDG Euro Fac B Loan	B			5G1	22,049,015	96.2736	21,497,196	22,329,281	21,659,403				(389,612)	5.250	5.250	MJSD	555,891		06/26/2018	02/09/2025
D3785*-AC-1	Ipsen International Hold Term Loan B	B			4Z	26,845,957	96.9549	26,445,818	27,276,408	26,526,307				(319,650)	6.750	6.750	MON	178,093	533,298	08/22/2018	08/09/2024
F02																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
F6512#-AA-6	NEOXO Floating Rate Bond A	B	2		561	4,733,564	94.4945	4,455,861	4,715,473	4,644,741				(88,823)	6.750	6.750	MON	66,006		05/31/2018	05/31/2025
F6512#-AB-4	NEOXO Euro Bond B	B	2		561	556,890	94.8321	526,092	554,762	546,440	(10,450)				0.000	0.000	MAY	14,433		05/31/2018	08/31/2025
F7638#-AA-3	Questel Term Loan B (EU)	B	2		561	3,661,806	96.7346	3,578,208	3,698,996	3,620,392				(41,414)	6.500	6.500	MJSD	50,042	70,098	06/28/2018	06/28/2025
F7638#-AB-1	Questel Term Loan B (US)	B	2		561	3,504,442	96.7346	3,463,608	3,580,528	3,504,442					8.896	8.896	MJSD	69,145		06/28/2018	06/28/2025
F7954#-AA-3	SSOP THERMAL BIDCO EURO FAC B LN	B	2		561	11,737,154	98.6856	11,461,528	11,614,187	11,323,832				(563,621)	5.250	5.250	FA	126,446	259,352	11/28/2017	07/31/2024
G0128#-AA-8	AGILITY TRAINS WEST LIMI GBP TERM LOAN	B	2		561	39,159,122	91.8182	34,120,900	37,161,369	37,152,634				(1,870,896)	2.291	2.291	MJSD	221,534	590,414	12/28/2018	12/31/2041
G0128#-AA-6	AGILITY TRAINS EAST LIMI GBP TERM LOAN	B	2		561	9,956,365	86.5318	8,377,221	9,681,090	9,681,090				(490,131)	2.532	2.532	JAJO	18,267	331,747	12/28/2018	09/30/2043
G0128#-AA-6	AGILITY TRAINS EAST LIMI GBP TERM LOAN	B	2		561	16,792,499	88.7718	14,502,509	16,336,842	16,336,842				(820,707)	2.537	2.207	JAJO	18,582	171,668	12/28/2018	09/30/2043
G0391#-AA-4	Anord Mardix Term Loan - USD	D	2		4Z	10,178,453	96.1913	10,093,591	10,493,250	10,178,453					7.427	7.427	FMAN	77,933	557,199	02/20/2018	02/20/2025
G0391#-AB-2	Anord Mardix Term Loan - GBP	B	2		4Z	14,714,706	96.1913	13,282,150	13,808,060	13,393,819				(1,320,887)	5.750	5.750	MON	163,114	410,811	02/20/2018	02/20/2025
G0698#-AA-4	AUGUSTA (BIDCO) LTD GBP FAC A2 LN	B	2		561	5,929,529	96.3071	5,564,961	5,778,347	5,604,997				(342,122)	7.550	7.550	MJSD	89,316	434,598	09/18/2017	06/30/2023
G0698#-AB-2	AUGUSTA (BIDCO) LTD Fac B2 Loan	B	2		561	490,067	96.3071	449,309	466,538	466,538				(23,530)	7.550	7.550	MJSD	7,211	7,316	09/21/2018	06/30/2023
G0756#-AA-5	Highland Ltd. TLB - Last Out	B	2		4Z	20,807,453	96.4757	19,365,436	18,833,390	18,833,390				(1,974,063)	7.800	7.800	JAJO	309,239	768,937	04/04/2018	03/29/2025
G1150#-AA-5	Trascare Bidco Limited	B	2		4Z	22,818,543	97.9172	22,624,956	23,106,210	22,759,617				(58,926)	6.648	6.648	FMAN	125,793		11/29/2018	11/14/2025
G1150#-AB-3	Trascare Bidco Limited	B	2		4Z	994,518	97.9172	2,554,681	2,609,021	991,950				(2,568)	6.648	6.648	FMAN	14,204		11/29/2018	11/14/2025
G1737#-AA-9	BUCHAREST BIDCO LTD Fac B Term Loan	B	2		4Z	13,586,588	96.2499	12,996,175	13,502,539	13,097,463				(489,125)	6.558	6.558	JAJO	181,293		07/05/2018	07/09/2025
G215A#-AA-0	Node4 Ltd Unitranch - B2	B	2		5	9,338,192	98.8967	9,364,767	9,469,239	9,190,358				(560,968)	8.800	8.800	MJSD	170,598	983,212	06/27/2017	10/07/2023
G215A#-AB-8	Node4 Ltd Acquisition Fac	B	2		5	169,201	98.8967	170,907	172,814	167,721				(10,237)	8.800	8.800	MJSD	3,113	32,822	06/27/2017	10/07/2023
G2656#-AA-0	DANU II - Term Loan Prime	B	2		3	30,361,365	100.0000	26,688,687	26,688,687	26,688,687				(1,629,044)	2.898	2.898	JD	399,078	769,749	04/25/2016	06/30/2030
G2656#-AB-8	DANU II - Term Loan Prime	B	2		4	4,250,936	100.0000	3,736,719	3,736,719	3,736,719				(228,085)	4.788	4.788	JD	92,331	182,799	04/25/2016	06/30/2030
G3087#-AB-5	EQUITIX SOLAR - FLOATING FACILITY	B	2		2FE	8,557,022	100.0000	8,745,664	8,745,664	8,745,664				(533,824)	3.301	3.301	JD	75,810	291,057	06/01/2017	12/31/2035
G3242#-AA-1	EXECUTIVE CO LTD USD FAC B LN	C	2		4	24,330,000	98.5735	23,982,926	24,330,000	24,330,000					6.506	6.506	MON	55,021	1,274,320	10/28/2016	10/28/2021
G3296#-AA-8	FCC Energy Limited Senior Secured	B	2		2FE	50,771,290	96.0011	46,918,870	48,873,262	48,873,262				(1,898,028)	3.980	3.980	JD	398,216	61,067	06/18/2018	06/15/2038
G4035#-AA-0	Inspiring Learning Unitranch	B	2		6Z	3,113,211	92.7543	3,119,533	3,363,220	3,119,533				(198,102)	9.418	9.418	AO	52,740	329,173	10/26/2016	10/25/2023
G4035#-AA-0	Inspiring Learning Unitranch	B	2		6Z	34,836	92.7543	31,016	33,438	31,016				(1,397)	9.418	9.418	AO	524	741	10/29/2018	10/25/2023
G4301U-AF-1	Harbour Aircraft Investm Series 2017-1 C	C	2		1FE	24,144,529	99.7271	24,265,367	24,331,769	24,144,529					4.000	4.000	MON	37,849	939,907	12/01/2017	11/15/2037
G4945#-AA-7	Group IMD Term Loan B (GB)	B	2		561	8,800,085	96.8161	8,733,741	9,020,959	8,661,618				(528,694)	6.408	6.408	MJSD	116,237	549,318	09/20/2016	09/07/2023
G4945#-AB-5	IRIDIUM BIDCO LTD GBP FAC B3 LN	B	2		561	721,986	96.8029	685,079	707,706	679,397				(42,589)	6.308	6.308	JAJO	9,140	35,592	01/11/2018	09/16/2023
G5244#-AA-2	Keys Group (Kestrel Bidc Term Loan B	B	2		561	15,594,778	96.4757	14,735,346	15,273,637	14,853,612				(906,646)	7.817	7.817	JAJO	421,572	585,278	12/22/2017	12/22/2024
G5244#-AB-0	Keys Group (Kestrel Bidc Capex/Acquisiti	B	2		4Z	6,524,717	96.4757	5,805,726	6,017,813	6,017,813				(506,904)	7.841	7.841	JAJO	87,155	146,516	10/05/2018	12/22/2024
G5503#-AA-2	LISTRAC BIDCO LIMITED GBP TERM LOAN B	B	2		561	12,561,581	93.4160	10,097,966	10,809,673	10,630,181				(648,853)	6.191	6.191	MS	137,003	652,984	02/03/2016	06/30/2022
G5503#-AB-0	Listrac Bidco Limited - GBP Acquisition	B	2		561	592,375	93.4160	535,339	573,070	527,503				(32,198)	6.155	6.155	MS	7,221	34,575	09/30/2016	06/30/2022
G6031#-AA-7	MerseyLink - Revolver OAM	B	2		2	20,120,055	100.0000	20,202,925	20,202,925	20,202,925				(1,233,161)	2.905	2.616	MS	71,096	598,532	06/30/2017	03/31/2032
G6031#-AA-7	MerseyLink Limited - Term Loan	B	2		2Z	22,370,008	99.0385	22,231,860	22,447,694	22,447,694				(1,370,179)	2.905	2.905	MS	62,399	607,517	06/30/2017	03/31/2032
G6361#-AA-9	NYOP EDUCATION (ABERDEEN AMORTISING TERM	B	2		2PL	46,771,528	89.3900	36,502,580	40,835,194	36,010,065				(2,198,010)	1.680	1.680	MS	117,894	613,410	08/18/2014	03/31/2037
G6562A-AF-4	Nomad Foods Europe Midco Limited	C	2		3FE	1,857,730	94.4750	1,755,530	1,858,195	1,857,730					4.705	4.705	MON	9,970	65,094	12/20/2017	05/15/2024
G6902#-AA-3	PARC ADFER LTD GBP TERM LN FAC	B	2		2PL	19,963,884	100.0000	19,049,655	19,049,655	19,049,655				(1,121,864)	3.737	3.424	MON	61,371	789,818	12/31/2018	10/15/2042
G6984#-AA-3	MINTAKA BIDCO LTD Unitranch Fac	B	2		4Z	9,128,403	96.5386	8,789,250	9,104,386	8,854,016				(274,387)	6.550	6.550	MJSD	122,088	150,446	06/27/2018	12/18/2024
G7255#-AA-4	Process Measurement Tech Facility A2-2	B	2		5	454,134	98.6907	472,735	479,007	467,031					6.305	6.305	JAJO	6,183	32,256	03/17/2017	03/07/2024
G7255#-AB-2	Process Measurement Tech Facility A2-1	D	2		5	738,143	98.6907	747,157	757,070	738,143					7.908	7.908	JAJO	12,473	61,361	03/14/2017	03/07/2024
G7255#-AC-0	PROCESS SENSING TECH GBP FAC A TRANCHE A	B	2		5	10,350,126	98.6907	10,296,382	10,432,982	10,172,157				(620,896)	6.305	6.305	JAJO	134,669	698,884	07/06/2017	07/05/2024
G7255#-AD-8	Michell Instruments Ltd. Facility A3-1	B	2		5	8,138,748	98.6907	8,066,875	8,173,897	7,969,550				(75,983)	6.000	6.000	JAJO	236,369	382,625	07/06/2017	07/05/2024
G7255#-AA-8	Michell Instruments Ltd. Facility A	B	2		561	5,888,848	98.6907	5,897,500	5,975,741	5,826,348				(355,633)	6.305	6.305	JAJO	77,135	400,117	10/26/2016	10/26/2023
G7329#-AA-8	Reward Gateway Term Loan B	B	2		4Z	13,214,318	96.7881	12,368,683	12,779,140	12,459,661				(754,657)	6.987	6.987	MJSD	181,772		05/15/2018	05/15/2024
G7329#-AB-6	Reward Gateway Term Loan C	B	2		4Z	1,289,181	96.7881	1,236,313	1,277,340	1,245,407				(43,774)	6.987	6.987	MN	17,883		06/29/2018	05/15/2024
G7445#-AA-5	Red Funnel Ferry Senior Term Loa	B	2		2PL	47,142,990	97.5630	44,891,722	46,013,060	46,013,060				(1,129,930)	5.010	5.010	MJSD	471,936		09/12/2018	09/12/2030
G7584#-AA-6	RIVA HOLDCO 2 LTD Euro Fac B Ln	B	2		4Z	24,214,943	96.6562	23,745,698	24,567,174	23,891,577				(323,367)	5.000	5.000	JJ	255,662		07/19/2018	07/06/2025
G7735																					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1	2	Codes			6	7	Fair Value		10	11	Change in Book/Adjusted Carrying Value				Interest				Dates		
		3	4	5			8	9			12	13	14	15	16	17	18	19	20	21	22
CUSIP Identification	Description	C o d e	F o r e i g n	B o n d C h a r	NAIC Designation and Administrative Symbol	Actual Cost	Rate Used to Obtain Fair Value	Fair Value	Par Value	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor-tization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Rate of	Effective Rate of	When Paid	Admitted Amount Due and Accrued	Amount Received During Year	Acquired	Stated Contractual Maturity Date
L0175-AA-0	ALPHA TRAINS FINANCE S.A EUR TERM LOAN A	B	2		2FE	48,555,115	100.8406	51,355,714	50,927,617	50,927,617				(2,534,819)	2.197	2.197	JD	232,876	806,934	03/26/2015	03/05/2030
L0175-AB-8	Alpha Trains Finance S.A Term Loan	B	2			25,156,159	87.4267	22,181,077	25,371,056	25,371,056				(1,262,793)	2.742	2.742	JD	147,791	482,915	03/30/2016	12/31/2035
L0175-AA-4	ALPHA TRAINS FINANCE S.A EUR JUNIOR NOTE	B	2			24,784,995	106.0634	27,572,284	25,996,040	25,996,040				(1,293,900)	5.506	5.506	JD	297,910	1,035,750	03/26/2015	03/06/2022
L1957L-AB-7	Consolidated Energy Fina First Lien TL	D	2		3FE	713,552	96.7500	692,092	715,341	715,341					4.932	4.932	MON	4,452	16,105	05/21/2018	05/02/2025
L5002B-AA-0	GLACIS ACQ FAC B1 TERM LN	B	2		4Z	22,720,555	97.9148	22,903,570	23,391,319	23,040,449				319,894	6.500	6.500	MJSD	189,872		11/14/2018	07/31/2023
L5582B-AT-4	ION Trading Technologies Incremental USD	D	2		4FE	2,719,870	94.2500	2,591,383	2,749,478	2,719,870					6.522	6.522	MON	36,933	29,472	09/07/2018	11/21/2024
L6232U-AF-4	MALLINCKRODT INTL FIN SA-1L GTD SR SECD	C	2		3FE	3,832,899	91.5000	3,502,680	3,828,065	3,828,065					5.553	5.553	MJSD	41,713	179,929	02/28/2017	09/24/2024
L7300K-AJ-3	ORTHO-CLINICAL DIAGNOSTICS SA Term Loan	C	2		4FE	3,171,403	92.5310	2,933,064	3,169,818	3,171,403					5.756	5.756	MON	17,778	79,747	06/08/2018	06/30/2025
L7306F-AA-7	OysterCatcher Luxco 2 S.+ R.L-SGD Term L	B	2		1FE	50,732,404	106.4122	55,431,153	52,090,976	52,090,976				(1,028,881)	7.080	7.080	MJSD	1,695,937	3,595,005	03/23/2017	03/23/2029
L8039F-AA-3	Siblu (SSCP Eleanor Fina Unitranche	B	2		56L	8,281,190	97.6775	8,785,502	8,994,401	8,697,574				(432,904)	6.500	6.500	JD	121,682	436,433	03/03/2016	08/07/2022
L8039F-AB-1	Sscp Eleanor Finance Sarl-EUR TERM LOAN	B	2		56L	2,319,847	97.6775	2,408,675	2,465,948	2,402,006				(119,555)	6.500	6.500	MJSD	74,852	152,252	06/19/2017	08/07/2022
L8039F-AC-9	Siblu (SSCP Eleanor Fina Acquisition/Cap	B	2		56L	15,053,075	97.6775	14,282,178	14,601,300	14,601,300				(575,025)	6.500	6.500	AO	197,333	494,933	10/10/2018	08/08/2022
M1102F-AA-9	ANKARA ETLIK HASTANE SAG TERM LOAN	B	2		3	11,886,519	92.0837	11,270,541	12,239,452	12,148,823				(599,737)	4.233	4.233	JAJO	117,188	509,756	07/31/2018	08/18/2033
M1102F-AA-7	ANKARA ETLIK HASTANE IFC B LN FAC	B	2		3	9,149,997	92.0793	8,689,923	9,437,434	9,437,434				(462,427)	4.182	4.182	JAJO	84,361	394,529	07/31/2018	07/15/2033
M1102F-AB-5	ANKARA ETLIK HASTANE SAGLIK SA-EUR SACE	B	2		3	3,250,836	95.3156	3,071,631	3,222,590	3,222,590				(153,733)	2.300	2.300	JAJO	368,772	221,022	07/31/2018	06/25/2033
N1827F-AA-8	CARIBBEAN INFRASTRUCTURE TERM LOAN	D	2		2Z	28,203,000	101.6574	28,670,437	28,203,000	28,203,000					6.587	6.587	JAJO	387,027	1,793,501	01/03/2017	07/13/2030
N3136F-AA-0	EVIDES N V EURO TERM LN	B	2		1	46,332,000	99.9279	45,774,972	45,808,000	45,808,000				(524,000)	1.260	1.260	MJSD	120,131		06/27/2018	03/27/2025
N6946F-AB-7	NSI N V EURO LN FAC	B	2		2Z	52,179,940	98.7549	51,797,103	52,450,160	52,450,160					2.460	2.460	AO	229,162		10/24/2018	10/25/2028
N7136F-AA-1	Pon Holdings BV Senior Term Loa	C	2		2PL	95,000,000	99.1857	94,226,415	95,000,000	95,000,000					4.820	4.820	AO	953,958	2,467,572	10/27/2017	10/27/2027
N7660F-AR-8	SHV NEDERLAND BV EURO TERM LN	B	2		2	74,011,000	105.1638	84,303,509	80,164,000	80,164,000				(3,990,000)	2.460	2.460	JD	136,815	958,209	12/02/2015	12/02/2025
P3596F-AA-1	EVIM ENERGIA DEL VALLE DE MEXICO USD SR S	D	2		2PL	18,990,000	98.0900	18,627,291	18,990,000	18,990,000					6.190	6.195	JD	493,049		07/31/2018	06/30/2037
Q0146F-AA-1	AESTHETICS AUSTRALIA GROUP FAC B LN	B	2		56L	14,932,195	95.7404	13,150,949	13,736,409	13,255,287				(1,447,297)	7.792	7.792	MJSD	220,163	1,040,868	09/21/2017	09/08/2023
Q1298F-AA-5	Icon Cancer Care Senior Term Loa	B	2		56L	2,190,739	95.6401	1,904,180	1,990,985	1,990,985				(212,497)	5.990	5.990	MJSD	24,495		08/31/2017	06/30/2022
Q1298F-AB-3	Icon Cancer Care Senior Term Loa	B	2		56L	7,028,093	95.6571	6,109,869	6,387,263	6,243,549				(681,711)	6.500	6.500	FMAN	32,972	420,426	08/31/2017	06/30/2022
Q3079F-AA-8	DBNGP FIN CO PTY LTD AUD TERM LN FAC	B	2		56L	63,492,300	100.5100	60,524,760	60,217,650	60,217,650				(6,574,950)	4.420	4.420	FMAN	506,804	2,828,055	11/25/2016	11/25/2026
Q3787F-AA-1	Findex Group Ltd Term Loan B	B	2		5	16,272,053	95.8132	14,961,927	15,615,718	15,147,247				(1,124,806)	7.255	7.255	MJSD	80,667	600,271	05/31/2018	05/30/2024
Q5425F-AA-6	LANE COVE TUNNEL-TermLoan Prime	B	2		3	23,582,475	99.9900	22,183,231	22,185,450	22,185,450				(2,422,350)	4.380	4.380	FMAN	193,222	1,032,267	07/20/2016	05/20/2028
Q5545F-AC-2	Liberty - Series No. 2018 - 4 Class B	B	2		1FE	14,356,160	99.8400	14,274,414	14,297,290	14,297,290				(58,870)	4.124	4.126	MON	95,434		10/31/2018	10/25/2050
Q5545F-AH-1	Liberty - Series No. 2018 - 4 Class C	B	2		1FE	7,354,880	99.8400	7,313,000	7,324,720	7,324,720				(30,160)	4.824	4.827	MON	57,513		10/31/2018	10/25/2050
Q6880F-AA-8	Novotech (Australia) Pty Term Loan B1	B	2		56L	9,647,370	96.1266	8,632,002	8,979,825	8,665,531				(946,158)	6.928	6.928	MON	49,409	646,726	09/29/2017	09/29/2023
Q6880F-AB-6	Novotech Aus Bidco Pty Ltd B3 Fac	B	2		56L	3,147,130	96.1273	1,553,422	1,616,006	1,567,526				(1,579,605)	6.000	6.000	MON	8,830	9,495	10/31/2018	09/29/2023
Q7322F-AA-2	Panther Bidco Fac B Ln	B	2		4Z	10,860,715	97.2822	10,330,849	10,619,466	10,407,077				(453,638)	6.500	6.500	MON	153,776	143,556	08/28/2018	06/29/2024
Q7322F-AB-0	Panther Bidco Fac C Ln	B	2		4Z	1,585,437	97.2822	1,527,169	1,569,834	1,569,834				(15,603)	8.466	8.466	MON	364		12/28/2018	06/29/2024
Q7447F-AA-6	PERPETUAL TRUSTEE CO LTD - MORTGAGE HOUS	B	2		1FE	11,252,000	100.0000	10,916,650	10,916,650	10,916,650				(335,350)	4.140	4.143	MON	98,045	13,701	11/15/2018	05/08/2051
Q7447F-AB-4	PERPETUAL TRUSTEE CO LTD - MORTGAGE HOUS	B	2		1FE	9,798,300	100.0000	9,508,050	9,508,050	9,508,050				(290,250)	5.390	5.394	MON	121,171	20,057	09/24/2018	05/08/2051
Q7677F-AB-3	PLENARY HEALTH FIN CO PTY LTD AUST SER B	B	2		1FE	65,886,671	100.0000	60,083,876	60,083,876	60,083,876				(6,560,344)	4.086	4.086	MJSD	638,059	2,625,598	10/19/2016	06/30/2040
Q7794F-AC-1	QSRH Borrowing Co Pty Lt First Lien	B	2		56L	2,190,294	97.5987	2,010,930	2,060,407	2,029,501				(221,594)	6.705	6.705	MJSD	9,080	136,690	12/05/2017	12/05/2021
Q7794F-AD-9	QSRH Borrowing Co Pty Lt Second Lien	B	2		56L	3,600,196	98.1004	3,339,319	3,403,980	3,335,901				(364,235)	10.705	10.705	MJSD	23,950	360,201	12/05/2017	05/05/2021
Q8506F-AA-2	Simulation Software Bullel Term Loan	B	2		56L	15,887,093	95.9990	14,130,235	14,719,154	14,270,220				(1,558,114)	7.498	7.498	MJSD	226,673	1,097,179	09/29/2017	09/15/2022
Q8506F-AB-0	Simulation Software Fac B Bullel Term	D	2		56L	11,795,686	96.0121	11,681,574	12,166,773	11,795,686					7.881	7.881	MJSD	199,763	699,685	12/08/2017	09/29/2022
Q8550F-AA-1	WATTLE POINT HOLDINGS PT AUD FACILITY B	B	2		2Z	39,066,560	97.6771	31,197,913	31,939,843	31,939,843				(3,487,397)	3.900	3.900	MJSD	253,604	(58,797)	11/24/2014	11/20/2024
R6236F-AA-8	Norspan LNG AS Fixed Rate Loan	B	2		1FE	55,099,200	99.1758	59,059,586	59,550,400	59,550,400				(2,964,000)	1.470	1.470	FA	182,198	704,668	02/13/2017	02/14/2024
R9747F-AA-8	VICTORY PRTRNS VIII NOK Fac B Ln	B	2		4Z	9,420,960	96.8509	8,949,626	9,240,619	8,986,502				(434,458)	7.850	7.850	JAJO	149,760		10/04/2018	10/05/2025
R9747F-AB-6	VICTORY PRTRNS VII Euro Fac B Ln	B	2		4Z	14,094,531	96.8388	13,971,497	14,427,580	14,030,822				(63,710)	6.182	6.182	JAJO	185,637	105,192	10/04/2018	10/05/2025
R9747F-AC-4	VICTORY PRTRNS VIII Capex Fac	B	2		4Z	1,085,540	96.8388	1,056,668	1,091,162	1,091,162				5,622	6.500	6.500	FEB	9,841		11/09/2018	10/05/2025
T0002F-AA-1	ASR MEDIA EURO TERM LN FAC	B	2		3FE	33,070,330	100.0000	32,190,078	32,190,078	31,868,177				(1,586,174)	7.000	7.000	FMAN	277,932	2,337,544	09/14/2017	06/23/2022
T3829F-AA-6	F.C. Internazionale Mila Senior Revolver	B	2		3Z	19,3															

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 1

Showing All Long-Term BONDS Owned December 31 of Current Year

1 CUSIP Identification	2 Description	Codes			6 NAIC Design- ation and Admini- strative Symbol	7 Actual Cost	Fair Value		10 Par Value	11 Book/ Adjusted Carrying Value	Change in Book/Adjusted Carrying Value				Interest					Dates	
		3 C o d e	4 F o r e i g n	5 B o n d C h a r			8 Rate Used to Obtain Fair Value	9 Fair Value			12 Unrealized Valuation Increase/ (Decrease)	13 Current Year's (Amor- tization) Accretion	14 Current Year's Other- Than- Temporary Impairment Recognized	15 Total Foreign Exchange Change in Book/ Adjusted Carrying Value	16 Rate of	17 Effective Rate of	18 When Paid	19 Admitted Amount Due and Accrued	20 Amount Received During Year	21 Acquired	22 Stated Contractual Maturity Date
6499999	Subtotal - Bonds -Bank Loans - Acquired					5,851,484,831	XXX	5,735,455,507	5,840,655,350	5,780,653,640	(128,398)		2,551,258	(93,795,883)	XXX	XXX	XXX	53,921,533	168,443,145	XXX	XXX
6599999	Subtotal -Bank Loans					6,016,796,614	XXX	5,892,416,422	5,998,690,518	5,937,601,191	(128,398)		2,551,258	(102,643,557)	XXX	XXX	XXX	55,788,054	174,422,249	XXX	XXX
7799999	Total - Issuer Obligations					75,095,821,565	XXX	76,348,514,282	76,670,273,186	76,056,928,620	(8,440,422)	75,395,616	43,226,380	(428,503,402)	XXX	XXX	XXX	898,682,004	2,736,883,770	XXX	XXX
7899999	Total - Residential Mortgage-Backed Securities					1,619,903,128	XXX	1,807,719,426	1,919,359,059	1,700,622,427	803,777	29,476,721	1,708,581	(19,717,635)	XXX	XXX	XXX	16,254,864	56,407,189	XXX	XXX
7999999	Total - Commercial Mortgage-Backed Securities					2,256,571,316	XXX	2,238,003,626	2,809,797,978	2,230,972,646	(1,489,968)	1,528,885	1,683,436		XXX	XXX	XXX	40,087,439	84,977,616	XXX	XXX
8099999	Total - Other Loan-Backed and Structured Securities					11,159,451,368	XXX	11,124,349,993	11,426,964,661	11,142,954,967	(5,469,896)	13,265,661	11,501,670	(5,149,207)	XXX	XXX	XXX	110,788,988	275,046,595	XXX	XXX
8199999	Total - SVO Identified Funds					9,965,389	XXX	10,043,280	87,000	10,043,280		(77,891)			XXX	XXX	XXX			XXX	XXX
8299999	Total - Bank Loans					6,016,796,614	XXX	5,892,416,422	5,998,690,518	5,937,601,191	(128,398)		2,551,258	(102,643,557)	XXX	XXX	XXX	55,788,054	174,422,249	XXX	XXX
8399999	Total Bonds					96,158,509,380	XXX	97,421,047,029	98,825,172,402	97,079,123,131	(14,724,907)	119,588,992	60,671,325	(556,013,801)	XXX	XXX	XXX	1,121,601,349	3,327,737,419	XXX	XXX

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 2 - SECTION 1

Showing All PREFERRED STOCKS Owned December 31 of Current Year

1	2	3 Codes		5	6	7	8	9 Fair Value		11	12 Dividends			15 Change in Book/Adjusted Carrying Value				20 NAIC Designation and Administrative Symbol/Market Indicator	21 Date Acquired	
		3	4					9	10		12	13	14	15	16	17	18			19
CUSIP Identification	Description	Code	Foreign	Number of Shares	Par Value Per Share	Rate Per Share	Book/Adjusted Carrying Value	Rate Per Share Used to Obtain Fair Value	Fair Value	Actual Cost	Declared but Unpaid	Amount Received During Year	Nonadmitted Declared But Unpaid	Unrealized Valuation Increase/(Decrease)	Current Year's (Amortization) Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (15 + 16 - 17)	Total Foreign Exchange Change in Book/Adjusted Carrying Value		
00117@-12-4	AFC-Dell Holding Corp. Perpetual Pref St	R		3,374,020	1.00	100.000	337,402	112.750	380,422	337,402									PSA	11/15/2018
020002-30-9	Allstate Corp The/Redeemable Pref Stk	R		20,000,000	1.00	25.000	485,800	23.840	476,800	485,800	6,375	25,500							RP2FEL	12/02/2013
04226Y-MM-4	ARMOR HOLDCO, INC-PERPETUAL PREF STK	R		489,150	1.00	31.890		1,038.740	508,100										P6*V	09/20/2011
05590*-12-1	BCC Group Holdings, Inc. Preferred Stock	R		63,250	1.00	0.000	632,500	10,000.000	632,500	632,500				3,640			3,640		RP5G1V	10/11/2017
128117-2#-4	Calamos Convertible Oppo Mandatory Redeem	R		1,340,000,000	1.00	25.000	33,500,000	24.746	33,160,042	33,500,000	280,900	1,474,872							RP1FEV	09/06/2017
128117-2*-8	Calamos Convertible Oppo Mandatory Redeem	R		1,330,000,000	1.00	25.000	33,250,000	24.559	32,663,603	33,250,000	242,813	1,277,913							RP1FEV	09/06/2017
128117-2#-6	Calamos Convertible Oppo Mandatory Redeem	R		1,330,000,000	1.00	25.000	33,250,000	24.695	32,844,882	33,250,000	262,500								RP1FEV	09/06/2017
128118-*2-4	Calamos Global Total Ret Mandatory Redeem	R		160,000,000	1.00	25.000	4,000,000	24.559	3,929,456	4,000,000	37,000	145,944							RP1FEV	09/06/2017
128118-*3-2	Calamos Global Total Ret Mandatory Redeem	R		160,000,000	1.00	25.000	4,000,000	24.695	3,951,264	4,000,000	40,000	157,778							RP1FEV	09/06/2017
128118-*4-0	Calamos Global Total Ret Mandatory Redeem	R		160,000,000	1.00	25.000	4,000,000	24.746	3,959,408	4,000,000	42,400	167,244							RP1FEV	09/06/2017
12811L-2#-3	Calamos Global Dynamic I Mandatory Redeem	R		880,000,000	1.00	25.000	22,000,000	24.746	21,776,744	22,000,000	168,540	984,505							RP1FEV	09/06/2017
12811L-2*-7	Calamos Global Dynamic I Mandatory Redeem	R		860,000,000	1.00	25.000	21,500,000	24.559	21,120,826	21,500,000	146,150	837,176							RP1FEV	09/06/2017
12811L-2#-5	Calamos Global Dynamic I Mandatory Redeem	R		860,000,000	1.00	25.000	21,500,000	24.695	21,238,044	21,500,000	152,000	911,056							RP1FEV	09/06/2017
12811P-*2-6	Calamos Convertible & Hi Mandatory Redeem	R		1,460,000,000	1.00	25.000	36,500,000	24.559	35,856,286	36,500,000	272,875	1,396,493							RP1FEV	09/06/2017
12811P-*3-4	Calamos Convertible & Hi Mandatory Redeem	R		1,460,000,000	1.00	25.000	36,500,000	24.695	36,055,284	36,500,000	295,000	1,509,722							RP1FEV	09/06/2017
12811P-*4-2	Calamos Convertible & Hi Mandatory Redeem	R		1,480,000,000	1.00	25.000	37,000,000	24.746	36,624,524	37,000,000	318,000	1,621,211							RP1FEV	09/06/2017
12811V-*2-3	Calamos Dynamic Converti Mandatory Redeem	R		850,000,000	1.00	25.000	21,250,000	24.559	20,875,235	21,250,000	143,837	828,055							RP1FEV	09/06/2017
12811V-*3-1	Calamos Dynamic Converti Mandatory Redeem	R		850,000,000	1.00	25.000	21,250,000	24.695	20,991,090	21,250,000	149,500	901,194							RP1FEV	09/06/2017
12811V-*4-9	Calamos Dynamic Converti Mandatory Redeem	R		860,000,000	1.00	25.000	21,500,000	24.746	21,281,818	21,500,000	163,240	963,599							RP1FEV	09/06/2017
18469P-4#-4	ClearBridge Energy MLP Op Fd-Mand Redeem	R		75,000	1.00	100,000.000	7,500,000	99,846.300	7,488,473	7,500,000		639,000							RP1FEU	03/26/2015
18469Q-4#-2	ClearBridge Energy MLP TR Fd-Mand Redeem	R		49,000	1.00	100,000.000	4,900,000	99,826.100	4,891,479	4,900,000		313,110							RP1FEU	03/26/2015
21775@-12-3	CORA Health Services, In Preferred Equit	R		3,777,780	1.00	95.000	358,889	124.013	468,492	358,889									RP5A	06/30/2016
26433F-3#-3	Duff & Phelps Select Ene Mandatory Redeem	R		880,000,000	1.00	25.000	22,000,000	26.711	23,505,592	22,000,000		1,042,375							RP1FEV	02/08/2017
43923#-12-6	Hoosier HD Holdings, Inc.-Redeemable Pre	R		546,800	1.00	1,000.000	287,758	526.258	287,758	546,253				(132,782)			(132,782)		PSZV	08/17/2015
48660@-4#-0	KAYNE ANDERSON MLP INVT CO-REDEEM PREF S	R		572,000,000	1.00	25.000	14,300,000	25.353	14,502,088	14,300,000		1,487,200							RP1FEU	11/09/2010
52728@-2*-4	Jefferies Financial Group Inc	R		123,000,000	1.00	1.000	123,000,000	743.500	91,450,500	123,000,000		2,459,506							RP3FEV	02/28/2013
55336V-2#-6	MPLX LP - Convertible Preferred	R		206,154,000	1.00	0.000	6,599,505	34.580	7,128,805	6,599,505		326,550							P3A	05/12/2016
56523#-11-4	Maple Holdings, Inc-Redeemable Pref Stk	R		10,320,000	1.00	980.000	10,113,600	1,321.659	13,639,520	10,113,600									RP5G1V	04/11/2016
56523#-12-2	Maple Holdings, Inc-Redeemable Pref Stk	R		2,580,000	1.00	980.000	2,528,400	1,265.579	3,265,194	2,528,400									RP5G1V	04/11/2016
60471#-11-8	MIRI Holdings, Inc. Preferred Stock	R		4,803,920	1.00	100.000	480,392	112.510	540,489	480,392				19,312			19,312		PS	12/02/2016
63975#-12-1	Ned Stevens Holding Corp Preferred Stock	R		19,581,490	1.00	100.000	1,958,149	120.810	2,365,640	1,958,149									PSG1V	09/28/2016
67101*-12-3	DAO Acquisitions, Inc. Preferred Stock S	R		10,000,000	1.00	0.000	10,000,000	1,000.000	10,000,000	10,000,000									RP6*V	07/06/2018
67101*-13-1	DAO Acquisitions, Inc. Preferred Stock S	R		669,179	1.00	0.000	669,179	1,172.899	784,880	669,179									RP4ZV	07/06/2018
726503-2#-1	PLAINS ALL AMER PIPELINE LP - Convertibl	R		450,040,000	1.00	0.000	11,344,203	28.330	12,749,633	10,909,136		460,873							P3A	02/14/2018
74939Z-MM-2	r4 Technologies, Inc Preferred Equity -	R		992,427,000	1.00	0.000	6,300,001	8.736	8,670,231	6,300,001									P6ZV	09/13/2018
89147L-2#-6	Tortoise Energy Infrastr-Mand Redeem Pre	R		2,405,000,000	1.00	10.000	24,050,000	9.923	23,865,056	24,050,000		962,000							RP1FEU	12/17/2014

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 2 - SECTION 1

Showing All PREFERRED STOCKS Owned December 31 of Current Year

1 CUSIP Identification	2 Description	Codes		5 Number of Shares	6 Par Value Per Share	7 Rate Per Share	8 Book/ Adjusted Carrying Value	Fair Value		11 Actual Cost	Dividends			Change in Book/Adjusted Carrying Value					20 NAIC Design- ation and Admini- strative Symbol/ Market Indi- cator	21 Date Acquired
		3 Code	4 For- eign					9 Rate Per Share Used to Obtain Fair Value	10 Fair Value		12 Declared but Unpaid	13 Amount Received During Year	14 Nonadmitted Declared But Unpaid	15 Unrealized Valuation Increase/ (Decrease)	16 Current Year's (Amor- tization) Accretion	17 Current Year's Other-Than- Temporary Impairment Recognized	18 Total Change in Book/Adjusted Carrying Value (15 + 16 - 17)	19 Total Foreign Exchange Change in Book/ Adjusted Carrying Value		
89147L-3F-5	Tortoise Energy Infrastr-Mand Redeem Pre	R		2,010,000.000	1.00	10.000	20,100,000	9.993	20,084,925	20,100,000		884,400							RP1FEU	12/17/2014
151327-20-2	CENTAUR FUNDING CORP-REDEEMABLE PREF STK	D		10,380,000	1.00	1,000.000	12,981,488	1,078,214	11,191,860	12,981,488		1,178,130							RP2FEU	01/01/2013
67649*-AA-3	ROTHESAY LIFE LTD Perpetual	R	B	100,000	1.00	1.000	112,164,800	1,285,689.0	128,568,902	142,260,800	3,171,816	3,188,684					(6,846,400)		PZZV	12/21/2012
8499999. Subtotal - Preferred Stock - Industrial and Miscellaneous (Unaffiliated)							744,092,066	XXX	733,775,845	774,011,494	5,892,946	27,525,618	(109,830)			(109,830)	(6,846,400)	XXX	XXX	
8999999 - Total Preferred Stocks							744,092,066	XXX	733,775,845	774,011,494	5,892,946	27,525,618	(109,830)			(109,830)	(6,846,400)	XXX	XXX	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 2 - SECTION 2

Showing All COMMON STOCKS Owned December 31 of Current Year

1	2	Codes		5	6	Fair Value		9	Dividends			Change in Book/Adjusted Carrying Value				17	18
		3	4			7	8		10	11	12	13	14	15	16		
CUSIP Identification	Description	Code	Foreign	Number of Shares	Book/Adjusted Carrying Value	Rate Per Share Used to Obtain Fair Value	Fair Value	Actual Cost	Declared but Unpaid	Amount Received During Year	Nonadmitted Declared But Unpaid	Unrealized Valuation Increase/ (Decrease)	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (13 - 14)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	NAIC Market Indicator (a)	Date Acquired
00027*-10-9	AAA Partners, Inc. Common Stock	R		3,222,115.000	6,834,989	2.121	6,834,989	3,222,115				296,583		296,583		V	03/20/2015
001084-10-2	AGCO CORP-COMMON STOCK			7,000.000	389,690	55.670	389,690	382,223				7,467		7,467		L	12/21/2018
001176-10-8	AFC-Dell Holding Corp. Common Stock	R		1,042.060		0.000		1,046				(47)		(47)		V	11/15/2018
00450*-10-5	ACE Partners, Inc. Common Stock	R		455,960.000	535,481	1.174	535,481	455,960				53,452		53,452		A	03/20/2015
008492-10-0	AGREE REALTY CORP-COMMON STOCK REIT			2,323.000	137,336	59.120	137,336	114,223	1,289	3,755		15,553		15,553		L	12/18/2018
02215L-10-0	ALTUS MIDSTREAM CO-COMMON STOCK			500,000.000	3,865,000	7.730	3,865,000	5,000,000				(1,135,000)		(1,135,000)		L	11/09/2018
023135-10-6	AMAZON.COM INC-COMMON STOCK			120.000	180,236	1,501.970	180,236	181,305				(1,069)		(1,069)		L	12/17/2018
032332-50-4	AMTECH SYSTEMS INC-COMMON STOCK			87,032.000	394,255	4.530	394,255	518,340				(482,157)		(482,157)		L	02/02/2015
03350F-10-6	Andeavor Logistics LP			97,506.000	3,167,970	32.490	3,167,970	4,605,027		1	362,919	(1,362,159)		(1,362,159)		L	08/31/2018
03673L-10-3	ANTERO MIDSTREAM PARTNERS LP LTD PARTNER			87,527.000	1,872,203	21.390	1,872,203	2,119,627	60,812	134,317		(650,123)		(650,123)		L	12/19/2018
03675Y-10-3	ANTERO RESOURCES MIDSTRE-COMMON STOCK			31,238.000	349,241	11.180	349,241	341,119		14,120		90,740	357,513	(266,773)		U	05/30/2017
037023-10-8	ANTHRACITE CAPITAL INC-COMMON STOCK REIT			10,000.000	10	0.001	10									U	08/29/2008
03835B-12-6	APPVION HL-COMMON STOCK			6,153.000	65,520	10.648	65,520					65,520		65,520		U	08/24/2018
03957W-10-6	Archrock Inc-COMMON STOCK			3.000	22	7.490	22			2		(9)		(9)		L	08/01/2011
042315-50-7	ARMOUR RESIDENTIAL REIT -COMMON STOCK								361,792							L	05/12/2016
053484-10-1	AVALONBAY COMMUNITIES IN-COMMON STOCK RE			1,201.000	209,034	174.050	209,034	208,951	1,765	1,765		83		83		L	08/02/2018
05534Y-XX-2	BCC Group Holdings, Inc. Common Stock Cl	R		2,001.730	62,190	31.068	62,190	2,002				62,190		62,190		V	10/11/2017
0556EL-10-9	BP MIDSTREAM PARTNERS LP-COMMON STOCK			47,442.000	737,249	15.540	737,249	830,389		47,976		(238,633)		(238,633)		L	10/27/2017
06761A-10-3	BARINGS PARTICIPATION IN-COMMON STOCK			80,000.441	1,200,007	15.000	1,200,007	911,551	64,800	42,002		71,724		71,724		L	05/18/2018
090319-40-1	BIMINI CAPITAL MANAGENEN-COMMON STOCK RE			211,628.000	452,884	2.140	452,884	13,244				(99,465)		(99,465)		U	08/29/2008
09259E-10-8	BLACKROCK TCP CAPITAL CO-COMMON STOCK			1,603,372.000	20,907,971	13.040	20,907,971	24,050,580	1,012,831	577,214		(3,142,609)		(3,142,609)		L	08/14/2018
095877-10-6	Blue Ridge Mountain Resources - Common S			298,463.000	1,193,852	4.000	1,193,852	2,581,650				(1,268,468)		(1,268,468)		U	05/06/2016
096627-10-4	BOARDWALK PIPELINE PARTN-COMMON STOCK LT			130,700.000	1,574,935	12.050	1,574,935	1,726,771		26,140		(112,402)		(112,402)		U	01/13/2016
101121-10-1	Boston Properties Inc-COMMON STOCK REIT			1,831.000	206,079	112.550	206,079	136,741	1,739	5,775		(30,693)		(30,693)		L	06/25/2018
118230-10-1	BUCKEYE PARTNERS LP-PARTNERSHIP INTEREST			311,828.000	9,039,894	28.990	9,039,894	12,686,352		455,186		(2,878,799)	1,597,992	(4,476,791)		L	11/05/2018
125141-10-1	CECO Environmental Corp-COMMON STOCK			15,343.000	103,565	6.750	103,565	94,513				24,856		24,856		L	08/28/2013
161635-10-7	CHASE PACKAGING CORP-COMMON STOCK			9,541.000	382	0.040	382					238		238		U	03/19/2008
163851-10-8	CHEMOURS CO-COMMON STOCK			31,000.000	874,820	28.220	874,820	853,756				21,065		21,065		L	12/18/2018
16411Q-10-1	CHENIERE ENERGY PARTNERS-COMMON STOCK			12,000.000	433,200	36.100	433,200	455,632				(22,432)		(22,432)		L	12/19/2018
16411R-20-8	CHENIERE ENERGY INC-COMMON STOCK			21,451.000	1,269,685	59.190	1,269,685	1,103,568				71,888		71,888		L	12/20/2018
184499-10-1	Clean Energy Fuels Corp.-COMMON STOCK			200,000.000	344,000	1.720	344,000	510,000				(62,000)		(62,000)		L	12/06/2007
20605P-10-1	CONCHO RESOURCES INC-COMMON STOCK			2,073.000	213,084	102.790	213,084	292,003				(98,322)		(98,322)		L	10/06/2017
20825C-10-4	ConocoPhillips-COMMON STOCK			40,000.000	2,494,000	62.350	2,494,000	2,247,632		46,400		298,400		298,400		L	04/22/2016
217756-10-7	CORA Health Services, In Common Stock Cl	R		18,888.900	323,926	17.149	323,926			149,388		267,603		267,603		V	06/30/2016
222795-10-6	COUSINS PROPERTIES INC-COMMON STOCK REIT			14,196.000	112,148	7.900	112,148	122,506	7,802	2,537		(17,007)		(17,007)		L	09/20/2018
22662X-10-0	CRIMSON WINE GROUP LTD-COMMON STOCK			86.000	673	7.825	673					(245)		(245)		U	02/26/2013
22822V-10-1	CROWN CASTLE INTERNATION-COMMON STOCK RE			499.000	54,206	108.630	54,206	49,501	561	2,096		(1,188)		(1,188)		L	07/24/2017
23311P-10-0	DCP MIDSTREAM PARTNERS LP COMMON UNIT			11,936.000	316,185	26.490	316,185	496,955		9,310		(180,771)		(180,771)		L	10/12/2018
23331A-10-9	DR Horton Inc-COMMON STOCK			2,044.000	70,845	34.660	70,845	74,309		251		(3,464)		(3,464)		L	12/04/2018
253868-10-3	DIGITAL REALTY TRUST INC-COMMON STOCK RE			3,379.000	360,032	106.550	360,032	367,742	3,413	9,128		(16,988)		(16,988)		L	10/04/2018
254687-10-6	Walt Disney Co/The-COMMON STOCK			8,450.000	926,543	109.650	926,543	933,218				(6,676)		(6,676)		L	12/17/2018
257454-10-8	DOMINION MIDSTREAM PARTNERS LP COMMON UN			19,720.000	355,749	18.040	355,749	361,862		27,056		(183,267)	61,458	(244,725)		L	10/31/2016
26826M-10-8	ECC CAPITAL CORP-COMMON STOCK REIT			1,200,000.000	16,800	0.014	16,800	25,200				(7,200)		(7,200)		U	08/29/2008
26885B-10-0	EQT MIDSTREAM PARTNERS L P LTD PARTNERSH			100,590.000	4,350,518	43.250	4,350,518	4,937,648	54,428	291,694		(1,564,640)	381,433	(1,946,073)		L	12/19/2018
26908M-10-9	ESI ENERGY SERVICES INC-COMMON STOCK			103,326.000	12,367	0.120	12,367	38,243				(21,420)		(21,420)	(3,194)	U	02/22/2005
277432-10-0	EASTMAN CHEMICAL CO-COMMON STOCK			23,076.000	1,687,086	73.110	1,687,086	912,624		14,307		51,690		(450,674)		U	08/19/2011
29273V-10-0	ENERGY TRANSFER EQUITY L P LTD PARTNERSH			106,851.000	1,411,502	13.210	1,411,502	968,848		173,052		97,769		(432,747)		L	01/26/2016
29278N-10-3	Energy Transfer Partners LP COMMON UNIT			1,234,076.315	26,495,618	21.470	26,495,618	22,991,773	503,308	1,643,491		4,371,344		4,371,344		U	06/04/2018
29330#-10-6	Engs Holdings, Inc. Common Stock	R		242,677.320	33,336,401	137.369	33,336,401	24,258,605				9,591,934		9,591,934		V	04/28/2016
29330#-10-6	Engs Holdings, Inc. Common Stock	R		80,432.990	11,049,019	137.369	11,049,019	5,874,021				5,174,998		5,174,998		V	05/18/2018
29336U-10-7	ENLINK MIDSTREAM PARTNER-ENLINK MIDSTREA			104,337.000	1,148,750	11.010	1,148,750	1,140,403		40,691		8,347	746,204	(737,857)		L	10/18/2018
293792-10-7	ENTERPRISE PRODS PARTNERS L P COMMON UNI			328,544.000	8,078,897	24.590	8,078,897	7,874,050		278,768		(581,727)		(581,727)		L	12/19/2018
29438Z-IM-2	Electric Power Systems (Cash Equity			158.800	158,800	1,000.000	158,800	158,800								V	12/28/2018
29444U-70-0	EQUINIX INC-COMMON STOCK			579.000	204,132	352.560	204,132	250,012		24,365		(56,438)		(56,438)		L	03/09/2018

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 2 - SECTION 2

Showing All COMMON STOCKS Owned December 31 of Current Year

1	2	Codes		5	6	Fair Value		9	Dividends			Change in Book/Adjusted Carrying Value				17	18
		3	4			7	8		10	11	12	13	14	15	16		
CUSIP Identification	Description	Code	Foreign	Number of Shares	Book/Adjusted Carrying Value	Rate Per Share Used to Obtain Fair Value	Fair Value	Actual Cost	Declared but Unpaid	Amount Received During Year	Nonadmitted Declared But Unpaid	Unrealized Valuation Increase/(Decrease)	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (13 - 14)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	NAIC Market Indicator (a)	Date Acquired
29476L-10-7	Equity Residential-COMMON STOCK REIT			4,479,000	285,659	66.010	295,659	307,222	2,419			(11,563)		(11,563)		L	12/20/2018
30068N-10-5	RESOURCE CAPITAL CORP-COMMON STOCK			8,750,000	87,675	10.020	87,675	106,400	1,531	2,625		5,688		5,688		L	08/29/2008
30219G-10-8	EXPRESS SCRIPTS HOLDING -COMMON STOCK			7,600,000	701,708	92.330	701,708	733,687				(31,979)		(31,979)		L	12/17/2018
30225T-10-2	Extra Space Storage Inc-COMMON STOCK REI			2,481,000	224,481	90.480	224,481	234,746	2,134	2,134		(10,266)		(10,266)		L	08/06/2018
30227H-10-6	EXTERIAN CORP-COMMON STOCK			1,000	18	17.700	18					(14)		(14)		L	11/04/2015
31338#-11-2	FHLBB Capital Stock Class B	RF		737,000,000	73,700,000	100.000	73,700,000	73,700,000		3,012,811						V	08/14/2017
31660T-10-2	Fieldwood Energy Inc			11,996,000	441,453	36.800	441,453	258,706				182,746		182,746		V	04/11/2018
31660T-20-1	Fieldwood Energy Inc Restricted Common			2,944,000	103,040	35.000	103,040	103,040								V	04/11/2018
32054K-10-3	FIRST INDUSTRIAL REALTY -COMMON STOCK RE			4,380,000	126,407	28.860	126,407	131,304	953	2,858		(4,897)		(4,897)		L	01/18/2018
35671D-05-7	FREEMONT-MCMORAN INC-COMMON STOCK			23,600,000	243,316	10.310	243,316	244,373				(1,057)		(1,057)		L	12/21/2018
35905B-10-7	Frontera Energy Corp -Common Stock			15,420,000	150,219	9.742	150,219	215,880				(29,699)	58,591	(88,290)		V	12/05/2016
36245#-10-7	GTI HLDG CO COMMON STK	R		4,925,000	560,480	113.803	560,480	492,489				(48,772)		(48,772)		V	11/22/2017
36245#-12-3	GTI HLDG CO WARRANT	R		1,870,000	212,812	113.803	212,812	173,299				(18,519)		(18,519)		V	02/05/2014
36467J-10-8	GAMING AND LEISURE PROPE-COMMON STOCK			2,355,000	76,090	32.310	76,090	80,186		6,052		(11,045)		(11,045)		L	06/05/2017
37250U-20-1	GeoMet Inc-COMMON STOCK			85,857,000	309	0.004	309			357		90		90		L	05/12/2011
38002*-10-8	Glynlyon Holding Company Common Stock	R		271,400	447,549	1,649.037	447,549	189,981	54,280			(28,822)		(28,822)		V	01/15/2016
40609P-10-5	Hallador Energy Co-COMMON STOCK			60,544,000	306,958	5.070	306,958	287,314		9,687		(61,755)		(61,755)		V	08/17/2016
41139*-10-8	Happy Floors Holding Co Common Stock	R		415,460	490,820	1,181.389	490,820	415,460				(30,307)		(30,307)		V	07/01/2016
41683#-10-6	Hartland Controls Holdin Common Stock			2,103,260	660,830	314.193	660,830	2,104				(125,980)		(125,980)		V	02/14/2014
42709#-11-6	Hercules Inc			3,851,000	97,045	25.200	97,045	3,451				(1,078)		(1,078)		V	12/09/2016
42824C-10-9	HEWLETT PACKARD ENTERPRI-COMMON STOCK			71,500,000	944,515	13.210	944,515	989,467				(44,952)		(44,952)		L	12/18/2018
43610#-10-8	HOLLYFRONTIER CORP-COMMON STOCK			8,500,000	434,520	51.120	434,520	448,065				(13,545)		(13,545)		L	12/17/2018
43923Z-MN-3	Hoosier HD Holdings, Inc Common Stock	R		546,800		0.000		547								V	08/17/2015
44107P-10-4	Host Hotels & Resorts In-COMMON STOCK RE			6,093,000	101,570	16.670	101,570	124,487	1,523	1,723		(22,917)		(22,917)		L	10/11/2018
452327-10-9	ILLUMINA INC-COMMON STOCK			1,530,000	458,893	299.930	458,893	473,711				(14,818)		(14,818)		L	12/17/2018
45259*-10-3	Impact Topco, Inc. Cash Equity	R		6,391,670		0.000						639,167	639,167			V	11/10/2014
46014#-10-3	International Paper Co-COMMON STOCK			9,900,000	399,564	40.360	399,564	395,753				3,812		3,812		L	12/21/2018
460690-10-0	Interpublic Group of Cos-COMMON STOCK			31,000	640	20.630	640	335	13	13		15		15		L	11/30/2012
46266C-10-5	IQVIA Holdings Inc-COMMON STOCK			7,462,000	866,861	116.170	866,861	358,251				136,331		136,331		L	01/23/2014
47233W-10-9	Jefferies Financial Group Inc - COMMON S			868,000	15,068	17.360	15,068		26	365		(7,925)		(7,925)		L	08/16/2011
48203R-10-4	JUNIPER NETWORKS INC-COMMON STOCK			27,000,000	726,570	26.910	726,570	740,308				(13,738)		(13,738)		L	12/17/2018
48238#-10-9	KAMC Holdings, Inc. Common Stock	R		502,671,000	621,607	1.237	621,607	502,671				(123,604)		(123,604)		V	10/31/2016
000000-00-0	KKR Eagle Asset Financing LLC			1,000	730,059	730.059	730,059	1				730,058		730,058		V	12/29/2017
48270#-10-0	Stanadyn Corporation Common Stock			5,000,000,000	2,936,585	0.587	2,936,585	1,195,176				(1,835,205)		(1,835,205)		V	12/19/2017
483007-70-4	KAISER ALUMINUM CORP-COMMON STOCK			358,000	31,966	89.290	31,966		18	788		(6,286)		(6,286)		L	12/24/2014
49338L-10-3	KEYSIGHT TECHNOLOGIES IN-COMMON STOCK			18,700,000	1,160,896	62.080	1,160,896	703,892				382,976		382,976		L	03/01/2017
49427F-10-8	KILLROY REALTY CORP-COMMON STOCK REIT			3,149,000	198,009	62.880	198,009	187,262	1,433	3,597		(26,189)		(26,189)		L	12/20/2018
49456B-10-1	Kinder Morgan Inc/DE-KINDER MORGAN INC			72,126,000	1,109,298	15.380	1,109,298	1,118,307				(9,009)		(9,009)		L	12/28/2018
526057-10-4	Lenmar Corp-COMMON STOCK CLASS A			1,781,000	69,726	39.150	69,726	76,782				(7,056)		(7,056)		L	12/04/2018
55336V-10-0	MLPX LP COMMON UNIT			186,104,000	5,638,951	30.300	5,638,951	6,018,337	256,537			(940,600)		(940,600)		L	12/19/2018
55406#-10-2	Mid-America Pet Foods (M Common Stock	R		1,324,110	3,462,664	2,615.088	3,462,664	7				(1,006,415)		(1,006,415)		V	09/02/2014
559080-10-6	MAGELLAN MIDSTREAM PARTNERS LP COMMON UN			121,832,000	6,951,734	57.060	6,951,734	6,703,808	39,008	427,184		(1,571,081)		(1,571,081)		L	12/21/2018
56523Z-MZ-2	Maple Holdings, Inc-Warrants	R		444,213,000	488,975	1.101	488,975					(74,863)		(74,863)		V	04/11/2016
57038#-10-8	Dayco LLC Common Stock Cl			15,000	450	30.000	450									V	11/13/2009
58463J-30-4	Medical Properties Trust-COMMON STOCK RE			5,747,000	92,412	16.080	92,412	78,834	1,437	3,429		12,073		12,073		L	07/11/2018
59047#-10-9	MES Partners, Inc. Common Stock Cl	R		915,023,290	391,145	0.427	391,145	915,023				(206,103)		(206,103)		V	02/28/2018
595112-10-3	Micron Technology Inc-Common Stock			11,000,000	349,030	31.730	349,030	372,075				(23,045)		(23,045)		L	12/17/2018
59560V-10-9	MID-CON ENERGY PARTNERS -COMMON STOCK LT			32,769,000	27,323	0.834	27,323	35,718				(11,345)		(11,345)		L	08/12/2014
60471#-10-0	MIRI Holdings, Inc. Common Stock	R		679,530		0.000		680								V	12/02/2016
62910T-RR-8	Sabine Oil & Gas LLC			1,057,000	46,508	44.000	46,508	43,337				(2,114)		(2,114)		V	08/11/2016
62910T-SS-5	Sabine Oil & Gas LLC			3,349,000	5,024	1.500	5,024	15,037				(15,071)		(15,071)		V	08/11/2016
62973*-10-3	NSI Industries Holdings, Common Stock	R		428,130	590,910	1,380.211	590,910	428,128				50,495		50,495		V	05/17/2016
63633D-10-4	National Health Investor-COMMON STOCK RE			933,000	70,479	75.540	70,479	58,957	933	2,939		(500)		(500)		L	12/18/2018
637417-10-6	NATL RETAIL PROPERTIES-COMMON STOCK REIT			3,772,000	182,980	48.510	182,980	174,616				8,364		8,364		L	12/18/2018

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 2 - SECTION 2

Showing All COMMON STOCKS Owned December 31 of Current Year

1	2	Codes		5	6	Fair Value		9	Dividends			Change in Book/Adjusted Carrying Value				17	18
		3	4			7	8		10	11	12	13	14	15	16		
CUSIP Identification	Description	Code	Foreign	Number of Shares	Book/Adjusted Carrying Value	Rate Per Share Used to Obtain Fair Value	Fair Value	Actual Cost	Declared but Unpaid	Amount Received During Year	Nonadmitted Declared But Unpaid	Unrealized Valuation Increase/ (Decrease)	Current Year's Other Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (13 - 14)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	NAIC Market Indicator (a)	Date Acquired
63975Z-NM-8	Ned Stevens Holding Corp Common Stock	R		3,599,540	54,497	15.140	54,497	3,600				(848,592)		(848,592)		V	09/28/2016
64800#-10-4	New Penhall Holding Comp Common Stock Cl	R		6,000,000	708,000	118.000	708,000	700,800								V	12/01/2014
64800#-11-2	New Penhall Holding Comp Common Stock Cl	R		2,000,000	236,000	118.000	236,000	233,600								V	12/01/2014
64828T-20-1	NEW RESIDENTIAL INVESTME-COMMON STOCK RE			3,609,000	51,284	14.210	51,284	61,996	1,805	4,128		(10,712)		(10,712)		L	10/10/2018
65506L-10-5	NOBLE MIDSTREAM PARTNERS-COMMON STOCK			16,973,000	489,501	28.840	489,501	417,113		35,538		(359,149)		(359,149)		L	09/19/2016
66989V-10-7	NOVATION COS INC-COMMON STOCK REIT			19,255,889.000	423,630	0.022	423,630					(879,802)		(879,802)		U	06/01/2013
67059Z-IM-0	NuStef Holding Corp - Common Stock	R		279,190	267,123	956.780	267,123	416,855				(264,803)		(264,803)		V	11/07/2017
68244V-10-4	1155 Island Avenue LLC-COMMON STOCK			5,780,540.500	104,050	0.018	104,050	104,050				(251,527)	164,423	(415,950)		U	12/15/2014
682680-10-3	ONEOK INC COMMON STK			209,371.990	11,295,619	53.950	11,295,619	6,743,015		621,190		39,171		39,171		L	12/31/2018
69863*-10-1	PANOS Holdings, Inc. Common Stock Cl	R		2,377,179.000	4,198,894	1.766	4,198,894	2,377,179				846,233		846,233		V	02/17/2017
700517-10-5	PARK HOTELS & RESORTS IN-COMMON STOCK RE			3,151,850	81,885	25.980	81,885	84,057	3,166			(6,424)		(6,424)		L	10/11/2018
718549-20-7	PHILLIPS 66 PARTNERS LP COMMON UNIT			68,001.000	2,863,522	42.110	2,863,522	2,890,930				(667,119)		(667,119)		L	12/19/2018
71943U-10-4	PHYSICIANS REALTY TRUST-COMMON STOCK REI			4,783.000	76,671	16.030	76,671	69,314		3,851		(8,625)		(8,625)		L	12/18/2018
72201P-61-3	PIMCO FDS SHORT TERM FLTG NAV PORT II			386,388.596	3,867,750	10.010	3,867,750	3,866,259	(825)			1,468		1,468		U	12/26/2018
726503-10-5	PLAINS ALL AMERICAN PIPELINE L.P. LTD PA			318,296.000	6,378,652	20.040	6,378,652	7,076,157	292,956	250,027		(397,379)		(397,379)		U	12/19/2018
73174Z-IM-8	Polycor Holding, Inc.	R		1,090,000.000	2,741,620	2.515	2,741,620	826,111				2,369,270		2,369,270	(67,875)	V	09/14/2016
73174Z-IM-6	Polycor Holding, Inc.	R		9,810,000.000	8,245,060	0.840	8,245,060	7,434,999				565,455		565,455	(610,879)	V	09/14/2016
74340W-10-3	Prologis Inc-COMMON STOCK			4,756.000	279,272	58.720	279,272	211,157	2,283	8,941		(27,537)		(27,537)		V	11/29/2016
74992#-10-1	RWA HLDG CO INC CL B	R		216.350	533,365	2,465.288	533,365	216,349				(84,010)		(84,010)		V	05/12/2015
758849-10-3	REGENCY CENTERS CORP-COMMON STOCK REIT			3,612.750	211,996	58.680	211,996	200,409		6,378		(28,946)		(28,946)		L	12/20/2018
759509-10-2	Reliance Steel & Aluminu-COMMON STOCK			6,500.000	462,605	71.170	462,605	471,565	2,275			(8,960)		(8,960)		L	12/21/2018
76086Z-IM-8	RESA Holding Company - Common Stock			7,000.000	4,702,677	671.811	4,702,677	7,000,000				(2,297,323)		(2,297,323)		V	12/15/2017
78532M-11-2	Sabine Oil & Gas LLC			596.000	596	1.000	596	1,621				(2,384)		(2,384)		U	08/11/2016
81752K-10-5	SERINUS ENERGY INC-COMMON STOCK			35,049.000	4,545	0.130	4,545					(5,065)		(5,065)		U	06/17/2013
822634-10-1	SHELL MIDSTREAM PARTNERS L.P. LTD PARTNER			211,736.000	3,474,588	16.410	3,474,588	6,785,432		302,359		(2,839,380)		(2,839,380)		L	09/11/2017
828806-10-9	SIMON PROPERTY GROUP INC-COMMON STOCK RE			1,412.000	237,202	167.990	237,202	49,531		11,155		(5,295)		(5,295)		L	09/27/2010
845467-10-9	SOUTHWESTERN ENERGY CO-COMMON STOCK			495,495.000	1,689,638	3.410	1,689,638	3,363,750	41,092			(1,674,112)		(1,674,112)		L	01/15/2018
84756N-10-9	SPECTRA ENERGY PARTNERS LP COMMON STK			74,100.000	2,623,140	35.400	2,623,140	3,652,881		224,523		(306,790)		(306,790)		L	11/19/2015
85512C-10-5	STAR GAS PARTNERS LP-COMMON STOCK LTD PA			17,318.000	161,750	9.340	161,750	179,934		3,810		(24,418)		(24,418)		L	04/01/2016
862121-10-0	STORE CAPITAL CORP-COMMON STOCK			4,752.000	134,529	28.310	134,529	126,306		1,568		5,821		5,821		L	10/24/2018
866674-10-4	SUN COMMUNITIES INC COMMON STK			1,183.000	120,323	101.710	120,323	103,365	840	2,520		16,958		16,958		L	01/18/2018
86801#-10-6	SUNVAIR AEROSPACE GROUP INC COMMON STK	R		188.340	0.000		0.000	288,758				(31,455)		(31,455)		V	07/31/2015
874696-10-7	TALLGRASS ENERGY GP LP-COMMON STOCK			106,997.000	2,604,307	24.340	2,604,307	2,366,215	43,979	133,656		124,991		124,991		L	07/02/2018
87612G-10-1	TARGA RES CORP COMMON STK			46,697.000	1,682,026	36.020	1,682,026	2,653,315	94,719	154,045		(632,650)		(632,650)		L	10/01/2018
902653-10-4	UDR INC-COMMON STOCK REIT			7,475.000	296,160	39.620	296,160	265,483		7,232		30,676		30,676		L	03/15/2018
92532W-10-3	VERSUM MATERIALS INC-COMMON STOCK			35,800.000	992,376	27.720	992,376	991,452				924		924		L	12/18/2018
925652-10-9	VICI PROPERTIES INC-COMMON STOCK REIT			5,329.000	100,079	18.780	100,079	111,818	1,532			(11,740)		(11,740)		L	12/18/2018
92965#-10-6	WG SMC Holdings, Inc. Common Stock	R		404.590	541,836	1,339.223	541,836	404,588				(57,070)		(57,070)		V	01/22/2016
948741-10-3	Weingarten Realty Invest-COMMON STOCK RE			2,556.000	63,414	24.810	63,414	64,632				(1,217)		(1,217)		L	12/21/2018
95040C-10-4	Welltower Inc-COMMON STOCK REIT			3,119.000	216,490	69.410	216,490	169,063		7,588		11,326		11,326		L	12/18/2018
958254-10-4	WESTERN GAS PARTNERS LP COMMON UNIT			492,962.000	20,817,785	42.230	20,817,785	16,479,374	31,464	1,796,486		(2,522,756)	370,629	(2,893,385)		L	08/31/2018
95825R-10-3	WESTERN GAS EQUITY PARTNERS LP COMMON UN			45,271.000	1,255,365	27.730	1,255,365	1,416,207		38,586		(160,842)	133,864	(294,706)		L	10/10/2018
969457-10-0	WILLIAMS COS INC COMMON STK			196,766.000	4,338,690	22.050	4,338,690	5,087,662	208,095	136,338		(1,824,389)		(1,824,389)		L	08/13/2018
98717#-10-4	York Wall Holding Compan Common Stock	R		5,163.990	384,793	74.515	384,793	505,835				303,079		303,079		V	02/07/2018
C8326*-10-7	Serafina Energy Ltd Common Stock	R		6,000,000.000	7,741,368	1.290	7,741,368	5,054,504				2,388,437		2,388,437	(373,626)	V	04/13/2017
E7946J-10-5	Parques Reunidos Common Stock	B		27,902.000	326,443	11.700	326,443	484,155				(145,647)		(145,647)		L	04/10/2017
G29183-10-3	EATON CORP PLC-COMMON STOCK	C		11,600.000	796,456	68.660	796,456	801,251				(4,795)		(4,795)		L	12/17/2018
G5216J-11-8	JZ CAP PARTNERS LTD SHARES	B		750,000.000	5,305,523	7.074	5,305,523	1,667,889				(1,097,106)		(1,097,106)	(78,748)	U	08/23/2011
G6302R-10-8	PARAGON OFFSHORE FINANCE - Restructured	C		2,462.000	102,173	41.500	102,173	36,930				57,242		57,242		U	07/18/2017
G9001E-10-2	LIBERTY LATIN AMERICA LT-COMMON STOCK	C		64,200.000	929,616	14.480	929,616	1,040,509				(110,893)		(110,893)		L	12/18/2018
NE3745-10-0	LyondellBasell Industrie-COMMON STOCK CL	C		9.000	748	83.160	748			36		(244)		(244)		L	10/19/2012
Q6154R-TT-0	Boomerang Tube, Inc. - Common Stock			4,397.000	428	0.097	428					428		428		V	01/29/2016
Y982#-10-0	YINGDA TAHE LIFE INS CO LTD Common Stoc	B		796,000,000.000	137,166,590	0.172	137,166,590	120,452,817				7,495,713		7,495,713	(6,481,126)	V	08/20/2013
9099999. Subtotal - Common Stock - Industrial and Miscellaneous (Unaffiliated)					499,993,432	XXX	499,993,432	453,332,646	3,655,788	14,269,251		(2,197,137)	4,511,274	(6,708,411)	(7,641,483)	XXX	XXX

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 2 - SECTION 2

Showing All COMMON STOCKS Owned December 31 of Current Year

1 CUSIP Identification	2 Description	3 Codes		5 Number of Shares	6 Book/Adjusted Carrying Value	7 Fair Value		9 Actual Cost	10 Dividends			13 Change in Book/Adjusted Carrying Value				17 NAIC Market Indicator (a)	18 Date Acquired
		3	4			7	8		10	11	12	13	14	15	16		
		Code	Foreign			Rate Per Share Used to Obtain Fair Value	Fair Value		Declared but Unpaid	Amount Received During Year	Nonadmitted Declared But Unpaid	Unrealized Valuation Increase/ (Decrease)	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (13 - 14)	Total Foreign Exchange Change in Book/Adjusted Carrying Value		
12583*-10-0	C M LIFE INSURANCE COMPANY Common Stock			12,500,000	1,637,317,539	130,985,403	1,637,317,539	410,496,118				64,157,649		64,157,649		K	01/01/2001
21926*-10-5	Cornerstone Global REIT Common Stock			1,000,000	188,515	188,515	188,515	200,000				15,757		15,757		K	09/21/2007
55338*-10-5	MML Management Corporation - Common Stock			2,000	1,012,033,389	506,016,694.31	1,012,033,389	849,124,249				55,603,538		55,603,538		K	12/02/2017
57543*-11-8	MassMutual Holding LLC			8,000,420	9,337,733,346	1,167,155,393	9,337,733,346	2,856,543,727	650,000,000	250,000,000		(112,728,739)		(112,728,739)		K	05/09/2005
57631*-10-5	MASSMUTUAL TR CO COMMON STK			5,500,000,000	26,658,638	4,847	26,658,638	16,500,000		2,500,000		4,668,590		4,668,590		K	02/02/2000
9199999. Subtotal - Common Stock - Parent, Subsidiaries and Affiliates					12,013,931,427	XXX	12,013,931,427	4,132,864,094	650,000,000	252,500,000		11,716,795		11,716,795		XXX	XXX
55312*-63-0	MML SER INVT FD II SPECIAL SITUATIONS FD			10,452,322	109,436	10,470	109,436	104,425		17		(10,342)		(10,342)		U	12/18/2018
55312*-64-8	MML SER INVT FD II SPECIAL SITUATIONS FD			2,091,401,732	21,980,632	10,510	21,980,632	20,835,035		37,916		(2,045,371)		(2,045,371)		U	12/18/2018
55312*-65-5	MML SER INVT FD II EQUITY ROTATION FD SV			12,440,261	134,977	10,850	134,977	128,199		16,554		(34,145)		(34,145)		U	12/18/2018
55312*-66-3	MML SER INVT FD II EQUITY ROTATION FD CL			2,489,689,939	27,112,723	10,890	27,112,723	25,624,803		3,342,989		(6,823,809)		(6,823,809)		U	12/18/2018
55312*-71-3	MML SER INVT FD II ASSET MOMENTUM FD CL			2,474,970,306	23,091,473	9,330	23,091,473	24,377,539		2,962,663		(7,176,990)		(7,176,990)		U	12/18/2018
57629H-42-6	MASSMUTUAL PREMIER STRAT-MPSMX			7,278,020	85,881	11,800	85,881	100,000				(14,119)		(14,119)		L	04/27/2018
57629H-85-5	MASSMUTUAL PREMIER MAIN -MASSMUT-P MAI-S			8,802,817	82,835	9,410	82,835	100,000	936			(17,165)		(17,165)		L	04/27/2018
57629U-34-4	MASSMUTUAL SELECT MID CA-MASSMUT-M/C VL-			7,209,805	75,847	10,520	75,847	100,000	892			(24,153)		(24,153)		L	04/27/2018
57629U-35-1	MASSMUTUAL SELECT MID CA-MASSMUT-M/C VL-			6,915,630	71,300	10,310	71,300	100,000	1,024			(28,700)		(28,700)		L	01/29/2018
57630A-15-4	MASSMUTUAL RETIRESMARTSM-CLASS SVC			74,863,390	692,486	9,250	692,486	751,307		58,288		(169,940)		(169,940)		U	12/17/2014
57630E-22-2	MASSMUTUAL RETIRESMARTSM-CLASS R5			18,494,829	170,892	9,240	170,892	204,705		7,733		(42,489)		(42,489)		U	04/27/2018
57630E-29-7	MASSMUTUAL RETIRESMART 2-CLASS R5			7,204,611	79,107	10,980	79,107	100,000				(20,893)		(20,893)		U	04/27/2018
57630E-36-2	MASSMUTUAL RETIRESMART 2-CLASS R5			7,315,289	80,907	11,060	80,907	100,000				(19,093)		(19,093)		U	04/27/2018
57630E-49-5	MASSMUTUAL RETIRESMART 2-CLASS R5			8,403,361	88,655	10,550	88,655	100,000				(11,345)		(11,345)		U	04/27/2018
57630E-58-6	MML Select Small Company Val Fd Class R4			7,301,230	55,051	7,540	55,051	115,449	1	17,190		(23,291)		(23,291)		U	12/15/2014
57630E-69-3	MASSMUTUAL SELECT MID CA-CLASS R4			14,208,264	145,066	10,210	145,066	202,350	2,046	15,358		(48,200)		(48,200)		U	04/27/2018
57630E-81-8	MASSMUTUAL SELECT DIVERS-CLASS R4			7,719,000	74,951	9,710	74,951	116,454		1,763		(41,502)		(41,502)		U	01/29/2018
57630G-59-9	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE			6,666,667	94,333	14,150	94,333	100,000				(5,667)		(5,667)		L	02/15/2018
57630G-81-3	MASSMUTUAL SELECT FDS RETIRESMART 2060 F			10,147,760	91,228	8,990	91,228	101,417		5,453		(23,644)		(23,644)		L	12/22/2015
57630G-82-1	MASSMUTUAL SELECT FDS RETIRESMART 2060 F			10,150,470	91,659	9,030	91,659	101,443		5,606		(23,651)		(23,651)		L	12/22/2015
57630G-83-9	MASSMUTUAL SELECT FDS RETIRESMART 2060 F			18,905,997	170,721	9,030	170,721	201,433		5,474		(44,475)		(44,475)		L	04/30/2018
57630G-84-7	MASSMUTUAL SELECT FDS RETIRESMART 2060 F			10,152,140	91,674	9,030	91,674	101,459		5,744		(23,553)		(23,553)		L	12/22/2015
57630G-85-4	MASSMUTUAL SELECT FDS RETIRESMART 2060 F			18,894,440	170,806	9,040	170,806	201,469		5,845		(44,534)		(44,534)		L	04/30/2018
57630G-86-2	MASSMUTUAL SELECT FDS RETIRESMART 2060 F			18,895,590	170,816	9,040	170,816	201,480		5,925		(44,639)		(44,639)		L	04/30/2018
57630G-87-0	MASSMUTUAL SELECT FDS RETIRESMART 2060 F			954,606,990	8,639,193	9,050	8,639,193	9,540,081		566,464		(2,214,688)		(2,214,688)		L	12/22/2015
G0819U-55-2	BARINGS UMBRELLA FUND PLC - BARINGS EME			400,000,000	40,000,000	100,000	40,000,000	40,000,000								U	10/17/2018
G069E*-10-1	BABSON CAPITAL GLOBAL IN-GLOBAL CR DISTR	R	D	46,276,326	6,757,732	146,030	6,757,732	4,627,633				1,188,376		1,188,376		U	10/01/2012
G069E*-10-1	BABSON CAPITAL GLOBAL IN-GLOBAL CR DISTR	R	D	8,166,271	1,192,521	146,030	1,192,521	816,627				209,710		209,710		U	10/01/2012
G0R5P5-24-5	Barings Global Investment Funds plc - Em			396,815,551	46,403,611	116,940	46,403,611	39,688,941		32,719		(777,758)		(777,758)		U	04/29/2014
G0R5PL-85-1	Babson Capital Global In-US HIGH YIELD B			408,187,150	50,145,791	122,850	50,145,791	44,288,306				(1,649,076)		(1,649,076)		U	04/29/2016
G67585-68-0	OPPENHEIMERFUND S ICAV - MUTUAL FUND			728,980,369	85,297,990	117,010	85,297,990	76,536,611				(12,185,218)		(12,185,218)		U	11/28/2018
9299999. Subtotal - Mutual Funds					313,450,294	XXX	313,450,294	289,667,166	6,662	7,091,938		(32,190,364)		(32,190,364)		XXX	XXX
9799999 - Total Common Stocks					12,827,375,153	XXX	12,827,375,153	4,875,863,906	653,662,450	273,861,189		(22,670,706)	4,511,274	(27,181,980)	(7,641,483)	XXX	XXX
9899999 - Total Preferred and Common Stocks					13,571,467,219	XXX	13,561,150,998	5,649,875,400	659,555,396	301,368,807		(22,780,536)	4,511,274	(27,291,810)	(14,487,883)	XXX	XXX

(a) For all common stock bearing the NAIC market indicator "U" provide: the number of such issues38 , the total \$ value (included in Column 8) of all such issues \$343,380,709

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
31342*-KF-8	FHA Project Loan Merrill Lynch #		01/01/2018	PAYUP		(76,215)	(76,215)	
313444-KX-1	FREDDIE MAC-NOTE		10/04/2018	IN-KIND TRANSFER		1,838,820	1,407,000	
36180S-PP-1	GOVERNMENT NATIONAL MORT-GNMA II POOL #A		12/01/2018	PAYUP		26,307	26,307	
36182M-DB-8	GOVERNMENT NATIONAL MORT-GNMA II POOL #A		12/01/2018	PAYUP		28,963	28,963	
38378N-HS-5	Government National Mort-SERIES 13-175 C		02/07/2018	DTCYID		477,656	480,000	506
38379K-LY-2	Government National Mort-SERIES 15-73 CL		01/23/2018	DTCYID		615,367	650,000	1,219
690353-2V-8	Overseas Private Investm-SENIOR UNSECURE		06/07/2018	DTCYID		545,000	545,000	2,449
690353-5B-9	Overseas Private Investm-SENIOR UNSECURE		12/10/2018	DTCYID		575,328	575,000	
83162C-UE-1	SMALL BUSINESS ADMIN SER 2011-20H PARTN		03/07/2018	DTCYID		107,919	106,768	400
83162C-ZC-0	Small Business Admin GTD Dev Partn CTF		01/23/2018	DTCYID		394,198	395,000	288
83162C-ZH-9	SMALL BUSINESS ADMINISTR-SBAP 2018-20C 1		06/11/2018	DTCYID		606,565	608,000	656
83162C-ZO-9	United States Small Busi-SBAP 2018-25A 1		07/05/2018	DTCYID		658,000	658,000	
83162C-ZV-8	United States Small Busi-SERIES 2018-25C		09/06/2018	DTCYID		498,000	498,000	
89156H-AB-3	Tote Shipholdings Inc-SENIOR UNSECURED		03/28/2018	DTCYID		560,703	563,000	3,777
912803-EC-3	STRIP PRINC		06/20/2018	DTCYID		538,597	1,145,000	
912803-EN-9	SP 0 05/15/45		06/19/2018	DTCYID		608,573	1,360,000	
912810-RS-9	US TREASURY N/B-BOND		12/31/2018	VARIOUS		463,321	540,000	4,355
912810-SA-7	United States Treasury N-UNSECURED		06/19/2018	DTCYID		1,375,242	1,400,000	10,608
912828-3I-8	United States Treasury N-UNSECURED		10/04/2018	IN-KIND TRANSFER		8,726,751	9,025,000	
912828-4V-9	United States Treasury N-UNSECURED		12/31/2018	VARIOUS		661,730	660,000	6,342
912828-4Y-3	United States Treasury N-UNSECURED		09/11/2018	CREDIT AGRICOLE C18		818,238	820,000	714
912828-V9-8	UNITED STATES TREASURY N-UNSECURED		10/04/2018	IN-KIND TRANSFER		3,233,737	3,461,000	
912833-5B-2	S 0 02/15/36		10/04/2018	IN-KIND TRANSFER		6,112,579	10,867,000	
912833-0B-9	S 0 11/15/27		10/04/2018	IN-KIND TRANSFER		5,762,861	7,713,000	
759470-AT-4	Reliance Industries Inc Ex Im Bk Gtd Ser	D.	12/07/2018	DTCYID		171,248	174,750	1,780
0599999. Subtotal - Bonds - U.S. Governments						35,329,488	43,630,573	33,094
748148-OR-7	PROVINCE OF QUEBEC-DEBENTURE	A.	10/04/2018	IN-KIND TRANSFER		337,760	250,000	
042207-AB-6	REPUBLIC OF ARMENIA-SENIOR UNSECURED	D.	04/23/2018	CITIGROUP GLOBAL MAR		2,130,000	2,000,000	11,519
085209-AF-1	Bermuda Government Inter-SENIOR UNSECURE	D.	11/15/2018	CITIGROUP GLOBAL MAR		29,478,735	29,700,000	
195325-BM-6	REPUBLIC OF COLOMBIA-SENIOR UNSECURED BO	D.	10/04/2018	IN-KIND TRANSFER		112,250	100,000	
195325-BR-5	REPUBLIC OF COLOMBIA-SENIOR UNSECURED NO	D.	10/04/2018	IN-KIND TRANSFER		1,357,875	1,275,000	
195325-CJ-7	REPUBLIC OF COLOMBIA-SR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		987,955	1,003,000	
30216J-AC-9	Export-Import Bank of In-SENIOR UNSECURE	D.	10/04/2018	IN-KIND TRANSFER		1,100,687	1,175,000	
445545-AF-3	HUNGARY-SR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		407,519	292,000	
445545-AJ-5	HUNGARY-SENIOR UNSECURED	D.	12/13/2018	VARIOUS		42,156,000	39,000,000	256,674
445545-AL-0	HUNGARY-SENIOR UNSECURED NOTE	D.	06/28/2018	VARIOUS		21,455,000	20,000,000	217,986
455780-CC-8	Indonesia Government Int-SENIOR UNSECURE	D.	10/04/2018	IN-KIND TRANSFER		339,753	355,000	
455780-CE-4	Indonesia Government Int-SENIOR UNSECURE	D.	10/04/2018	IN-KIND TRANSFER		181,254	200,000	
46513Y-JJ-8	Israel Government Intern-SENIOR UNSECURE	D.	01/10/2018	CITIGROUP GLOBAL MAR		7,927,840	8,000,000	
698299-AD-6	REPUBLIC OF PANAMA-NOTE	D.	10/04/2018	IN-KIND TRANSFER		255,835	190,000	
698299-AK-0	REPUBLIC OF PANAMA-SR UNSECURED	D.	10/04/2018	VARIOUS		31,326,297	22,218,000	421,094
698299-BH-6	Panama Government Intern-SENIOR UNSECURE	D.	10/18/2018	VARIOUS		10,010,000	10,240,000	3,375
715638-AP-7	REPUBLIC OF PERU-SENIOR UNSECURED BOND	D.	10/04/2018	IN-KIND TRANSFER		197,315	134,000	
715638-BM-3	REPUBLIC OF PERU-SENIOR UNSECURED BOND	D.	10/04/2018	IN-KIND TRANSFER		683,850	582,000	
715638-BU-5	Peruvian Government Inte-SENIOR UNSECURE	D.	10/04/2018	IN-KIND TRANSFER		291,068	283,000	
718286-BG-1	REPUBLIC OF PHILIPPINES-SR UNSECURED	D.	10/04/2018	VARIOUS		903,780	725,000	2,147
74727P-AX-9	Qatar Government Interna-SENIOR UNSECURE	D.	04/12/2018	DEUTSCHE BANK SECURI		6,977,110	7,000,000	
760942-BA-9	REPUBLICA ORIENT URUGUAY-UNSECURED BOND	D.	10/04/2018	VARIOUS		974,744	960,000	744
760942-BB-7	REPUBLICA ORIENT URUGUAY-SR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		710,245	700,000	
760942-BD-3	Uruguay Government Inter-SENIOR UNSECURE	D.	10/04/2018	IN-KIND TRANSFER		118,920	120,000	
900123-OR-9	Republic of Turkey-SENIOR UNSECURED	D.	10/16/2018	DTCYID		989,170	1,000,000	
91086Q-AS-7	UNITED MEXICAN STATES-SENIOR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		240,250	200,000	
91086Q-AV-0	UNITED MEXICAN STATES-SENIOR UNSECURED B	D.	10/04/2018	IN-KIND TRANSFER		1,549,210	1,402,000	
91086Q-AZ-1	UNITED MEXICAN STATES-SENIOR UNSECURED B	D.	07/19/2018	VARIOUS		76,027,350	76,000,000	1,030,975
91086Q-BB-3	UNITED MEXICAN STATES-SENIOR UNSECURED N	D.	10/04/2018	IN-KIND TRANSFER		1,019,799	1,078,000	
91086Q-BE-7	UNITED MEXICAN STATES-SR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		1,503,758	1,424,000	
91086Q-BF-4	UNITED MEXICAN STATES-SR UNSECURED	D.	10/04/2018	VARIOUS		10,425,650	11,218,000	19,323
91087B-AC-4	MEXICO GOVERNMENT INTERN-SENIOR UNSECURE	D.	12/17/2018	VARIOUS		1,660,313	1,700,000	4,288
91087B-AD-2	Mexico Government Intern-SENIOR UNSECURE	D.	10/04/2018	IN-KIND TRANSFER		236,000	250,000	
91087B-AE-0	Mexico Government Intern-SENIOR UNSECURE	D.	01/04/2018	BANK OF AMERICA CORP		3,966,909	3,984,000	
917288-BA-9	REPUBLICA ORIENT URUGUAY-SENIOR UNSECURE	D.	06/14/2018	VARIOUS		13,012,500	10,000,000	316,094
000000-00-0	REPUBLIC OF INDONESIA-SENIOR UNSECURED	B.	09/18/2018	VARIOUS		5,865,582	5,836,401	21,865
A06168-83-7	Macedonia Government Int-SENIOR UNSECURE	B.	01/11/2018	CITIGROUP		14,102,033	14,325,216	
A06543-17-0	Republic of Albania-SENIOR UNSECURED	B.	10/02/2018	CITIGROUP		6,977,897	6,999,245	
M88269-UP-4	Turkey Government Intern-SENIOR UNSECURE	B.	01/09/2018	BANK OF AMERICA CORP		2,834,833	2,754,940	51,759

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9	
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends	
P1910W-PU-7	Provincia de Buenos Aires-SENIOR UNSECURE	B.....	10/16/2018	VARIOUS		162,265	193,353	7,659	
P28714-AQ-9	Colombia Government Inte-SENIOR UNSECURE	B.....	12/14/2018	VARIOUS		61,354,238	54,043,706	1,052,040	
P87324-BP-6	Peruvian Government Inte-SENIOR UNSECURE	B.....	12/17/2018	VARIOUS		11,135,590	10,217,698	248,397	
UV3545-01-8	Indonesia Government Int-SENIOR UNSECURE	B.....	12/14/2018	VARIOUS		22,522,109	21,130,767	189,799	
X5424X-CA-4	Russian Foreign Bond - E-SENIOR UNSECURE	D.....	03/16/2018	VTB CAPITAL PLC, LON		7,633,314	7,800,000		
X55005-UE-9	Ukraine Government Inter-SENIOR UNSECURE	D.....	10/16/2018	VARIOUS		632,486	627,000	6,074	
X55005-UF-6	Ukraine Government Inter-SENIOR UNSECURE	D.....	03/26/2018	JP MORGAN SECURITIES		627,600	600,000	3,488	
X5500B-UN-6	Croatia Government Inter-SENIOR UNSECURE	B.....	06/06/2018	JP MORGAN CHASE		15,976,297	16,252,254		
X7360W-AH-5	Romanian Government Inte-SENIOR UNSECURE	B.....	07/27/2018	VARIOUS		96,158,003	34,935,905	942,051	
X7360W-AS-1	Romanian Government Inte-SENIOR UNSECURE	B.....	06/21/2018	VARIOUS		28,914,660	30,002,006	208,069	
X7360W-AX-0	Romanian Government Inte-SENIOR UNSECURE	B.....	10/04/2018	BNP PARIBAS		17,062,474	17,313,517		
X93622-FK-3	Hungary Government Inter-SENIOR UNSECURE	B.....	09/25/2018	DEUTSCHE BANK AG		20,884,969	21,176,994		
Y20721-BV-0	Indonesia Government Int-UNSECURED	B.....	11/21/2018	VARIOUS		33,760,950	34,030,364	58,088	
Y20722-AR-8	REPUBLIC OF INDONESIA-SENIOR UNSECURED	B.....	12/14/2018	VARIOUS		8,085,304	7,427,480	142,699	
Y7177R-AL-9	REPUBLIC OF AZERBAIJAN I-SENIOR UNSECURE	D.....	01/01/2018	EXCHANGE OFFER		82	2,000		
Y7276L-DH-8	Kazakhstan Government In-SENIOR UNSECURE	B.....	11/14/2018	VARIOUS		90,795,357	90,649,103	5,046	
1099999. Subtotal - Bonds - All Other Governments							596,538,744	571,075,949	5,221,253
13063A-5G-5	State of California-GENERAL OBLIGATION U		10/04/2018	IN-KIND TRANSFER		2,566,295	1,775,000		
13063A-7D-0	CALIFORNIA ST-GENERAL OBLIGATION UNLTD		10/04/2018	IN-KIND TRANSFER		622,719	450,000		
13063D-GD-4	State of California-GENERAL OBLIGATION U		06/21/2018	JP MORGAN SECURITIES		7,947,884	7,610,000	57,075	
181059-E4-4	Clark County School Dist-GENERAL OBLIGAT		12/12/2018	DTCYID		9,016,560	8,000,000	47,778	
452151-LF-8	State of Illinois-GENERAL OBLIGATION UNL		04/12/2018	BANK OF AMERICA CORP		117,374	125,000	2,391	
57582P-UE-8	Commonwealth of Massachu-GENERAL OBLIGAT		10/04/2018	IN-KIND TRANSFER		234,396	200,000		
70914P-M7-4	Commonwealth of Pennsylv-GENERAL OBLIGAT		05/16/2018	DTCYID		5,084,850	5,000,000		
882722-KF-7	State of Texas-GENERAL OBLIGATION UNLTD		10/04/2018	IN-KIND TRANSFER		263,004	215,000		
937440-FC-4	Washington Clackamas & Y-GENERAL OBLIGAT		01/31/2018	DTCYID		2,006,150	5,000,000		
93974C-PM-6	WASHINGTON ST-GENERAL OBLIGATION UNLTD		08/01/2018	IN-KIND TRANSFER		726,774	600,000		
93974C-RF-9	State of Washington-GENERAL OBLIGATION U		10/04/2018	IN-KIND TRANSFER		287,139	260,000		
1799999. Subtotal - Bonds - U.S. States, Territories and Possessions							28,873,145	29,235,000	107,244
406792-7D-7	Town of Hamden CT-GENERAL OBLIGATION UNL		07/18/2018	DTCYID		711,819	625,000		
442331-3K-8	City of Houston TX-GENERAL OBLIGATION LT		12/19/2018	RAYMOND JAMES		4,763,716	4,715,000	24,718	
54438C-PA-4	LOS ANGELES CA CMNTY CLG-BUILD AMERICA G		10/04/2018	IN-KIND TRANSFER		215,126	150,000		
544646-XZ-0	LOS ANGELES CA UNIF SCH-BUILD AMERICA GE		10/04/2018	IN-KIND TRANSFER		117,146	100,000		
544646-ZR-6	LOS ANGELES CA UNIF SCH-BUILD AMERICA GE		10/04/2018	IN-KIND TRANSFER		254,220	200,000		
64966H-YM-6	City of New York NY-GENERAL OBLIGATION U		10/04/2018	IN-KIND TRANSFER		438,350	370,000		
64966M-YS-2	City of New York NY-GENERAL OBLIGATION U		07/25/2018	JP MORGAN SECURITIES		11,500,547	11,845,000	117,048	
717883-TH-5	School District of Phila-GENERAL OBLIGAT		09/11/2018	DTCYID		1,769,413	1,595,000	2,658	
2499999. Subtotal - Bonds - U.S. Political Subdivisions of States, Territories and Possessions							19,770,337	19,600,000	144,424
072024-ND-0	BAY AREA CA TOLL AUTH TO-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		632,352	470,000		
072024-NU-2	BAY AREA CA TOLL AUTH TO-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		265,646	200,000		
072024-PY-2	Bay Area Toll Authority-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		285,764	200,000		
091156-MR-7	Birmingham-Jefferson Civ-SPECIAL TAX		07/18/2018	VARIOUS		2,820,300	2,500,000		
113807-BP-5	Brooklyn Arena Local Dev-REVENUE BONDS		02/09/2018	DTCYID		3,354,300	3,000,000	11,667	
121342-PM-5	Burke County Development-REVENUE BONDS		01/26/2018	DTCYID		5,000,000	5,000,000		
130486-BD-4	California Municipal Fin-REVENUE BONDS		06/29/2018	DTCYID		245,000	245,000		
249182-LV-6	City & County of Denver -REVENUE BONDS		09/19/2018	VARIOUS		10,226,598	9,250,000	16,771	
25477G-CY-9	District of Columbia-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		205,450	180,000		
3133XV-5J-6	Federal Home Loan Banks-UNSECURED		10/04/2018	IN-KIND TRANSFER		283,990	250,000		
3134A4-AA-2	FREDDIE MAC-UNSECURED		10/04/2018	IN-KIND TRANSFER		446,466	336,000		
31359M-EU-3	FANNIE MAE-UNSECURED		10/04/2018	IN-KIND TRANSFER		1,251,021	1,000,000		
31359M-FP-3	Federal National Mortgage-UNSECURED		10/04/2018	IN-KIND TRANSFER		805,044	590,000		
31359M-GK-3	FANNIE MAE-UNSECURED		10/04/2018	IN-KIND TRANSFER		524,594	400,000		
3138MB-KA-3	FANNIE MAE AP7488		08/23/2018	DTCYID		126,135	125,444	329	
3140FO-HF-4	FANNIE MAE-POOL #BC4729		01/10/2018	DTCYID		53,793	54,072	50	
3140O9-E2-5	Fannie Mae Pool-POOL #CA1952		06/15/2018	WELLS FARGO		51,887,557	49,787,161	68,457	
340618-CW-5	Florida Development Fina-REVENUE BONDS		06/06/2018	DTCYID		53,273	50,000		
340618-CX-3	Florida Development Fina-REVENUE BONDS		06/06/2018	DTCYID		174,184	165,000		
340618-CY-1	Florida Development Fina-REVENUE BONDS		06/06/2018	DTCYID		260,000	260,000		
355697-CH-4	County of Frederick MD-REVENUE BONDS		01/01/2018	VARIOUS		(540,000)	(540,000)		
359900-BK-6	Fulton County Development-REVENUE BONDS		11/15/2018	DTCYID		4,273,760	4,000,000	76,667	
377450-AK-7	Glen Cove Local Economic-REVENUE BONDS		06/26/2018	DTCYID		285,000	285,000		
396649-EV-3	Greenville Health & Edu-REVENUE BONDS		05/10/2018	DTCYID		4,501,760	4,000,000		
45204E-C7-1	Illinois Finance Authori-REVENUE BONDS		07/31/2018	RBC CAPITAL MARKETS		1,832,170	1,900,000	36,328	
45204E-D4-7	Illinois Finance Authori-REVENUE BONDS		02/26/2018	JP MORGAN SECURITIES		30,393,984	30,600,000	41,543	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
452252-LX-5	Illinois State Toll High-REVENUE BONDS		10/09/2018	MORGAN STANLEY AND C		3,242,970	3,000,000	41,667
50376F-AT-4	La Paz County Industrial-REVENUE BONDS		08/01/2018	DTCYID		300,000	300,000	
52349E-DR-8	Lee County Industrial De-REVENUE BONDS		01/01/2018	DTCYID		(699,170)	(715,000)	
542691-AT-7	Long Island Power Author-REVENUE BONDS		12/18/2018	DTCYID		1,675,725	1,500,000	22,708
547804-AE-4	Lower Alabama Gas Distri-REVENUE BONDS		06/07/2018	DTCYID		11,099,960	9,145,000	171,318
576000-KV-4	Massachusetts School Bui-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		117,975	100,000	
592041-IH-6	Metropolitan Government -REVENUE BONDS		11/08/2018	DTCYID		2,337,434	2,200,000	40,333
63166L-DM-0	Nassau County Local Econ-REVENUE BONDS		04/02/2018	DTCYID		210,000	210,000	
64578E-KB-2	New Jersey Economic Deve-REVENUE BONDS		01/05/2018	DTCYID		1,371,083	1,265,000	
646136-2T-7	New Jersey Transportatio-REVENUE BONDS		09/14/2018	DTCYID		1,323,090	3,000,000	
646136-3L-3	New Jersey Transportatio-REVENUE BONDS		07/18/2018	VARIOUS		3,716,685	3,340,000	
646136-3N-9	New Jersey Transportatio-REVENUE BONDS		07/18/2018	VARIOUS		521,291	470,000	
646136-3Q-2	New Jersey Transportatio-REVENUE BONDS		07/18/2018	VARIOUS		487,054	440,000	
64971M-4P-4	NEW YORK CITY NY TRANSIT-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		174,179	150,000	
64971M-T4-4	NEW YORK CITY NY TRANSIT-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		433,947	395,000	
64971Q-V2-6	New York City Transition-REVENUE BONDS		01/04/2018	DTCYID		2,000,000	2,000,000	150
64972F-Y3-4	NEW YORK CITY NY MUNI WT-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		250,240	200,000	
649902-ZQ-9	NEW YORK ST DORM AUTH REVENUE BOND		10/04/2018	IN-KIND TRANSFER		287,528	250,000	
64990F-GK-4	New York State Dormitory-REVENUE BONDS		12/18/2018	DTCYID		1,682,115	1,500,000	26,042
650035-TD-0	NEW YORK ST URBAN DEV CO-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		114,216	100,000	
650116-CJ-3	New York Transportation -REVENUE BONDS		05/11/2018	DTCYID		2,281,940	2,000,000	3,333
65830T-AH-8	North Carolina Turnpike -REVENUE BONDS		05/24/2018	EXCHANGE OFFER		269,186	260,000	
65830T-AJ-4	North Carolina Turnpike -REVENUE BONDS		05/24/2018	EXCHANGE OFFER		196,713	190,000	
66285W-FB-7	N TX TOLLWAY AUTH-BUILD AMERICA REVENUE		10/04/2018	IN-KIND TRANSFER		663,082	476,000	
67766W-QG-0	OHIO ST WTR DEV AUTH REVENUE BOND		10/04/2018	IN-KIND TRANSFER		267,130	250,000	
69671T-CQ-0	PALMDALE CA ELEM SCH DIST SPL TAX REVENU		04/12/2018	DTCYID		2,604,603	2,100,000	35,097
709224-WG-8	Pennsylvania Turnpike Co-REVENUE BONDS		09/07/2018	MORGAN STANLEY AND C		5,422,250	5,000,000	69,444
709224-ZW-2	Pennsylvania Turnpike Co-REVENUE BONDS		02/13/2018	DTCYID		3,349,170	3,000,000	31,250
73358W-EK-6	PORT AUTH OF NEW YORK & -REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		359,733	325,000	
73358W-JA-3	PORT AUTH OF NEW YORK & -REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		3,174,172	3,040,000	
74526Q-PQ-9	PUERTO RICO ELECTRIC POW-REVENUE BONDS		01/01/2018	DTCYID				(41,563)
75157T-AA-7	RAMPART RANGE METROPOLIT-REVENUE BONDS		03/05/2018	DTCYID		2,263,180	2,000,000	36,944
79467B-AR-6	Sales Tax Securitization-REVENUE BONDS		09/19/2018	BARCLAYS CAPITAL INC		722,640	800,000	6,377
79467B-BN-4	Sales Tax Securitization-REVENUE BONDS		09/14/2018	GOLDMAN		1,240,880	1,350,000	11,030
796253-T9-3	City of San Antonio TX E-REVENUE BONDS		08/01/2018	IN-KIND TRANSFER		416,523	325,000	
79741T-AR-5	SAN DIEGO CNTY CA WTR AU-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		468,370	360,000	
79765R-SV-2	SAN FRANCISCO CITY & CNTY CA-BUILD AMERI		10/04/2018	IN-KIND TRANSFER		301,665	250,000	
79765R-TL-3	SAN FRANCISCO CITY & CNTY CA-BUILD AMERI		08/01/2018	IN-KIND TRANSFER		928,980	650,000	
87638R-GY-7	Tarrant County Cultural -REVENUE BONDS		10/03/2018	DTCYID		3,148,650	3,000,000	58,333
88283L-HJ-3	TEXAS ST TRANSPRTN COMM-BUILD AMERICA RE		10/04/2018	IN-KIND TRANSFER		676,718	600,000	
913366-JP-6	Regents of the Universit-REVENUE BONDS		01/01/2018	EXCHANGE OFFER		3,967,772	3,895,000	
913366-JX-9	Regents of the Universit-REVENUE BONDS		01/01/2018	EXCHANGE OFFER		1,125,645	1,105,000	
91412F-7Y-7	UNIV OF CALIFORNIA-BUILD AMERICA REVENUE		08/01/2018	IN-KIND TRANSFER		1,359,772	1,110,000	
915137-SR-0	University of Texas Syst-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER		216,824	200,000	
915217-IHX-7	University of Virginia-REVENUE BONDS		07/27/2018	VARIOUS		18,062,002	18,790,000	301,248
928172-V6-9	Virginia Public Building-REVENUE BONDS		01/01/2018	EXCHANGE OFFER		266,393	269,999	
928172-V7-7	Virginia Public Building-REVENUE BONDS		01/01/2018	EXCHANGE OFFER		8,317,527	8,430,001	
97712D-SJ-6	Wisconsin Health & Educa-REVENUE BONDS		02/22/2018	DTCYID		675,863	625,000	4,774
97712D-SK-3	WISCONSIN ST HLTH & EDUC-REVENUE BONDS		02/22/2018	DTCYID		1,665,832	1,550,000	11,840
3199999	Subtotal - Bonds - U.S. Special Revenues					214,707,768	205,108,677	1,082,137
000366-AA-2	AASET 2017-1 TRUST-SERIES 17-1A CLASS A		11/27/2018	BANK OF AMERICA CORP		3,395,675	3,438,659	4,926
00037B-AC-6	ABB FINANCE USA INC-SENIOR UNSECURED		06/25/2018	BARCLAYS CAPITAL INC		8,895,924	8,700,000	51,807
00038A-AB-9	ABB TREASURY CENTER USA-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		401,887	395,000	
001055-AR-3	Aflac Inc-SENIOR UNSECURED		07/11/2018	WELLS FARGO		9,579,300	10,000,000	97,778
001055-AY-8	Aflac Inc-SENIOR UNSECURED		12/20/2018	VARIOUS		17,097,400	17,000,000	35,625
00108W-AF-7	AEP Texas Inc-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		149,247	160,000	
00108W-AG-5	AEP Texas Inc-SENIOR UNSECURED		06/13/2018	BARCLAYS CAPITAL INC		5,944,718	5,980,000	18,372
00115A-AJ-8	AEP Transmission Co LLC-SENIOR UNSECURED		09/05/2018	GOLDMAN		10,098,182	10,100,000	
00116*-AA-9	AFC-Dell Holding Corp. Senior Sub Note		11/16/2018	VARIOUS		1,301,281	1,301,406	
00122B-AA-9	AES Southland Energy LLC Senior Secured		11/30/2018	DIRECT		25,653,713	25,653,713	
00169B-AB-1	AM Conservation Holding Corp.		09/30/2018	PIK BOND		57,443	24,997	
00169B-AC-9	AM Conservation Holding Incremental Sen		06/30/2018	PIK BOND		4,148	4,146	
00206R-FM-9	AT&T Inc-SENIOR UNSECURED		01/01/2018	EXCHANGE OFFER		266,198	715	
00206R-GQ-9	AT&T Inc-SENIOR UNSECURED		12/17/2018	MORGAN		194,650	205,000	3,036
002824-BF-6	ABBOTT LABORATORIES-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		278,947	280,000	

E13.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
002824-BG-4	ABBOTT LABORATORIES-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		306,896	285,000	
002824-BH-2	ABBOTT LABORATORIES-SENIOR UNSECURED		10/04/2018	VARIOUS		1,689,949	1,537,000	16,880
00287Y-AM-1	AbbVie Inc-SENIOR UNSECURED BOND		04/10/2018	GOLDMAN		198,362	200,000	3,813
00287Y-AR-0	ABBVIE INC-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		1,278,433	1,295,000	
00287Y-AS-8	AbbVie Inc-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		241,612	245,000	
00287Y-AW-9	ABBVIE INC-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		268,117	280,000	
00440E-AO-0	ACE INA HOLDINGS-SR UNSECURED		10/04/2018	VARIOUS		5,853,378	5,850,000	42,306
00440E-AV-9	ACE INA HOLDINGS-SR UNSECURED		06/26/2018	WELLS FARGO		16,468,750	17,000,000	87,007
00440E-AW-7	ACE INA HOLDINGS-SR UNSECURED		07/27/2018	VARIOUS		15,687,137	15,150,000	137,533
006346-AS-9	ADAMS OUTDOOR ADV SECD REV NT SER 2018-1		10/19/2018	DEUTSCHE BANK SECURI		18,919,431	18,920,000	
007036-GB-6	ADJUSTABLE RATE MORTGAGE-SERIES 2005-1 C		08/01/2018	PAYUP		201,861	1,037	
007589-AA-2	Advocate Health & Hospit-SENIOR UNSECURE		08/07/2018	JP MORGAN SECURITIES		65,000	65,000	
007589-AB-0	Advocate Health & Hospit-SENIOR UNSECURE		08/07/2018	JP MORGAN SECURITIES		8,100,000	8,100,000	
008252-AM-0	Affiliated Managers Grou-SENIOR UNSECURE		06/25/2018	KEY CAPITAL MARKETS		1,125,752	1,105,000	17,220
008252-AN-8	Affiliated Managers Grou-SR UNSECURED		07/16/2018	KEY CAPITAL MARKETS		2,622,240	2,700,000	43,837
009098-A*-5	Air Cargo Logistics Ft W Lease-Collatera		12/07/2018	DIRECT		6,938,750	6,938,750	
010392-FS-2	Alabama Power Co-SENIOR UNSECURED		06/21/2018	MORGAN		26,131,735	26,330,000	
02005N-BG-4	Ally Financial Inc-SENIOR UNSECURED		12/18/2018	NOMURA SECURITIES IN		396,480	400,000	3,069
022058-AA-5	Altorfer Inc. Senior Note Series 2018-A		12/17/2018	DIRECT		3,600,000	3,600,000	
022058-AB-3	Altorfer Inc. Senior Note Series 2018-B		12/17/2018	DIRECT		12,300,000	12,300,000	
023135-AO-9	AMAZON.COM INC-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,879,696	1,688,000	
023135-BF-2	Amazon.com Inc-SENIOR UNSECURED		06/11/2018	EXCHANGE OFFER		254,602	250,000	
023135-BJ-4	Amazon.com Inc-SENIOR UNSECURED		07/27/2018	VARIOUS		17,848,120	18,250,000	242,499
023135-BM-7	Amazon.com Inc-SENIOR UNSECURED		07/12/2018	VARIOUS		45,353,096	45,296,000	639,483
02361D-AQ-3	Ameren Illinois Co-SECURED		08/01/2018	IN-KIND TRANSFER		323,781	325,000	
02361D-AR-1	Ameren Illinois Co-SECURED		07/09/2018	JEFFERIESLLC		9,975,420	10,500,000	43,167
02361D-AT-7	Ameren Illinois Co-SECURED		12/21/2018	VARIOUS		17,305,690	17,000,000	25,625
02376*-AA-0	American Airlines Group Senior Secured		05/22/2018	DIRECT		28,900,000	28,900,000	
02377*-AA-5	American Airlines Group Senior Secured		05/22/2018	DIRECT		40,099,000	40,099,000	
02377*-AA-7	American Airlines Group Series 2011-1B(R)		10/18/2018	DIRECT		8,754,000	8,754,000	
02377A-AA-6	AMER AIRLN 14-1 A PTT-SECURED NOTE		08/20/2018	DTCYID		86,421	86,833	769
02378*-AA-8	American Airlines Group Series 2017-2C P		07/24/2018	VARIOUS		38,000,000	38,000,000	
02378L-AA-1	American Airlines Group Series 2017-1C P		07/24/2018	VARIOUS		24,000,000	24,000,000	
025644-AA-3	Ascent Resources - Utica LLC Subordinate		01/01/2018	PIK BOND		258,606	273,168	
025816-BD-0	American Express Co-SENIOR UNSECURED BON		11/27/2018	DTCYID		38,319	40,000	521
0258M0-EJ-4	American Express Credit -SENIOR UNSECURE		10/22/2018	WELLS FARGO		494,669	494,000	3,014
026874-DA-2	AMERICAN INTL GROUP-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		2,368,161	2,501,000	
026874-DK-0	American International G-SENIOR UNSECURE		08/01/2018	VARIOUS		7,722,063	7,843,000	76,219
026874-DL-8	American International G-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		1,797,660	1,830,000	
03027X-AJ-9	AMERICAN TOWER CORP SR NT		07/27/2018	CITIGROUP GLOBAL MAR		50,107	50,000	1,014
03040W-AJ-9	AMERICAN WATER CAPITAL C-SR UNSECURED		06/06/2018	MORGAN		6,543,996	6,639,000	60,821
03040W-AR-6	American Water Capital C-SENIOR UNSECURE		06/07/2018	VARIOUS		13,225,595	14,175,000	142,760
03040W-AT-2	American Water Capital C-SENIOR UNSECURE		08/06/2018	MIZUHO SECURITIES		10,094,546	10,100,000	
03063F-AA-2	Americold Realty Trust Senior Unsecured		12/04/2018	BOFAMILSEC		34,200,000	34,200,000	
03073E-AQ-8	AmerisourceBergen Corp-SENIOR UNSECURED		07/13/2018	U. S. BANCORP		5,247,494	5,792,000	22,198
031100-N*-7	AMETEK, Inc. Senior Secured Series T		12/13/2018	BOFAMILSEC		28,442,500	28,442,511	
031162-BZ-2	AMGEN INC-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		217,252	220,000	
031162-CF-5	AMGEN INC-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		901,942	885,000	
03350W-AA-7	Andeavor Logistics LP / -SENIOR UNSECURE		09/21/2018	TORONTO DOMINION SEC		590,340	600,000	6,650
03350W-AB-5	Andeavor Logistics LP / -SENIOR UNSECURE		01/31/2018	BRILEY		4,678,300	4,410,000	40,768
03522A-AD-2	Anheuser-Busch Cos LLC /-SENIOR UNSECURE		12/10/2018	VARIOUS		38,703,783	38,790,000	379,932
03522A-AE-0	Anheuser-Busch Cos LLC /-SENIOR UNSECURE		11/13/2018	EXCHANGE OFFER		5,708,089	5,225,000	
03522A-AF-7	Anheuser-Busch Cos LLC /-SENIOR UNSECURE		11/13/2018	EXCHANGE OFFER		93,669,284	87,370,000	
03523T-BJ-6	ANHEUSER-BUSCH INBEV WOR-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		998,430	730,000	
03523T-BT-4	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE		01/01/2018	EXCHANGE OFFER		922,785	948,000	
035240-AH-3	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE		01/01/2018	EXCHANGE OFFER		922,698	948,000	
035240-AM-2	Anheuser-Busch InBev Wor-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		706,726	710,000	
035240-AN-0	Anheuser-Busch InBev Wor-SENIOR UNSECURE		10/04/2018	VARIOUS		1,578,928	1,620,000	
035240-AP-5	Anheuser-Busch InBev Wor-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		188,397	200,000	
03666H-AA-9	Antares Holdings LP-SENIOR UNSECURED		07/19/2018	DEUTSCHE BANK SECURI		25,373,731	25,375,000	
036752-AB-9	Anthem Inc-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		319,831	335,000	
036752-AF-0	Anthem Inc-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		321,178	330,000	
036752-AH-6	Anthem Inc-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		370,127	375,000	
037389-AU-7	AOJ CORP-SENIOR UNSECURED		07/19/2018	CREDIT SUISSE SECURI		4,043,266	3,302,000	64,779
037411-AI-5	Apache Corp-SENIOR UNSECURED NOTE		10/04/2018	IN-KIND TRANSFER		339,051	347,000	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
037411-AY-1	Apache Corp-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		95,872	95,000	
037411-BA-2	Apache Corp-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		101,086	105,000	
037411-BC-8	Apache Corp-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		502,014	565,000	
037735-CV-7	APPALACHIAN POWER CO-SR UNSECURED		06/13/2018	BARCLAYS CAPITAL INC		9,409,039	9,131,000	15,802
037833-BW-9	APPLE INC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		106,241	100,000	
037833-BX-7	APPLE INC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,152,606	1,076,000	
037833-BY-5	APPLE INC-SENIOR UNSECURED		12/17/2018	GOLDMAN		194,858	200,000	2,094
037833-DG-2	Apple Inc-SENIOR UNSECURED		07/20/2018	VARIOUS		25,248,700	26,600,000	154,031
038222-AG-0	APPLIED MATERIALS INC-SENIOR UNSECURED N		06/01/2018	GOLDMAN		24,205,787	20,000,000	543,595
038222-AM-7	APPLIED MATERIALS INC-SENIOR UNSECURED		12/20/2018	STIFEL NICOLAUS		4,958,700	5,000,000	50,146
038522-AQ-1	Aramark Services Inc-SENIOR UNSECURED		01/10/2018	GOLDMAN		2,220,000	2,220,000	
039483-BH-4	Archer-Daniels-Midland C-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		929,580	984,000	
039483-BM-3	ARCHER-DANIELS-MIDLAND C-SENIOR UNSECURE		06/06/2018	VARIOUS		10,392,037	11,030,000	88,582
04010L-AP-8	ARES CAPITAL CORP-UNSECURED NOTE		01/10/2018	WELLS FARGO		178,000	175,000	3,334
042735-BG-4	ARROW ELECTRONICS INC-SENIOR UNSECURED		07/27/2018	GOLDMAN		60,932	65,000	839
04548K-AA-6	AASET 2018-2 US LTD-AASET 2018-2A A		11/01/2018	GOLDMAN		15,328,516	15,329,000	
04685A-ZB-6	ATHENE GLOBAL FUNDING-SECURED		05/02/2018	KEY CAPITAL MARKETS		201,684	200,000	2,192
04877Q-AB-0	Atlantic Oklahoma Wind, Senior Secured N		12/21/2018	DIRECT		26,918,000	26,918,000	
04956Q-AP-0	Atmos Energy Corp-SENIOR UNSECURED		10/01/2018	JP MORGAN SECURITIES		28,755,211	28,900,000	
05205F-AD-0	Aurora Parts & Accessori Junior Sub Note		08/30/2018	DIRECT		27,034	27,034	
05359A-AJ-2	Aventura Mall Trust-SERIES 2018 AVM CLAS		06/19/2018	JP MORGAN SECURITIES		28,232,496	28,800,000	92,116
05369A-AA-9	Aviation Capital Group L-SENIOR UNSECURE		07/19/2018	VARIOUS		28,942,386	31,144,000	153,168
05377R-DE-1	Avis Budget Rental Car Funding - Series		10/17/2018	BARCLAYS CAPITAL INC		3,123,930	3,125,000	
053807-AT-0	Avnet Inc-SENIOR UNSECURED		07/27/2018	MILLENNIUM ADVISORS		80,436	80,000	375
054561-AK-1	AXA Equitable Holdings I-SENIOR UNSECURE		05/18/2018	WELLS FARGO		16,846,810	17,800,000	79,111
05491V-AE-6	BBCMS 2018-CHRS Mortgage-BBCMS 2018-CHRS		07/26/2018	BARCLAYS CAPITAL INC		5,626,533	5,600,000	5,486
05491V-AG-1	BBCMS 2018-CHRS Mortgage-BBCMS 2018-CHRS		07/26/2018	BARCLAYS CAPITAL INC		17,315,341	17,510,000	17,155
05491V-AJ-5	BBCMS 2018-CHRS Mortgage-BBCMS 2018-CHRS		07/26/2018	BARCLAYS CAPITAL INC		13,340,114	13,760,000	13,481
05549G-AG-6	BHMS 2018-ATLS-BHMS 2018-ATLS B		07/13/2018	CITIGROUP GLOBAL MAR		35,000,000	35,000,000	
05580M-50-4	B. RILEY FINANCIAL INC-SENIOR UNSECURED		05/14/2018	BRILEY		10,000,000	400,000	
05580M-60-3	B RILEY FINANCIAL INC. - SENIOR UNSECURE		09/06/2018	BRILEY		13,200,000	528,000	
055878-AA-6	BEI Precision Systems & Senior Sub Note		09/30/2018	PIK BOND		22,429	22,685	
055888-AA-3	BCC Software, Inc. Senior Sub Note		09/30/2018	PIK BOND		11,671	11,901	
056059-AN-8	BX Trust-BX 2018-IND E		10/22/2018	CITIGROUP GLOBAL MAR		23,780,000	23,780,000	
05606#-AA-1	BIF III Holtwood LLC Senior Secured		02/15/2018	DIRECT		15,000,000	15,000,000	
05723K-AF-7	Baker Hughes a Ge Co LLC-SENIOR UNSECURE		02/05/2018	EXCHANGE OFFER		22,900,000	22,900,000	
059165-EK-2	Baltimore Gas & Electric-SENIOR UNSECURE		09/17/2018	CREDIT SUISSE SECURI		13,388,744	13,400,000	
06035R-AW-6	BANK 2018-BNK14-BANK 2018-BN14 C		09/18/2018	MORGAN		9,094,119	9,000,000	29,886
06050T-JZ-6	BANK OF AMERICA NA-SUBORDINATED		08/01/2018	IN-KIND TRANSFER		1,417,739	1,185,000	
06051G-FC-8	Bank of America Corp-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		102,366	95,000	
06051G-FQ-7	BANK OF AMERICA CORP-SUBORDINATED		10/04/2018	IN-KIND TRANSFER		350,492	350,000	
06051G-GA-1	BANK OF AMERICA CORP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		499,193	535,000	
06051G-GF-0	BANK OF AMERICA CORP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		77,899	80,000	
06051G-GV-5	Bank of America Corp-SENIOR UNSECURED		01/08/2018	EXCHANGE OFFER		2,033,944	2,127,000	
06051G-GW-3	Bank of America Corp-SENIOR UNSECURED		01/08/2018	EXCHANGE OFFER		2,568,766	2,576,000	
06051G-HA-0	Bank of America Corp-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		37,216	40,000	
06051G-HC-6	Bank of America Corp-SENIOR UNSECURED		05/30/2018	EXCHANGE OFFER		2,039,407	2,127,000	
06051G-HD-4	Bank of America Corp-SENIOR UNSECURED		08/01/2018	VARIOUS		2,712,074	2,728,000	
06051G-HG-7	Bank of America Corp-SENIOR UNSECURED		08/01/2018	VARIOUS		9,954,157	10,100,000	112,208
06406R-AF-4	Bank of New York Mellon -SENIOR UNSECURE		07/09/2018	VARIOUS		13,799,643	14,100,000	201,450
06406Y-AA-0	Bank of New York Mellon -SUBORDINATED		10/04/2018	IN-KIND TRANSFER		465,027	500,000	
06541K-BE-7	BANK 2017-BNK4-BANK 2018-BN12 B		05/15/2018	BANK OF AMERICA CORP		3,272,712	3,200,000	11,739
06541K-BF-4	BANK 2017-BNK4-BANK 2018-BN12 C		05/15/2018	BANK OF AMERICA CORP		2,270,116	2,300,000	8,437
06541X-AL-4	BANK 2017-BNK7-SERIES 2017-BNK7 CLASS C		10/22/2018	CANTOR		858,938	900,000	2,333
06849R-AG-7	BARRICK NA FINANCE LLC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		557,029	510,000	
06849R-AK-8	BARRICK NA FINANCE LLC-SR UNSECURED		12/20/2018	VARIOUS		13,837,627	12,627,000	153,183
07274N-AL-7	Bayer US Finance II LLC-SENIOR UNSECURED		06/18/2018	JP MORGAN SECURITIES		17,769,509	17,900,000	
07274N-AO-6	Bayer US Finance II LLC-SENIOR UNSECURED		12/19/2018	VARIOUS		22,263,887	22,620,000	119,167
07274N-AU-7	Bayer US Finance II LLC-SENIOR UNSECURED		07/16/2018	EXCHANGE OFFER		197,969	200,000	
07274N-AX-1	Bayer US Finance II LLC-SENIOR UNSECURED		07/16/2018	EXCHANGE OFFER		185,811	200,000	
07274N-AZ-6	Bayer US Finance II LLC-SENIOR UNSECURED		07/16/2018	EXCHANGE OFFER		140,306	133,000	
07274N-BA-0	Bayer US Finance II LLC-SENIOR UNSECURED		07/16/2018	EXCHANGE OFFER		9,782,366	9,680,000	
07274N-BC-6	Bayer US Finance II LLC-SENIOR UNSECURED		07/16/2018	EXCHANGE OFFER		28,094,980	26,329,000	
07274N-BD-4	Bayer US Finance II LLC-SENIOR UNSECURED		07/16/2018	EXCHANGE OFFER		828,515	1,055,000	
07274N-BF-9	Bayer US Finance II LLC-SENIOR UNSECURED		07/16/2018	EXCHANGE OFFER		2,585,520	2,670,000	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
07274N-BH-5	Bayer US Finance II LLC-SENIOR UNSECURED		10/04/2018	VARIOUS		4,713,696	5,070,000	
07325B-AG-3	BAYVIEW COMMERCIAL ASSET-SERIES 2006-4A		01/01/2018	PAYUP		8,769	(19,485)	
07385E-AA-6	BearCom Acquisition Corp Senior Sub Note		07/06/2018	DIRECT		6,691,782	6,691,782	
07386H-HI-4	BEAR STEARNS ALT-A TRUST-SERIES 2004-4 C		11/26/2018	PAYUP		90	909	
07386H-LU-3	BEAR STEARNS ALT-A TRUST-SERIES 2004-8 C		08/27/2018	PAYUP		(25,073)	428	
07389P-AY-6	BEAR STEARNS ASSET BACKE-SERIES 2006-AQ1		09/25/2018	PAYUP		(379)	(11)	
07400X-AB-4	BEAR STEARNS MORTGAGE FU-SERIES 2006-AC1		08/01/2018	PAYUP			777	
075887-BX-6	BECTON DICKINSON AND CO-SENIOR UNSECURED		07/27/2018	MORGAN		49,958	50,000	357
075887-CF-4	Becton Dickinson and Co-SENIOR UNSECURED		02/27/2018	BARCLAYS CAPITAL INC		275,000	275,000	
084664-BU-4	BERKSHIRE HATHAWAY FIN-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		238,900	230,000	
084664-BV-2	BERKSHIRE HATHAWAY FIN-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		326,013	320,000	
084664-CO-2	Berkshire Hathaway Finan-SENIOR UNSECURE		08/07/2018	BANK OF AMERICA CORP		23,385,830	23,505,000	
08621E-AA-8	Berwind Consolidated Hol Senior Unsecure		12/12/2018	DIRECT		47,200,000	47,200,000	
09256B-AG-2	BLACKSTONE HOLDINGS FINA-SENIOR UNSECURE		07/13/2018	JEFFERIESLLC		8,391,676	8,090,000	35,956
09256B-AH-0	BLACKSTONE HOLDINGS FINA-SENIOR UNSECURE		06/28/2018	STIFEL NICOLAUS		9,731,400	10,000,000	206,431
097023-AX-3	BOEING CO/THE-SENIOR UNSECURED NOTE		08/01/2018	VARIOUS		8,480,883	6,105,000	100,811
097023-BA-2	BOEING CO/THE-SENIOR UNSECURED NOTE		06/18/2018	VARIOUS		12,983,879	10,275,000	193,398
097023-BV-6	Boeing Co/The-SENIOR UNSECURED		06/25/2018	BAIRD		7,072,599	7,500,000	86,485
097023-BX-2	Boeing Co/The-SENIOR UNSECURED		07/11/2018	CREDIT SUISSE SECURI		3,130,617	3,210,000	40,571
097023-BY-0	Boeing Co/The-SENIOR UNSECURED		07/16/2018	VARIOUS		7,482,243	7,785,000	102,745
097023-BZ-7	Boeing Co/The-SENIOR UNSECURED		06/28/2018	BARCLAYS CAPITAL INC		17,298,192	18,400,000	235,625
09951*-AJ-9	Boral Industries, Inc. Senior Unsecure		04/16/2018	JP MORGAN SECURITIES		14,600,000	14,600,000	
100743-AJ-2	BOSTON GAS COMPANY-SENIOR UNSECURED NOTE		10/04/2018	IN-KIND TRANSFER		448,022	450,000	
10334#-AC-6	Boyd Watterson GSA Fund, Senior Notes Se		04/10/2018	KEYBANC CAPITAL MARK		43,400,000	43,400,000	
10334#-AE-2	Boyd Watterson GSA Fund, Senior Notes Se		04/10/2018	KEYBANC CAPITAL MARK		18,400,000	18,400,000	
10510K-AC-1	BRAMBLES USA INC-SR UNSECURED		07/10/2018	VARIOUS		9,101,242	9,080,000	59,747
110122-AU-2	BRISTOL-MYERS SQUIBB CO-SR UNSECURED		06/27/2018	VARIOUS		20,087,857	22,715,000	275,864
110122-AX-6	Bristol-Myers Squibb Co-SR UNSECURED		07/13/2018	VARIOUS		20,355,238	18,951,000	252,080
11042T-AA-1	BRITISH AIRWAYS 2018-1 C-FIRST LIEN		06/28/2018	VARIOUS		31,848,891	31,850,000	80,188
11134#-AB-8	Broadstone Net Lease, In Senior Unsecure		09/13/2018	DIRECT		29,300,000	29,300,000	
11134L-AC-3	Broadcom Corp / Broadcom-SENIOR UNSECURE		03/29/2018	EXCHANGE OFFER		21,010,417	21,045,000	
115637-AL-4	Brown-Forman Corp-SENIOR UNSECURED		06/06/2018	JEFFERIESLLC		7,424,736	7,900,000	117,677
115637-AT-7	Brown-Forman Corp-SENIOR UNSECURED		10/04/2018	VARIOUS		31,250,328	31,415,000	169,229
118230-AG-4	Buckeye Partners LP-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		816,530	885,000	
120568-AI-0	BUNGE LTD FINANCE CORP-SR UNSECURED		07/27/2018	CITIGROUP GLOBAL MAR		55,023	55,000	358
120568-AX-8	BUNGE LTD FINANCE CORP-SENIOR UNSECURED		07/10/2018	VARIOUS		8,386,094	9,183,000	109,027
120568-AY-6	BUNGE LTD FINANCE CORP-SENIOR UNSECURED		08/08/2018	GOLDMAN		390,533	405,000	4,556
12189L-AI-1	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE		08/01/2018	VARIOUS		9,542,449	9,706,000	83,237
12189L-AZ-4	BURLINGTN NORTH SANTA FE-SENIOR UNSECURE		06/12/2018	U. S. BANCORP		4,129,966	4,360,000	62,820
12189L-BC-4	Burlington Northern Sant-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		210,321	210,000	
12189T-AZ-7	BURLINGTN NORTH SANTA FE-UNSECURED NOTE		08/01/2018	IN-KIND TRANSFER		1,154,082	930,000	
124857-AN-3	CBS CORP-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		400,889	430,000	
1248MP-AH-7	CREDIT-BASED ASSET SERVI-SERIES 2007-MIX1		10/01/2018	PAYUP		4,112	42,110	
12524E-AA-8	CED Wind Holdings, LLC Senior Secured No		09/28/2018	DIRECT		11,850,000	11,850,000	
12572Q-AH-8	CME Group Inc-SENIOR UNSECURED		06/28/2018	VARIOUS		56,730,691	56,700,000	26,491
12589E-BL-3	CMS ENERGY CORP-SENIOR UNSECURED BOND		07/31/2018	SCOTIA CAPITAL MARKE		3,509,514	3,400,000	54,154
12592K-BF-0	COMM MORTGAGE TRUST-SERIES 2014-UBS5 REI		12/06/2018	DEUTSCHE BANK SECURI		5,005,898	5,000,000	5,643
12592M-BQ-2	COMM MORTGAGE TRUST-SERIES 2014-LC17 CLA		10/29/2018	BARCLAYS CAPITAL INC		3,922,875	3,960,000	15,186
12636M-AL-2	CSAIL 2016-C6 COML MTG T-COML MTG PASSTH		11/16/2018	CITIGROUP GLOBAL MAR		400,625	400,000	1,037
12636Y-AA-0	CRH America Finance Inc-SENIOR UNSECURED		05/31/2018	JP MORGAN SECURITIES		3,764,614	3,960,000	9,350
12636Y-AC-6	CRH America Finance Inc-SENIOR UNSECURED		07/11/2018	VARIOUS		7,782,380	8,000,000	76,367
12636Y-AD-4	CRH America Finance Inc-SENIOR UNSECURED		06/07/2018	VARIOUS		44,671,244	45,600,000	76,375
126650-BQ-2	CVS HEALTH CORP PASS THRU CTF 30/360		12/28/2018	VARIOUS		54,587	48,188	195
126650-CV-0	CVS Health Corp-SENIOR UNSECURED		03/06/2018	GOLDMAN		213,074	215,000	
126670-KN-7	COUNTRYWIDE ASSET-BACKED-SERIES 2005-AB4		11/26/2018	PAYUP			3,200	
12667F-2A-2	COUNTRYWIDE ALTERNATIVE -SERIES 2005-2 C		03/01/2018	PAYUP			4,490	
12669U-BB-5	COUNTRYWIDE HOME LOANS-SERIES 2002-R3 CL		11/01/2018	PAYUP		(160,701)	(21,055)	
12707E-AA-7	CVS 2018 - 08 Trust (CVS Senior Secured		07/24/2018	CTLCAPITAL		18,135,000	18,135,000	
133131-AI-2	Camden Property Trust-SENIOR UNSECURED		10/02/2018	BANK OF AMERICA CORP		5,893,687	5,900,000	78,604
141781-AT-1	Cargill Inc-SENIOR UNSECURED BOND		07/11/2018	JEFFERIESLLC		6,845,575	5,500,000	76,514
141781-BF-0	CARGILL INC-SR UNSECURED		09/19/2018	VARIOUS		13,013,476	11,758,000	
14314C-AA-3	CARLYLE FINANCE LLC-SENIOR UNSECURED		09/07/2018	JP MORGAN SECURITIES		25,877,726	25,900,000	
14856C-AB-5	Castlelake Aircraft Secu-SERIES 2018-1 C		10/18/2018	DTCY ID		14,032,516	13,940,200	28,305
149123-CB-5	Caterpillar Inc-SENIOR UNSECURED BOND		10/04/2018	VARIOUS		16,340,379	16,489,000	31,678
149123-CD-1	Caterpillar Inc-SR UNSECURED		12/26/2018	VARIOUS		3,497,490	3,399,000	22,923

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
151020-AU-8	CELGENE CORP-SR UNSECURED		01/19/2018	VARIOUS		20,373,916	18,300,000	399,694
151020-AW-4	Celgene Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		834,771	940,000	
151020-AZ-7	Celgene Corp-SENIOR UNSECURED		12/19/2018	VARIOUS		4,741,648	5,325,000	78,601
15189X-AS-7	CenterPoint Energy Houst-SECURED		02/26/2018	MIZUHO SECURITIES		9,359,016	9,400,000	
156504-AH-5	Century Communities Inc-SENIOR UNSECURED		08/30/2018	VARIOUS		2,237,232	2,309,000	41,457
161175-BA-1	CHARTER COMM OPT LLC/CAP-FIRST LIEN		04/12/2018	STIFEL NICOLAUS		111,304	100,000	3,116
16412X-AG-0	Cheniere Corpus Christi -FIRST LIEN		01/01/2018	EXCHANGE OFFER		1,215,000	1,215,000	
16876A-AA-2	CHILDREN'S HOSPITAL MEDI- SECURED NOTE		05/04/2018	WELLS FARGO		3,795,830	3,700,000	75,887
171232-AQ-4	CHUBB CORP-SR UNSECURED		06/05/2018	VARIOUS		10,291,694	8,335,000	36,118
171340-AL-6	Church & Dwight Co Inc-SENIOR UNSECURED		12/19/2018	U. S. BANCORP		4,569,550	5,000,000	76,806
171340-AN-2	Church & Dwight Co Inc-SENIOR UNSECURED		06/25/2018	VARIOUS		18,905,580	20,400,000	260,610
17252M-AN-0	Cintas Corp No 2-SENIOR UNSECURED		07/17/2018	BANK OF AMERICA CORP		11,377,801	11,504,000	127,694
172967-LJ-8	CITIGROUP INC-SENIOR UNSECURED		08/09/2018	MILLENNIUM ADVISORS		139,361	145,000	1,879
172967-LW-9	Citigroup Inc-SENIOR UNSECURED		06/15/2018	VARIOUS		9,059,746	9,200,000	50,507
17858P-AA-9	CITY OF HOPE-SECURED		10/04/2018	IN-KIND TRANSFER		566,684	495,000	
17858P-AB-7	City of Hope-SENIOR UNSECURED		10/22/2018	VARIOUS		37,327,136	37,075,000	28,853
186108-CE-4	CLEVELAND ELEC ILLUMINAT-SENIOR UNSECURE		07/06/2018	DEUTSCHE BANK SECURI		5,200,077	5,189,000	21,441
186108-CK-0	Cleveland Electric Illum-SENIOR UNSECURE		07/19/2018	DEUTSCHE BANK SECURI		11,623,515	12,185,000	125,302
189478-AA-4	Clubessentials LLC Senior Sub Note		05/02/2018	DIRECT		1,740,792	1,776,319	
194204-AC-7	COLLEGE AVE STUDENT LOAN-SERIES 2017 CLA		10/04/2018	RBC CAPITAL MARKETS		505,697	510,000	893
194230-AC-4	College Ave Student Loan-SERIES 18-A CLA		06/12/2018	BARCLAYS CAPITAL INC		2,956,343	2,970,000	
194230-AD-2	College Ave Student Loan-SERIES 18-A CLA		10/11/2018	VARIOUS		2,734,895	2,800,000	3,056
195869-AQ-5	Colonial Pipeline Co-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		145,997	150,000	
20030N-BH-3	Comcast Corp-SR UNSECURED		04/11/2018	GOLDMAN		416,532	400,000	4,156
20030N-BW-0	Comcast Corp-SENIOR UNSECURED		08/09/2018	MORGAN		195,116	220,000	402
20030N-CM-1	Comcast Corp-SENIOR UNSECURED		12/17/2018	MARKETAXESS FINANCIA		116,017	115,000	1,111
200474-AE-4	COMM 2015-LC19 Mortgage -COMM 2015-LC19		10/16/2018	DEUTSCHE BANK SECURI		7,315,137	8,500,000	8,641
20267X-AC-7	Commonbond Student Loan -CBSLT 2018-CGS		12/06/2018	GOLDMAN		32,575,522	32,583,000	
202795-JL-5	Commonwealth Edison Co-SECURED		08/01/2018	IN-KIND TRANSFER		1,402,859	1,500,000	
202795-JM-3	Commonwealth Edison Co-SECURED		02/12/2018	BANK OF AMERICA CORP		13,997,340	14,000,000	
20605P-AJ-0	Concho Resources Inc-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		773,685	770,000	
207597-DS-1	Connecticut Light & Powe-SECURED		12/06/2018	MITSUBISHI UFJ SEC I		1,687,455	1,500,000	20,365
207597-DX-0	Connecticut Light & Powe-SECURED		12/06/2018	MITSUBISHI UFJ SEC I		10,238,220	9,000,000	142,313
207597-EF-8	CONNECTICUT LIGHT & PWR 1ST & REF MTG BD		08/03/2018	DTCY ID		169,505	175,000	267
207597-EH-4	Connecticut Light & Powe-SECURED		07/11/2018	VARIOUS		28,765,680	28,145,000	311,679
207597-EJ-0	Connecticut Light & Powe-SECURED		06/06/2018	FIRST TENNESSEE		12,033,250	12,500,000	92,222
208251-AE-8	CONOCOPHILLIPS HLDG CO-SENIOR NOTE		08/01/2018	IN-KIND TRANSFER		3,587,650	2,905,000	
20825C-AQ-7	ConocoPhillips-NOTE		07/20/2018	VARIOUS		8,938,956	6,900,000	211,918
20826F-AC-0	CONOCOPHILLIPS COMPANY-SR UNSECURED		07/27/2018	GOLDMAN		58,792	57,000	517
20826F-AR-7	ConocoPhillips Co-SENIOR UNSECURED		01/26/2018	MORGAN		14,211,151	10,467,000	233,545
209111-FF-5	Consolidated Edison Co o-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		686,110	686,000	
21036P-AT-5	CONSTELLATION BRANDS INC-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		175,756	180,000	
21036P-AZ-1	Constellation Brands Inc-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		372,562	405,000	
210518-DB-9	Consumers Energy Co-SECURED		10/04/2018	VARIOUS		33,514,724	33,250,000	199,782
212015-AH-4	CONTINENTAL RESOURCES IN-SENIOR UNSECURE		12/12/2018	MORGAN		377,063	375,000	4,635
212015-AS-0	Continental Resources In-SENIOR UNSECURE		05/29/2018	EXCHANGE OFFER		8,894,922	8,898,999	
219350-BK-0	Corning Inc-SENIOR UNSECURED		12/20/2018	BARCLAYS CAPITAL INC		5,145,550	5,000,000	35,667
22160K-AM-7	Costco Wholesale Corp-SENIOR UNSECURED		06/28/2018	CREDIT SUISSE SECURI		8,539,639	8,900,000	32,633
224044-CG-0	COX COMMUNICATIONS INC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		252,135	271,000	
224399-AT-2	Crane Co-SENIOR UNSECURED		10/04/2018	VARIOUS		21,012,797	21,080,000	2,259
22540V-3F-7	CREDIT SUISSE FIRST BOST-SERIES 2002-18		01/01/2018	PAYUP			36,041	
22540V-HK-7	CREDIT SUISSE FIRST BOST-SERIES 2005-11		07/01/2018	PAYUP			70	
22822R-BH-2	Crown Castle Towers LLC-SECURED		06/26/2018	MORGAN		24,985,000	24,985,000	
233046-AE-1	DB Master Finance LLC-SERIES 2017-1A CLA		08/01/2018	JP MORGAN SECURITIES		4,726,182	4,852,615	35,709
23307*-AE-2	D.C. Arena L.P. Senior Secured		05/24/2018	DIRECT		39,800,000	39,800,000	
23338V-AE-6	DTE Electric Co-SECURED		05/29/2018	JEFFERIESLLC		29,332,384	31,278,000	228,344
23338V-AG-1	DTE Electric Co-SECURED		06/25/2018	STIFEL NICOLAUS		7,740,964	8,200,000	112,750
23338V-AH-9	DTE Electric Co-SECURED		06/19/2018	STIFEL NICOLAUS		13,638,170	13,600,000	67,320
23355L-AF-3	DXC Technology Co-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		690,679	578,000	
235851-AR-3	DANAHER CORP-SR UNSECURED		06/13/2018	CREDIT SUISSE SECURI		9,928,327	9,400,000	98,243
243808-AB-4	Deer District LLC Senior Secured Notes		11/15/2018	DIRECT		27,600,000	27,600,000	
244098-A*-0	Deer Park Refinery Senior Note Series A		07/23/2018	SANTANDER INVESTMENT		20,000,000	20,000,000	
244098-A8-B	Deer Park Refinery Senior Note Series B		07/23/2018	SANTANDER INVESTMENT		15,000,000	15,000,000	
244199-BF-1	Deere & Co-SENIOR UNSECURED NOTE		10/04/2018	VARIOUS		10,753,998	10,733,000	45,211
247109-BR-1	DELMARVA PWR & LIGHT CO-SECURED		10/04/2018	IN-KIND TRANSFER		371,235	405,000	

E13.6

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
24763L-FY-1	DELTA FUNDING HOME EQUIT-SERIES 1999-3 C		07/01/2018	PAYUP			754	
25245B-AA-5	Diageo Investment Corp-SENIOR UNSECURED		07/20/2018	VARIOUS		10,533,168	10,100,000	33,221
25272K-AR-4	MULTIPLE GUARANTORS-FIRST LIEN		10/04/2018	IN-KIND TRANSFER		472,225	382,000	
25466A-AK-7	Discover Bank-SENIOR UNSECURED		01/31/2018	CITIGROUP GLOBAL MAR		269,976	270,000	
254709-AM-0	DISCOVER FINANCIAL SVS-SENIOR UNSECURED		07/19/2018	VARIOUS		32,640,438	33,701,000	592,992
25470D-AT-6	DISCOVERY COMMUNICATIONS-SENIOR UNSECURE		10/04/2018	VARIOUS		687,376	710,000	3,201
25730H-AA-8	Dominion Energy Questar Senior Note Ser		01/31/2018	DIRECT		32,600,000	32,600,000	
25746U-CC-1	Dominion Resources Inc/V-SR UNSECURED		12/19/2018	VARIOUS		5,772,110	5,734,000	25,609
25746U-CU-1	Dominion Energy Inc-SENIOR UNSECURED		09/06/2018	WELLS FARGO		15,047,700	15,000,000	7,177
257559-AJ-3	Domtar Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		563,447	580,000	
25755T-AH-3	DOMINOS PIZZA MASTER ISS-SERIES 17-1A CL		08/01/2018	BNP PARIBAS		6,919,172	7,029,000	6,432
25755T-AK-6	Domino's Pizza Master Is-DPABS 2018-1A A		04/18/2018	GUGGENHEIM CAPITAL M		42,000,000	42,000,000	
260003-AF-5	Dover Corp-NOTE		06/26/2018	BARCLAYS CAPITAL INC		1,127,020	1,000,000	10,899
260003-AG-3	Dover Corp-SENIOR UNSECURED		06/28/2018	DEUTSCHE BANK SECURI		19,205,600	15,000,000	294,250
260003-AK-4	Dover Corp-SENIOR UNSECURED NOTE		07/06/2018	VARIOUS		7,641,550	6,699,000	113,976
260543-CX-7	DOW CHEMICAL CO/THE-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		241,373	250,000	
26078J-AF-7	DowDuPont Inc-SENIOR UNSECURED		12/19/2018	VARIOUS		5,460,732	5,150,000	17,785
26138E-AT-6	DR PEPPER SNAPPLE GROUP -SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		142,180	150,000	
26207K-AE-1	Drive Auto Receivables T-DRIVE 2017-3 B		10/04/2018	IN-KIND TRANSFER		778,896	780,000	
26208B-AL-4	Drive Auto Receivables T-DRIVE 2016-CA C		10/04/2018	IN-KIND TRANSFER		1,300,827	1,300,000	
26208C-AN-8	Drive Auto Receivables T-DRIVE 2017-AA D		10/04/2018	IN-KIND TRANSFER		504,863	500,000	
26208D-AF-3	Drive Auto Receivables T-DRIVE 2017-BA D		10/04/2018	IN-KIND TRANSFER		1,154,109	1,150,000	
26208G-AF-6	Drive Auto Receivables T-DRIVE 2018-1 C		10/04/2018	IN-KIND TRANSFER		1,276,390	1,280,000	
26208J-AE-3	Drive Auto Receivables T-DRIVE 2018-2 B		10/04/2018	IN-KIND TRANSFER		899,023	900,000	
26208K-AE-0	Drive Auto Receivables T-DRIVE 2018-3 B		10/04/2018	IN-KIND TRANSFER		300,114	300,000	
263901-AA-8	DUKE ENERGY INDIANA INC 1ST MTG BD		08/01/2018	IN-KIND TRANSFER		447,381	350,000	
26441C-AT-2	Duke Energy Corp-SENIOR UNSECURED		10/04/2018	VARIOUS		1,526,965	1,740,000	10,838
26442C-AN-4	DUKE ENERGY CAROLINAS-SECURED		08/01/2018	IN-KIND TRANSFER		736,393	750,000	
26442C-AP-9	DUKE ENERGY CAROLINAS-SECURED		08/01/2018	IN-KIND TRANSFER		65,623	70,000	
26442C-AR-5	DUKE ENERGY CAROLINAS-SECURED		08/01/2018	VARIOUS		3,192,461	3,320,000	35,511
26444H-AA-9	Duke Energy Florida LLC-SECURED		08/01/2018	IN-KIND TRANSFER		736,719	835,000	
26835B-AA-2	EC Group Holdings LLC Senior Sub Note		09/30/2018	PIK BOND		16,890	17,222	
2688571-AC-0	ELFI Graduate Loan Progr-SERIES 18-A CLA		04/11/2018	CITIGROUP GLOBAL MAR		3,715,416	3,790,000	
268877-AH-1	EP Energy LLC / Everest -SECURED		01/04/2018	EXCHANGE OFFER		1,643,000	1,643,000	
26884A-BB-8	ERP OPERATING LP-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		447,611	450,000	
26884T-AE-2	ERAC USA FINANCE LLC-SENIOR UNSECURED		05/30/2018	CITIGROUP GLOBAL MAR		8,075,416	7,226,000	85,809
26884T-AN-2	ERAC USA FINANCE LLC-SR UNSECURED		07/12/2018	CREDIT SUISSE SECURI		4,280,248	4,475,000	84,466
26884T-AP-7	ERAC USA Finance LLC-SENIOR UNSECURED		06/26/2018	CREDIT SUISSE SECURI		3,571,775	3,630,000	21,841
26884T-AR-3	ERAC USA Finance LLC-SENIOR UNSECURED		06/13/2018	VARIOUS		10,794,628	11,493,000	14,749
26884T-AS-1	ERAC USA Finance LLC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,156,532	1,301,000	
26885B-AD-2	EQT Midstream Partners L-SENIOR UNSECURE		06/20/2018	DEUTSCHE BANK SECURI		399,044	400,000	
26911*-AA-1	E.S.P. Associates, P.A. Senior Sub Note		06/30/2018	VARIOUS		2,503,596	2,503,654	
278058-DB-5	EATON CORP-SENIOR UNSECURED NOTE		06/07/2018	CANTOR		2,917,325	2,500,000	34,639
278062-AD-6	EATON CORP-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		600,820	610,000	
278062-AE-4	EATON CORP-SR UNSECURED		06/06/2018	VARIOUS		17,150,714	17,800,000	149,169
278865-AM-2	Ecolab Inc-SENIOR UNSECURED NOTE		07/06/2018	STIFEL NICOLAUS		3,120,751	2,610,000	12,760
278865-AW-0	ECOLAB INC-SENIOR UNSECURED		05/30/2018	DEUTSCHE BANK SECURI		2,398,351	2,635,000	8,125
278865-BA-7	Ecolab Inc-SENIOR UNSECURED		06/27/2018	VARIOUS		13,650,327	13,876,000	154,526
28148W-AE-3	ED FDG SOUTH INC STUDENT LN ASSET BKD NT		06/04/2018	BMO CAPITAL MARKETS		7,497,000	6,800,000	13,407
28150H-AA-3	Educational Specialty Fu Senior Sub Note		03/09/2018	DIRECT		3,330,249	3,330,249	
28176E-AD-0	Edwards Lifesciences Cor-SENIOR UNSECURE		06/11/2018	VARIOUS		42,671,303	42,740,000	
28258H-AA-4	8point3 Solar Investco 1 Senior Secured		06/20/2018	DIRECT		66,258,697	66,258,697	
28370T-AF-6	Kinder Morgan Energy Par-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		89,098	95,000	
28661P-AA-3	Elite Sportswear LP Senior Sub Note		06/30/2018	PIK BOND		22,320	24,748	
291011-AQ-7	Emerson Electric Co-SENIOR UNSECURED NOT		07/17/2018	CANTOR		6,049,300	5,000,000	128,333
291011-BD-5	Emerson Electric Co-SENIOR UNSECURED		06/01/2018	JEFFERIESLLC		3,597,504	3,095,000	9,027
29250R-AP-1	Enbridge Energy Partners-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		179,065	140,000	
29273R-BL-2	ENERGY TRANSFER PARTNERS-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		120,248	125,000	
29273V-AF-7	Energy Transfer Equity L-FIRST LIEN		05/17/2018	JP MORGAN SECURITIES		455,486	450,000	11,688
29273V-AG-5	Energy Transfer Equity L-FIRST LIEN		04/17/2018	GOLDMAN		395,120	400,000	1,606
29278N-AF-0	Energy Transfer Partners-SENIOR UNSECURE		06/05/2018	SMB NIKKO SECURITIE		214,611	215,000	
29336U-AD-9	EnLink Midstream Partner-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		176,419	215,000	
29364W-BA-5	Entergy Louisiana LLC-SECURED		03/20/2018	MORGAN		399,376	400,000	
29364W-BB-3	Entergy Louisiana LLC-SECURED		12/19/2018	BANK OF AMERICA CORP		5,011,350	5,000,000	74,083
29379V-AT-0	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE		01/19/2018	OPPENHEIMER AND CO		8,272,242	6,600,000	187,623

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
29379V-BJ-1	ENTERPRISE PRODUCTS OPER-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		791,021	765,000	
29379V-BQ-5	Enterprise Products Oper-SENIOR UNSECURE		08/01/2018	VARIOUS		14,614,378	14,670,000	
29736R-AC-4	Estee Lauder Cos Inc/The-SENIOR UNSECURE		07/19/2018	VARIOUS		17,450,068	13,965,000	145,270
29736R-AF-7	ESTEE LAUDER COS INC/THE-SR UNSECURED		07/11/2018	VARIOUS		10,317,480	10,800,000	139,120
29736R-AG-5	ESTEE LAUDER CO INC-SENIOR UNSECURED		12/19/2018	VARIOUS		14,745,250	13,945,000	201,380
29736R-AK-6	Estee Lauder Cos Inc/The-SENIOR UNSECURE		06/05/2018	MORGAN		8,205,604	8,044,000	76,038
30152B-AC-5	EOG Consulting Group LLC Sr. Sub Note (		06/30/2018	PIK BOND		35,329	35,333	
30152B-AD-3	EOG Consulting Group LLC Senior Sub Note		06/20/2018	DIRECT		5,908,382	5,908,382	
30219G-AN-8	EXPRESS SCRIPTS HOLDING -SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		218,940	235,000	
30219G-AP-3	EXPRESS SCRIPTS HOLDING-SENIOR UNSECURED		10/04/2018	VARIOUS		12,538,296	11,855,000	39,451
30231G-AW-2	EXXON MOBIL CORPORATION-SR UNSECURED		07/20/2018	VARIOUS		21,630,289	21,022,000	280,275
30290Y-AC-5	FS Global Credit Opportu-FS GLOBAL CREDI		10/24/2018	MORGAN		100,000,000	100,000,000	
30306V-AA-7	FLNG Liquefaction 3 LLC-SECURED		06/26/2018	GOLDMAN		35,000,000	35,000,000	
30711X-DK-7	Fannie Mae Connecticut A-CAS 2016-COS 2M		10/04/2018	IN-KIND TRANSFER		223,984	200,000	
313747-AU-1	Federal Realty Investmen-SENIOR UNSECURE		06/28/2018	BANK OF AMERICA CORP		7,078,120	7,000,000	128,265
313747-AY-3	Federal Realty Investmen-SENIOR UNSECURE		07/09/2018	KEY CAPITAL MARKETS		4,707,350	5,000,000	79,444
31428X-BB-1	FEDEX CORP-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		512,350	570,000	
31428X-BG-0	FEDEX CORP-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		844,865	874,000	
31428X-BQ-8	FedEx Corp-SENIOR UNSECURED		12/19/2018	VARIOUS		15,779,232	16,475,000	72,371
32113J-BV-6	FIRST NLC TRUST-SERIES 2005-3 CLASS M2		11/26/2018	PAYUP			62	
33616C-AB-6	FIRST REPUBLIC BANK-SUBORDINATED		04/03/2018	STIFEL NICOLAUS		992,390	1,000,000	7,778
33616C-AC-4	FIRST REPUBLIC BANK-SUBORDINATED		03/16/2018	STIFEL NICOLAUS		14,574,822	14,124,000	53,355
33844F-AC-1	Flagship Credit Auto Tru-FCAT 2016-4 B		10/04/2018	IN-KIND TRANSFER		139,242	140,000	
341081-FE-2	Florida Power & Light Co-SECURED		10/04/2018	IN-KIND TRANSFER		975,353	892,000	
341081-FF-9	FLORIDA POWER & LIGHT CO-SECURED		08/01/2018	IN-KIND TRANSFER		247,226	245,000	
341081-FP-7	Florida Power & Light Co-SECURED		08/01/2018	VARIOUS		8,885,246	9,400,000	28,038
341081-FQ-5	Florida Power & Light Co-SECURED		07/16/2018	SCOTIA CAPITAL MARKE		4,206,511	4,185,000	64,286
341081-FR-3	Florida Power & Light Co-SECURED		06/13/2018	VARIOUS		31,910,109	31,800,000	38,580
341099-CH-0	DUKE ENERGY FLORIDA LLC-SECURED		08/01/2018	IN-KIND TRANSFER		417,253	325,000	
344868-AA-2	FOOTBALL CLUB TERM NTS 2020 TR CTF		09/11/2018	DTCYID		451,115	435,389	22,517
345397-XK-4	Ford Motor Credit Co LLC-SENIOR UNSECURE		12/20/2018	MILLENNIUM ADVISORS		195,752	200,000	2,455
345397-XQ-1	FORD MOTOR CREDIT CO LLC-SENIOR UNSECURE		08/08/2018	CITIGROUP GLOBAL MAR		583,357	590,000	1,311
345397-ZB-2	Ford Motor Credit Co LLC-SENIOR UNSECURE		04/30/2018	GOLDMAN		555,000	555,000	
34958B-AA-7	Fortistar Energy Recycli Secured Mezzani		01/01/2018	PIK NOTE BUY UP		824,501	829,269	
34958J-AH-1	FORTIVE CORPORATION-SENIOR UNSECURED		04/12/2018	DEUTSCHE BANK SECURI		6,085,826	6,099,000	88,148
35086B-AC-5	Four Corners Operating P Gtd Senior Note		12/20/2018	BOFAMLSEC		10,000,000	10,000,000	
35086B-AD-3	Four Corners Operating P Gtd Senior Note		12/20/2018	BAMLINTLTD		5,800,000	5,800,000	
36144B-BC-6	GATX Corp-SENIOR UNSECURED		06/07/2018	VARIOUS		37,072,981	36,845,000	67,533
36250S-AL-3	GS Mortgage Securities C-GSMS 2018-GS10		11/01/2018	VARIOUS		7,901,796	7,893,000	24,881
36252H-AK-7	GS MORTGAGE SECURITIES T-GSMS 2017-GS5 C		09/13/2018	GOLDMAN		5,150,234	5,200,000	9,935
36255N-AY-1	GS Mortgage Securities C-GS MORTGAGE SEC		03/15/2018	GOLDMAN		2,265,875	2,200,000	7,394
36255N-AZ-8	GS Mortgage Securities C-GS MORTGAGE SECU		03/15/2018	GOLDMAN		8,138,527	8,078,000	28,336
369550-AZ-1	General Dynamics Corp-SENIOR UNSECURED		05/31/2018	JP MORGAN SECURITIES		9,698,955	10,500,000	14,547
369550-BC-1	General Dynamics Corp-SENIOR UNSECURED		07/11/2018	VARIOUS		30,104,344	29,700,000	179,344
369550-BG-2	General Dynamics Corp-SENIOR UNSECURED		06/01/2018	BANK OF AMERICA CORP		10,062,731	10,100,000	23,567
369604-BD-4	GENERAL ELECTRIC CO-SR UNSECURED		12/12/2018	BANK OF AMERICA CORP		606,825	675,000	2,847
36962G-AR-2	General Electric Co-SENIOR UNSECURED		12/18/2018	BNP PARIBAS		399,500	400,000	4,569
36962G-5J-9	GENERAL ELECTRIC CO-SR UNSECURED MTN		12/17/2018	DEUTSCHE BANK SECURI		390,090	390,000	3,123
37045V-AF-7	GENERAL MOTORS CO-SENIOR UNSECURED		01/26/2018	VARIOUS		26,672,544	22,941,000	452,000
37045X-AO-9	General Motors Financial-SENIOR UNSECURE		12/12/2018	WELLS FARGO		374,648	375,000	3,600
37045X-BM-7	General Motors Financial-SENIOR UNSECURE		12/20/2018	GOLDMAN		462,337	475,000	7,093
37045X-OL-8	General Motors Financial-SENIOR UNSECURE		07/27/2018	VARIOUS		239,697	240,000	291
37329B-BN-7	Georgia-Pacific LLC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		121,228	102,000	
37329B-BP-2	Georgia-Pacific LLC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		458,689	370,000	
37555B-BA-0	GILEAD SCIENCES INC-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		853,514	865,000	
377372-AJ-6	GlaxoSmithKline Capital -SR UNSECURED		10/04/2018	IN-KIND TRANSFER		227,159	230,000	
378272-AO-1	Glencore Funding LLC-SENIOR UNSECURED		06/20/2018	HSBC SECURITIES INC		2,697,477	2,871,000	16,997
38141E-C3-1	Goldman Sachs Group Inc/-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		1,896,307	1,835,000	
38141G-IC-4	Goldman Sachs Group Inc/-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		1,236,768	1,265,000	
38141G-IV-2	Goldman Sachs Group Inc/-SENIOR UNSECURE		06/26/2018	GOLDMAN		7,892,387	8,300,000	136,298
38141G-IZ-3	Goldman Sachs Group Inc/-SENIOR UNSECURE		06/15/2018	VARIOUS		8,291,766	8,400,000	47,790
38148Y-AA-6	Goldman Sachs Group Inc/-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		951,657	1,010,000	
391382-AB-4	GREAT-WEST LIFE CO FINANC-SENIOR UNSECURE		12/26/2018	VARIOUS		4,697,544	5,000,000	14,139
39138Q-AC-9	GREAT-WEST LIFE CO FINANC-SENIOR UNSECURE		10/04/2018	VARIOUS		29,341,640	29,160,000	85,045
39535F-AA-6	Greenleaf Power Consolid Sub Note (6% PI		09/30/2018	PIK BOND		138,962	600,759	

E13.8

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
398433-AH-5	Griffon Corp-SENIOR UNSECURED		02/06/2018	EXCHANGE OFFER		4,286,733	4,250,000	
404658-AD-4	HSRE Core Holding I, LLC Senior Note Ser		05/02/2018	DIRECT		4,500,000	4,500,000	
404658-AE-2	HSRE Core Holding I, LLC Senior Note Ser		07/09/2018	DIRECT		11,300,000	11,300,000	
404658-AF-9	HSRE Core Holding I, LLC Senior Note Ser		08/07/2018	DIRECT		5,800,000	5,800,000	
40573L-AU-0	Halfmoon Parent Inc-SENIOR UNSECURED		10/04/2018	VARIOUS		10,280,238	10,300,000	
406216-AW-1	HALLIBURTON CO-SENIOR UNSECURED NOTE		12/26/2018	BRILEY		5,935,800	5,000,000	95,847
406216-BJ-9	HALLIBURTON CO-SR UNSECURED		08/01/2018	VARIOUS		5,628,162	5,320,000	49,298
406216-BK-6	HALLIBURTON CO-SR UNSECURED		12/19/2018	VARIOUS		6,763,496	6,620,000	49,642
40728T-AA-1	HAMILTON COLLEGE-UNSECURED		05/22/2018	BARCLAYS CAPITAL INC		6,156,256	6,243,000	106,348
41138F-AA-3	Happy Floors Acquisition Senior Sub Note		09/30/2018	VARIOUS		18,521	18,349	
413875-AW-5	Harris Corp-SENIOR UNSECURED		06/06/2018	VARIOUS		22,957,932	22,800,000	6,747
416515-AP-9	Hartford Financial Servi-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		404,109	345,000	
416515-BA-1	Hartford Financial Servi-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		966,410	779,000	
416515-BB-9	HARTFORD FINANCIAL SERVI-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		282,036	295,000	
416515-BD-5	Hartford Financial Servi-SENIOR UNSECURE		03/13/2018	BANK OF AMERICA CORP		29,402,109	29,700,000	
419839-AA-3	HAWAIIAN AIRLINES 13-1B-SERIES 13-1 CLAS		01/01/2018	BARCLAYS BANK PLC		(83,575)	(81,338)	(514)
42806D-BR-9	Hertz Vehicle Financing -HERTZ 2018-1A B		09/28/2018	VARIOUS		49,849,233	50,520,000	15,300
42806D-BS-7	Hertz Vehicle Financing -HERTZ 2018-1A C		01/17/2018	BANK OF AMERICA CORP		7,688,400	7,690,000	
42806D-CA-5	Hertz Vehicle Financing -SERIES 18-3A CL		06/21/2018	BARCLAYS CAPITAL INC		18,894,927	18,900,000	
42806D-CB-3	Hertz Vehicle Financing -SERIES 18-3A CL		06/21/2018	BARCLAYS CAPITAL INC		9,936,446	9,937,000	
42981C-AA-6	HIGH STREET FUNDING TRUS-SENIOR UNSECURE		06/25/2018	VARIOUS		8,624,573	8,624,000	98,238
42981D-AA-4	HIGH STREET FUNDING TRUS-SENIOR UNSECURE		07/19/2018	CREDIT SUISSE SECURI		36,255,522	36,255,000	193,398
43534-AA-3	Hollandia Produce LP Senior Sub Note		06/30/2018	VARIOUS		24,125	29,322	
437076-BD-3	Home Depot Inc/The-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		575,829	515,000	
437076-BS-0	HOME DEPOT INC/THE-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		737,559	755,000	
438516-AT-3	HONEYWELL INTERNATIONAL -SENIOR NOTE		07/16/2018	VARIOUS		15,732,569	12,800,000	206,989
438516-BB-1	HONEYWELL INTERNATIONAL -SENIOR UNSECURED		06/27/2018	CITIGROUP GLOBAL MAR		5,939,950	5,000,000	88,090
438516-BS-4	Honeywell International -SENIOR UNSECURE		06/26/2018	VARIOUS		15,708,921	16,025,000	63,306
440405-AE-8	HORZN 2018-1 A		11/16/2018	MIZUHO SECURITIES		13,029,721	13,030,000	
440405-AF-5	Horizon Aircraft Finance-SERIES 18-1 CLA		11/16/2018	VARIOUS		13,249,471	13,250,000	
44107H-AC-6	NY Society for Relief of-SECURED		06/05/2018	GOLDMAN		4,948,504	4,940,000	32,819
44107H-AD-4	NY Society for Relief of-SECURED		03/29/2018	GOLDMAN		4,424,408	4,365,000	
44107H-AE-2	NY Society for Relief of-SECURED		07/23/2018	VARIOUS		36,531,227	36,512,000	89,918
444859-BE-1	Humana Inc-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		200,371	190,000	
45138L-BD-4	IDAHO POWER CORP-SECURED NOTE		07/31/2018	JEFFERIESLLC		11,786,347	12,750,000	195,199
45174X-AA-0	IHC Health Services Inc-SECURED		06/26/2018	JP MORGAN SECURITIES		42,300,000	42,300,000	
452308-AR-0	Illinois Tool Works Inc-SR UNSECURED		07/23/2018	VARIOUS		37,464,115	38,086,000	493,503
452308-AX-7	Illinois Tool Works Inc-SENIOR UNSECURED		07/17/2018	CANTOR		12,175,615	13,050,000	61,101
452598-AB-7	Impact Confections, Inc. Senior Sub Note		01/01/2018	PIK BOND		83,975	102,096	
45326T-AA-6	INCITEC PIVOT FIN LLC-SECURED NOTE		04/25/2018	SEAPORT GROUP		364,571	350,000	7,992
455434-BP-4	Indianapolis Power & Lig-SECURED		07/12/2018	JEFFERIESLLC		30,643,536	28,434,000	288,783
455434-BS-8	Indianapolis Power & Lig-SECURED		08/01/2018	IN-KIND TRANSFER		448,342	430,000	
45660N-7R-0	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1		06/01/2018	PAYUP			104	
45687A-AG-7	INGERSOLL-RAND GL HLD CO-SENIOR UNSECURE		02/22/2018	JEFFERIESLLC		10,702,312	8,927,000	101,235
45687A-AN-2	Ingersoll-Rand Global Ho-SENIOR UNSECURE		02/13/2018	GOLDMAN		11,061,039	11,100,000	
457187-AB-8	INGREDION INC-SENIOR UNSECURED		07/17/2018	LQUIDNETINC		2,017,173	2,150,000	20,640
458140-BG-4	Intel Corp-SENIOR UNSECURED		10/04/2018	VARIOUS		17,146,346	17,258,000	
45866F-AD-6	INTERCONTINENTALEXCHANGE-SENIOR UNSECURE		07/20/2018	RBC CAPITAL MARKETS		8,804,136	8,800,000	48,583
45866F-AF-1	Intercontinental Exchang-SENIOR UNSECURE		06/25/2018	VARIOUS		11,719,934	12,502,000	109,809
45866F-AH-7	Intercontinental Exchang-SENIOR UNSECURE		10/24/2018	VARIOUS		26,199,384	26,800,000	86,181
459200-HF-1	International Business M-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		225,663	235,000	
459506-AL-5	International Flavors & -SENIOR UNSECURE		12/26/2018	VARIOUS		23,548,402	23,599,000	83,610
459745-GF-6	INTL LEASE FINANCE CORP-SENIOR UNSECURED		12/18/2018	MARKETAXESS FINANCIA		429,864	400,000	458
460146-CN-1	INTERNATIONAL PAPER CO-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		358,054	345,000	
460146-CO-4	INTERNATIONAL PAPER CO-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		691,453	750,000	
46590U-AB-8	JG Wentworth XLII LLC-SERIES 18-2A CLAS		10/02/2018	BARCLAYS CAPITAL INC		4,418,571	4,420,000	
46620D-AB-0	J.G. Wentworth XXXVII LL-HENDR 2016-1A B		11/13/2018	BARCLAYS CAPITAL INC		5,107,031	5,000,000	
46625H-HF-0	JPMorgan Chase & Co-NOTE		08/01/2018	IN-KIND TRANSFER		548,786	440,000	
46625H-HV-5	JPMorgan Chase & Co-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		113,943	100,000	
46625H-QW-3	JPMORGAN CHASE & CO-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		96,111	100,000	
46625H-RS-1	JPMORGAN CHASE & CO-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		85,613	90,000	
46625H-RY-8	JPMORGAN CHASE & CO-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		3,684,636	3,780,000	
46636D-AG-1	JP MORGAN CHASE COMMERCIAL-SERIES 2011-C4		04/17/2018	PAYUP		389,714		
46642E-BD-7	JPMBB COMMERCIAL MORT-SERIES 2014-C21 CL		11/20/2018	CREDIT SUISSE SECURI		10,473,868	10,520,000	26,209
46645L-BE-6	JPMBB COMMERCIAL MORT-SERIES 2016-C1 CLA		10/25/2018	BMO CAPITAL MARKETS		3,693,516	3,600,000	13,283

E13.9

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
46647P-AA-4	JPMorgan Chase & Co-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		111,790	115,000	
46647P-AK-2	JPMORGAN CHASE & CO-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		396,753	425,000	
46647P-AL-0	JPMorgan Chase & Co-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		18,490	20,000	
46647P-AR-7	JPMorgan Chase & Co-SENIOR UNSECURED		06/15/2018	VARIOUS		9,209,200	9,300,000	50,263
468223-AT-9	Jackson Laboratory/The-UNSECURED		04/19/2018	BARCLAYS CAPITAL INC		38,324,873	38,295,000	19,627
478115-AB-4	Johns Hopkins University-SENIOR UNSECURE		06/22/2018	MORGAN		1,366,090	1,345,000	26,695
482480-AF-7	KLA-Tencor Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		294,046	280,000	
48275P-AE-1	KREF 2018-FL1 Ltd-KREF 2018-FL1 B		11/07/2018	WELLS FARGO		6,650,000	6,650,000	
48275P-AG-6	KREF 2018-FL1 Ltd-KREF 2018-FL1 C		11/07/2018	WELLS FARGO		4,770,000	4,770,000	
48275P-AJ-0	KREF 2018-FL1 LTD-KREF 2018-FL1 D		11/07/2018	WELLS FARGO		3,430,000	3,430,000	
48305Q-AD-5	KAISER FOUNDATION HOSPIT-UNSECURED		05/15/2018	VARIOUS		5,443,816	5,475,000	10,098
491674-BG-1	KENTUCKY UTILITIES CO-SECURED		08/01/2018	IN-KIND TRANSFER		1,587,089	1,405,000	
49255P-AA-1	Kestrel Aircraft Funding-KSTRL 2018-1A A		12/11/2018	MIZUHO SECURITIES		27,210,070	28,000,000	
49446R-AM-1	Kimco Realty Corp-SENIOR UNSECURED		02/22/2018	WELLS FARGO		6,160,122	6,584,000	112,705
49446R-AS-8	Kimco Realty Corp-SENIOR UNSECURED		06/21/2018	WELLS FARGO		8,574,840	9,000,000	79,800
494550-AII-6	KINDER MORGAN ENER PART-BOND		08/01/2018	IN-KIND TRANSFER		2,251,707	1,900,000	
494550-BD-7	KINDER MORGAN ENER PART-SENIOR UNSECURED		05/04/2018	VARIOUS		20,107,141	18,000,000	186,622
49456B-AH-4	Kinder Morgan Inc/DE-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		518,340	490,000	
49456B-AQ-4	Kinder Morgan Inc/DE-SENIOR UNSECURED		07/27/2018	VARIOUS		250,508	250,000	1,300
50076Q-AN-6	Kraft Foods Group Inc-SENIOR UNSECURED B		10/04/2018	IN-KIND TRANSFER		326,929	295,000	
50077L-AB-2	KRAFT HEINZ FOODS CO-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		3,502,926	4,004,000	
50077L-AL-0	KRAFT HEINZ FOODS CO-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		627,232	630,000	
501044-CK-5	KROGER CO-SENIOR NOTE		10/04/2018	IN-KIND TRANSFER		232,331	248,000	
501044-DK-4	Kroger Co/The-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		443,808	475,000	
50170E-AA-5	LAFC StadiumCo, LLC Senior Secured Notes		08/30/2018	GOLDMAN SACHS BANK U		18,600,000	18,600,000	
50212Y-AB-0	LPL Holdings Inc-SENIOR UNSECURED		05/03/2018	JP MORGAN SECURITIES		1,215,638	1,263,000	10,490
50540R-AQ-5	Laboratory Corp of Ameri-SR UNSECURED		07/16/2018	VARIOUS		6,558,465	6,700,000	96,720
50540R-AS-1	LABORATORY CORP OF AMER-SENIOR UNSECURED		12/21/2018	GOLDMAN		4,701,300	5,000,000	94,653
50540R-AU-6	Laboratory Corp of Ameri-SENIOR UNSECURE		07/02/2018	KEY CAPITAL MARKETS		2,856,750	3,000,000	37,200
51680E-AE-6	Laredo Petroleum Inc-SENIOR UNSECURED		07/05/2018	JP MORGAN SECURITIES		2,506,250	2,500,000	49,479
52107Q-AG-0	LAZARD GROUP LLC-SENIOR UNSECURED		07/12/2018	MTSUBISHI UFJ SEC I		884,721	909,000	12,783
52107Q-AH-8	LAZARD GROUP LLC-SENIOR UNSECURED		07/12/2018	BRILEY		4,059,124	4,303,000	56,861
52107Q-AJ-4	Lazard Group LLC-SENIOR UNSECURED		09/12/2018	CITIGROUP GLOBAL MAR		16,833,522	16,990,000	
52108M-DP-5	LB-UBS COMMERCIAL MORTGA-SERIES 2006-C1		05/11/2018	PAYUP			438,969	
521865-AY-1	Lear Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,195,064	1,295,000	
525221-CD-7	LEHMAN XS TRUST-SERIES 2005-4 CLASS 1M1		10/25/2018	PAYUP		33,824	1,409	
525226-AL-0	LEHMAN XS TRUST-SERIES 2006-12N CLASS A4		06/25/2018	PAYUP		6,799	1,445	
525229-AG-5	LEHMAN XS TRUST-SERIES 2006-10N CLASS 1A		10/25/2018	PAYUP		84	(955)	
526057-BY-9	Lennar Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		599,250	600,000	
526057-CQ-5	Lennar Corp-SENIOR UNSECURED		02/22/2018	EXCHANGE OFFER		3,428,950	3,320,000	
526057-CR-3	Lennar Corp-SENIOR UNSECURED		06/15/2018	EXCHANGE OFFER		3,424,387	3,320,000	
526057-CU-6	Lennar Corp-SENIOR UNSECURED		02/22/2018	EXCHANGE OFFER		1,810,188	1,812,000	
526057-CV-4	Lennar Corp-SENIOR UNSECURED		06/15/2018	EXCHANGE OFFER		1,810,364	1,812,000	
53079E-AZ-7	LIBERTY MUTUAL GROUP INC-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		1,273,937	1,035,000	
53079E-BF-0	LIBERTY MUTUAL GROUP INC-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		247,981	250,000	
532457-AZ-1	Eli Lilly & Co-SENIOR UNSECURED		07/11/2018	WELLS FARGO		12,898,339	11,339,000	204,417
532457-BG-2	Eli Lilly & Co-SR UNSECURED		07/12/2018	JEFFERIESLLC		5,441,450	5,000,000	20,021
532457-BJ-6	ELI LILLY & CO-SR UNSECURED		07/16/2018	VARIOUS		6,028,274	6,300,000	67,720
532457-BP-2	Eli Lilly & Co-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		306,424	320,000	
534187-BA-6	LINCOLN NATIONAL CORP-SENIOR NOTE		10/04/2018	VARIOUS		32,197,774	25,063,000	604,012
534187-BG-3	Lincoln National Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		442,214	480,000	
534187-BH-1	Lincoln National Corp-SENIOR UNSECURED		11/30/2018	VARIOUS		15,963,878	16,700,000	23,486
539830-AZ-2	Lockheed Martin Corp-SENIOR UNSECURED B0		08/01/2018	IN-KIND TRANSFER		1,511,559	1,415,000	
539830-BD-0	LOCKHEED MARTIN CORP-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		432,438	467,000	
539830-BK-4	LOCKHEED MARTIN CORP-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		506,945	492,000	
539830-BL-2	LOCKHEED MARTIN CORP-SENIOR UNSECURED		12/20/2018	VARIOUS		6,471,285	6,070,000	39,225
539830-BN-8	Lockheed Martin Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		397,285	417,000	
548661-DE-4	LOWE'S COS INC-SR UNSECURED		06/11/2018	GOLDMAN		7,603,833	7,710,000	80,098
548661-DJ-3	LOWE'S COS INC-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		336,805	330,000	
548661-DN-4	Lowe's Cos Inc-SENIOR UNSECURED		07/16/2018	VARIOUS		4,733,583	5,125,000	47,805
55336V-AL-4	MPLX LP-SENIOR UNSECURED		08/01/2018	VARIOUS		4,989,019	4,587,000	94,563
55336V-AM-2	MPLX LP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		552,745	580,000	
55336V-AN-0	MPLX LP-SENIOR UNSECURED		10/04/2018	VARIOUS		10,927,054	11,040,000	23,226
55336V-AS-9	MPLX LP-SENIOR UNSECURED		11/07/2018	WELLS FARGO		79,546	80,000	
55374V-AA-1	MSN 1357 LLC Senior Secured Notes Class		11/30/2018	DIRECT		17,500,000	17,500,000	

E13.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
55374V-AB-9	MSN 1357 LLC Senior Secured Notes Class		11/30/2018	DIRECT		7,500,000	7,500,000	
559080-AM-8	Magellan Midstream Partn-SENIOR UNSECURE		02/02/2018	WELLS FARGO		3,759,074	3,800,000	54,530
56081F-BP-4	Major League Baseball Tr Senior Secured		06/11/2018	DIRECT		7,900,000	7,900,000	
565122-AB-4	Keurig Dr Pepper Inc-SENIOR UNSECURED		07/20/2018	VARIOUS		8,596,779	8,500,000	48,103
565122-AC-2	Keurig Dr Pepper Inc-SENIOR UNSECURED		09/21/2018	GOLDMAN		574,563	575,000	7,776
565122-AD-0	Keurig Dr Pepper Inc-SENIOR UNSECURED		06/20/2018	JP MORGAN SECURITIES		9,246,552	9,200,000	30,477
565122-AE-8	Keurig Dr Pepper Inc-SENIOR UNSECURED		05/14/2018	JP MORGAN SECURITIES		4,600,000	4,600,000	
565122-AG-3	Keurig Dr Pepper Inc-SENIOR UNSECURED		05/14/2018	JP MORGAN SECURITIES		9,100,000	9,100,000	
565849-AB-2	MARATHON OIL CORP-NOTE		08/01/2018	IN-KIND TRANSFER		136,300	115,000	
565849-AE-6	MARATHON OIL CORP-SENIOR UNSECURED NOTE		08/01/2018	IN-KIND TRANSFER		126,076	105,000	
565849-AM-8	Marathon Oil Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,292,909	1,226,000	
565849-AP-1	MARATHON OIL CORP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		232,069	230,000	
56585A-AF-9	MARATHON PETROLEUM CORP-SENIOR UNSECURED		06/11/2018	GOLDMAN		15,593,258	13,180,000	242,732
56585A-AS-1	Marathon Petroleum Corp-SENIOR UNSECURED		10/02/2018	EXCHANGE OFFER		104,851	105,000	
56585A-AT-9	Marathon Petroleum Corp-SENIOR UNSECURED		10/02/2018	EXCHANGE OFFER		7,723,075	7,840,000	
571748-BC-5	MARSH & MCLENNAN COS INC-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		189,573	201,000	
571748-BD-3	Marsh & McLennan Cos Inc-SENIOR UNSECURE		06/28/2018	VARIOUS		26,893,024	27,100,000	70,583
575634-AS-9	MASSACHUSETTS ELECTRIC-SENIOR UNSECURED		04/11/2018	JEFFERIES LLC		38,219,272	30,550,000	741,007
575718-AF-8	MASS INSTITUTE OF TECH-UNSECURED		04/23/2018	RAYMOND JAMES		1,376,010	1,522,000	18,724
579780-AN-7	MCCORMICK & CO INC/MID-SENIOR UNSECURED		06/28/2018	VARIOUS		30,304,711	32,097,000	370,766
58013M-EK-6	McDonald's Corp-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		593,619	595,000	
58013M-EV-2	MCDONALD'S CORP-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,194,200	1,180,000	
58013M-FC-3	MCDONALD'S CORP-SENIOR UNSECURED		10/04/2018	VARIOUS		863,228	880,000	4,522
58013M-FH-2	McDonald's Corp-SENIOR UNSECURED		12/21/2018	GOLDMAN		4,818,500	5,000,000	80,965
585055-BT-2	MEDTRONIC INC-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		626,988	595,000	
585055-BU-9	MEDTRONIC INC-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		945,309	870,000	
586054-AA-6	MEMORIAL SLOAN-KETTERING-SR UNSECURED		06/20/2018	CITIGROUP GLOBAL MAR		8,048,956	6,970,000	165,538
586054-AC-2	MEMORIAL SLOAN-KETTERING-SENIOR UNSECURE		07/24/2018	VARIOUS		7,799,069	7,585,000	90,271
589331-AS-6	MERCK & CO INC-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		243,143	255,000	
589331-AJ-4	MERCK & CO INC-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		638,951	635,000	
589331-AT-2	MERCK & CO INC-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,368,742	1,424,000	
59156R-BD-9	METLIFE INC-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		899,404	960,000	
59156R-BL-1	METLIFE INC-SR UNSECURED		05/31/2018	U B S SECURITIES		3,943,787	3,735,000	38,695
594918-AJ-3	Microsoft Corp-SENIOR NOTE		08/01/2018	VARIOUS		15,085,631	13,535,000	181,672
594918-BC-7	Microsoft Corp-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		107,262	110,000	
594918-BD-5	MICROSOFT CORP-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		147,790	150,000	
594918-BK-9	MICROSOFT CORP-SR UNSECURED		06/07/2018	HSBC SECURITIES INC		3,879,376	3,700,000	16,403
594918-BR-4	MICROSOFT CORP-SENIOR UNSECURED		12/17/2018	MARKETAXESS FINANCIA		195,063	210,000	1,834
594918-BS-2	MICROSOFT CORP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		728,631	755,000	
594918-BT-0	MICROSOFT CORP-SENIOR UNSECURED		10/04/2018	VARIOUS		7,983,790	8,329,000	111,526
594918-BZ-6	MICROSOFT CORP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		1,781,072	1,695,000	
594918-CB-8	MICROSOFT CORP-SENIOR UNSECURED		06/26/2018	BARCLAYS CAPITAL INC		3,272,853	3,035,000	53,871
595620-AR-6	MIDAMERICAN ENERGY CO-SECURED		08/01/2018	IN-KIND TRANSFER		544,729	565,000	
59562E-AH-8	MIDAMERICAN ENERGY CO-SECURED		08/01/2018	IN-KIND TRANSFER		272,688	225,000	
60053*-AA-8	Miller Environmental Ser Senior Sub Note		09/30/2018	PIK BOND		23,499	23,653	
60053*-AB-6	Miller Environmental Ser Senior Sub Note		09/30/2018	VARIOUS		2,263,985	2,263,741	
60470*-AA-9	Midwest Industrial Rubbe Senior Sub Note		09/30/2018	PIK BOND		33,080	33,151	
60871R-AG-5	MOLSON COORS BREWING CO-SENIOR UNSECURED		08/01/2018	VARIOUS		20,016,866	22,015,000	264,595
60871R-AH-3	MOLSON COORS BREWING CO-SENIOR UNSECURED		10/04/2018	VARIOUS		3,080,448	3,311,000	20,732
610202-BP-7	MONONGAHELA POWER CO-SECURED		12/19/2018	VARIOUS		40,907,560	34,437,000	103,414
61691R-AH-9	MSC 2018-H4 AS		12/14/2018	MORGAN		20,598,630	20,000,000	66,748
61744Y-AL-2	MORGAN STANLEY-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		1,426,846	1,510,000	
61744Y-AP-3	Morgan Stanley-SENIOR UNSECURED		06/26/2018	VARIOUS		17,723,220	18,400,000	282,575
61744Y-AR-9	Morgan Stanley-SENIOR UNSECURED		04/19/2018	MORGAN		390,000	390,000	
61746B-EF-9	MORGAN STANLEY-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		4,809	5,000	
61746B-EG-7	MORGAN STANLEY-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		239,737	251,000	
61747Y-DY-8	MORGAN STANLEY-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		127,009	130,000	
617482-V9-2	Morgan Stanley-SENIOR UNSECURED BOND		08/01/2018	IN-KIND TRANSFER		385,268	305,000	
61761J-3R-8	MORGAN STANLEY-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		107,426	115,000	
61766C-AV-1	MORGAN STANLEY CAPITAL I-SERIES 2016-UBS		10/02/2018	MORGAN		5,357,461	6,300,000	1,575
61767Y-BD-1	Morgan Stanley Capital I-MSC 2018-H3 B		06/27/2018	MORGAN		6,344,746	6,160,000	8,696
61946L-AA-0	Mosaic Solar Loan Trust -MSAIC 2018-2GS		12/17/2018	BARCLAYS CAPITAL INC		6,425,638	6,494,643	21,974
62927E-AC-2	NHL U.S. Funding LP Senior Note US Serie		07/12/2018	JP MORGAN SECURITIES		2,299,065	2,299,065	
62927E-AE-8	NHL U.S. Funding LP Senior Note US Serie		07/12/2018	JP MORGAN SECURITIES		21,712,707	21,712,707	
62972F-AA-8	NSI Holdings, Inc. Senior Sub Note		01/01/2018	PIK BOND		42,233		

EX 3.11

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
631005-BH-7	Narragansett Electric Co-SENIOR UNSECURE		07/24/2018	MORGAN		12,800,000	12,800,000	
637071-AK-7	National Oilwell Varco I-SR UNSECURED		10/15/2018	VARIOUS		13,639,184	15,800,000	91,486
637417-AL-0	National Retail Properti-SENIOR UNSECURE		09/18/2018	BANK OF AMERICA CORP		6,369,325	6,415,000	
63890B-AC-0	Navient Student Loan Tru-NAVSL 2018-EA B		11/06/2018	BANK OF AMERICA CORP		8,429,471	8,430,000	
63939D-AD-7	NAVIENT STUDENT LOAN TRUST 2014-8 CL B		09/27/2018	BARCLAYS CAPITAL INC		2,537,500	2,500,000	1,548
63939F-AC-4	Navient Student Loan Tru-SERIES 15-1 CLA		11/16/2018	VARIOUS		13,283,750	13,000,000	23,787
63940D-AD-4	Navient Student Loan Tru-SERIES 18-1A CL		01/23/2018	JP MORGAN SECURITIES		9,500,000	9,500,000	
63940U-AD-6	Navient Private Educatio-SERIES 18-DA CL		10/18/2018	JP MORGAN SECURITIES		14,993,829	15,000,000	
63940V-AC-6	Navient Private Educatio-NAVSL 2018-CA B		07/18/2018	BARCLAYS CAPITAL INC		15,799,147	15,800,000	
63941D-AD-3	Navient Student Loan Tru-NAVIENT STUDENT		03/20/2018	RBC CAPITAL MARKETS		8,900,000	8,900,000	
63941N-AD-1	Navient Student Loan Tru-NAVSL 2018-4A B		09/10/2018	RBC CAPITAL MARKETS		10,200,000	10,200,000	
64033L-AD-2	NELNET STUDENT LOAN TRUS-SERIES 2014-2A		11/08/2018	JP MORGAN SECURITIES		5,009,375	5,000,000	9,979
64034A-AD-5	Nelnet Student Loan Trus-NSLT 2018-3A B		07/17/2018	RBC CAPITAL MARKETS		7,385,450	7,500,000	
64034B-AB-7	Nelnet Student Loan Trus-NSLT 2018-5A B		12/06/2018	RBC CAPITAL MARKETS		11,500,000	11,500,000	
64034D-AB-3	Nelnet Student Loan Trus-NSLT 2018-4 B		08/27/2018	RBC CAPITAL MARKETS		11,300,000	11,300,000	
641423-BZ-0	NEVADA POWER CO-BOND		10/04/2018	IN-KIND TRANSFER		111,262	100,000	
649322-AA-2	NY & PRESBYTERIAN HOSPIT-UNSECURED		08/01/2018	BARCLAYS CAPITAL INC		4,105,282	4,196,000	938
649322-AC-8	New York and Presbyteria-UNSECURED		08/01/2018	VARIOUS		22,703,492	23,822,000	343,840
649322-AD-6	New York and Presbyteria-UNSECURED		09/17/2018	VARIOUS		10,294,572	10,435,000	101,808
64952II-CX-9	New York Life Global Fun-SECURED		07/10/2018	U B S SECURITIES		9,319,367	9,865,000	1,644
65106F-AG-7	NEWCASTLE MORTGAGE SECUR-SERIES 2007-1 C		12/26/2018	PAYUP		246,733	27,807	
651229-AV-8	Newell Brands Inc-SENIOR UNSECURED		09/21/2018	GOLDMAN		587,910	600,000	11,165
651639-AM-8	Newmont Mining Corp-SENIOR UNSECURED NOT		08/01/2018	IN-KIND TRANSFER		1,158,114	995,000	
65339K-AX-8	NextEra Energy Capital H-SENIOR UNSECURE		11/05/2018	WELLS FARGO		8,142,077	8,135,000	38,119
65473Q-AW-3	NISOURCE FINANCE CORP-SENIOR UNSECURED N		10/04/2018	IN-KIND TRANSFER		246,441	215,000	
65473Q-BD-4	NISOURCE FINANCE CORP-SENIOR UNSECURED B		10/04/2018	IN-KIND TRANSFER		707,132	640,000	
65473Q-BG-7	NISOURCE FINANCE CORP-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		266,719	300,000	
655044-AG-0	NOBLE ENERGY INC NT		10/04/2018	IN-KIND TRANSFER		1,122,346	1,134,000	
655044-AJ-4	NOBLE ENERGY INC-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		534,036	525,000	
655044-AN-5	Noble Energy Inc-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,088,067	1,115,000	
655844-BR-8	Norfolk Southern Corp-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		89,977	85,000	
655844-BV-9	Norfolk Southern Corp-SENIOR UNSECURED		08/01/2018	VARIOUS		2,686,357	2,855,000	
655844-BX-5	Norfolk Southern Corp-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		52,458	55,000	
664675-AS-4	Northeastern University-UNSECURED		06/20/2018	MORGAN		12,785,000	12,785,000	
665772-CJ-6	NORTHERN STATES PWR-MINN-SECURED		08/01/2018	IN-KIND TRANSFER		251,303	280,000	
665789-BA-0	Northern States Power Co-SECURED		09/05/2018	MIZUHO SECURITIES		6,675,143	6,700,000	
666807-AQ-5	Northrop Grumman Systems-SENIOR UNSECURE		07/18/2018	BRILEY		7,901,648	6,349,000	193,049
666807-BH-4	Northrop Grumman Corp-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		945,989	900,000	
666807-BJ-0	NORTHROP GRUMMAN CORP-SR UNSECURED		07/12/2018	CREDIT SUISSE SECURI		4,650,900	5,000,000	48,660
666807-BN-1	Northrop Grumman Corp-SENIOR UNSECURED		07/12/2018	CREDIT SUISSE SECURI		4,069,735	4,300,000	388
666807-BP-6	NORTHROP GRUMMAN CORP-SENIOR UNSECURED		08/01/2018	VARIOUS		5,521,981	5,780,000	62,306
66704J-AF-5	Northstar Education Fina-REVENUE BONDS		08/08/2018	CANTOR		5,715,625	5,900,000	
66704J-AH-1	Northstar Education Fina-REVENUE BONDS		10/04/2018	VARIOUS		16,759,188	17,300,000	24,026
66704J-AJ-7	Northstar Education Fina-REVENUE BONDS		10/04/2018	VARIOUS		15,936,531	16,450,000	31,355
66704J-BW-7	Northstar Education Fina-NEF 2007-1 A4		07/25/2018	STORMHARBOUR SECURIT		9,506,188	9,775,000	9,095
66705R-AA-7	NORTHSTAR EDUCATION FINA-NEF 2016-1 A		01/01/2018	PAYUP		(35,739)	(35,739)	
669884-AF-5	NOVASTAR HOME EQUITY LOA-SERIES 2006-1 C		10/25/2018	PAYUP			3,315	
670346-AN-5	NUCOR CORP-SENIOR UNSECURED		08/07/2018	VARIOUS		16,957,770	15,000,000	211,683
670346-AP-0	Nucor Corp-SENIOR UNSECURED		06/01/2018	BARCLAYS CAPITAL INC		6,491,290	6,500,000	27,815
670346-AQ-8	Nucor Corp-SENIOR UNSECURED		06/25/2018	BARCLAYS CAPITAL INC		20,971,204	21,255,000	133,720
67103H-AG-2	O'Reilly Automotive Inc-SENIOR UNSECURED		05/10/2018	JP MORGAN SECURITIES		254,317	255,000	
67105E-AF-8	OSI Group, LLC Senior Secured		03/22/2018	DIRECT		34,300,000	34,300,000	
67109Y-AN-4	Oak Hill Credit Partners-SERIES 15-12A C		06/06/2018	GOLDMAN		10,000,000	10,000,000	
674599-ON-3	Occidental Petroleum Cor-SENIOR UNSECURE		07/27/2018	GOLDMAN		50,435	50,000	869
677415-CQ-2	Ohio Power Co-SENIOR UNSECURED		07/17/2018	JEFFERIES LLC		9,675,086	9,430,000	127,187
68233D-AP-2	ONCOR ELECTRIC DELIVERY-SENIOR SECURED N		08/01/2018	IN-KIND TRANSFER		173,107	130,000	
68233J-AS-3	ONCOR ELECTRIC DELIVERY-SENIOR SECURED B		08/01/2018	IN-KIND TRANSFER		589,780	510,000	
68233J-AT-1	ONCOR ELECTRIC DELIVERY-SENIOR SECURED B		08/01/2018	IN-KIND TRANSFER		1,181,820	1,120,000	
68233J-BB-9	ONCOR ELECTRIC DELIVERY -FIRST LIEN		08/01/2018	IN-KIND TRANSFER		569,997	595,000	
68233J-BF-0	Oncor Electric Delivery -SECURED		08/07/2018	CITIGROUP GLOBAL MAR		10,090,102	10,100,000	
68389X-AV-7	ORACLE CORP-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,297,021	1,257,000	
68389X-AW-5	ORACLE CORP-SENIOR UNSECURED BOND		10/04/2018	IN-KIND TRANSFER		1,420,215	1,405,000	
68389X-BF-1	ORACLE CORP-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,702,869	1,759,000	
68389X-BJ-3	ORACLE CORP-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		695,934	735,000	
68389X-BP-9	Oracle Corp-SENIOR UNSECURED		08/01/2018	VARIOUS		1,513,345	1,555,000	15,301

E13.12

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
68389X-B0-7	Oracle Corp-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		536,235	550,000	
686514-AF-7	Orlando Health Obligated-UNSECURED		07/24/2018	RAYMOND JAMES		6,933,946	6,955,000	31,415
686515-AA-5	Orlando Health Obligated-UNSECURED		06/11/2018	RAYMOND JAMES		1,900,527	1,900,000	16,781
69327R-AJ-0	PDC Energy Inc-SENIOR UNSECURED		07/25/2018	EXCHANGE OFFER		4,725,000	4,724,999	
693304-AS-6	PECO ENERGY CO-SECURED		08/01/2018	JEFFERIESLLC		6,764,253	6,700,000	94,228
693304-AW-7	PECO Energy Co-SECURED		12/20/2018	VARIOUS		14,216,129	14,760,000	90,305
69351U-AV-5	PPL Electric Utilities C-SECURED		06/11/2018	VARIOUS		23,530,727	23,600,000	
69353R-EQ-7	PNC Bank NA-SENIOR UNSECURED		07/18/2018	MORGAN		19,548,400	20,000,000	88,472
69353R-FG-8	PNC Bank NA-SENIOR UNSECURED		05/30/2018	GOLDMAN		7,787,130	8,200,000	25,420
695114-CL-0	PacifiCorp-BOND		08/01/2018	IN-KIND TRANSFER		944,430	765,000	
695114-CT-3	PacifiCorp-SECURED		12/20/2018	VARIOUS		7,742,285	7,816,000	144,189
69764#-AA-5	Pamlico VPP Holdings LLC Senior PIK Note		08/14/2018	DIRECT		4,259,330	4,346,255	
69764#-AB-3	Pamlico VPP Holdings LLC HoldCo PIK DDTL		10/19/2018	DIRECT		4,259,330	4,346,255	
69863B-AB-5	PANOS Brands LLC Senior Sub Note		09/30/2018	VARIOUS		1,190,572	1,190,728	
701094-AL-8	Parker-Hamifin Corp-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		568,396	575,000	
70109H-AN-5	Parker-Hamifin Corp-SR UNSECURED		06/11/2018	BARCLAYS CAPITAL INC		8,584,358	8,300,000	22,571
70213H-AC-2	PARTNERS HEALTHCARE SYST-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		176,827	190,000	
70213H-AD-0	Partners Healthcare Syst-SENIOR UNSECURE		03/05/2018	RAYMOND JAMES		2,727,987	2,890,000	20,855
70342B-AG-3	Patterson Companies, Inc Senior Note		08/29/2018	DIRECT		14,419,526	15,250,000	229,970
70344#-AA-2	Patterson Companies, Inc Senior Unsecure		03/29/2018	JP MORGAN SECURITIES		21,000,000	21,000,000	
703481-AB-7	Patterson-UTI Energy Inc-SENIOR UNSECURE		09/10/2018	EXCHANGE OFFER		17,120,255	17,090,000	
708696-BV-0	PENNSYLVANIA ELECTRIC CO-SENIOR UNSECURE		07/02/2018	SCOTIA CAPITAL MARKE		5,328,573	4,398,000	70,625
708696-BY-4	Pennsylvania Electric Co-SENIOR UNSECURE		09/20/2018	MITSUBISHI UFJ SEC I		15,621,943	16,830,000	13,674
709599-AW-4	Penske Truck Leasing Co -SENIOR UNSECURE		07/16/2018	U. S. BANCORP		3,134,740	3,353,000	13,192
709599-AX-2	Penske Truck Leasing Co -SENIOR UNSECURE		06/26/2018	RBC CAPITAL MARKETS		4,928,050	5,000,000	50,750
709599-AZ-7	Penske Truck Leasing Co -SENIOR UNSECURE		07/19/2018	VARIOUS		22,423,352	22,600,000	319,325
71344B-CC-0	PepsiCo Inc-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		535,806	570,000	
71344B-DD-7	PEPSICO INC-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,274,501	1,230,000	
71344B-DP-0	PEPSICO INC-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		810,525	890,000	
717081-CY-7	Pfizer Inc-SENIOR UNSECURED NOTE		04/10/2018	CREDIT SUISSE SECURI		144,922	100,000	540
717081-EO-3	PFIZER INC-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		436,778	435,000	
717265-AL-6	FREEMONT MINERALS CORP-SENIOR UNSECURED		07/18/2018	IMPERIAL CAPITAL		6,107,016	4,871,000	62,985
718546-AK-0	Phillips 66-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		132,933	130,000	
718546-AL-8	PHILLIPS 66-SENIOR UNSECURED NOTE		12/19/2018	DEUTSCHE BANK SECURI		9,856,336	9,700,000	91,840
718546-AR-5	Phillips 66-SENIOR UNSECURED		07/10/2018	CITIGROUP GLOBAL MAR		10,561,482	10,727,000	152,234
718549-AE-8	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED		01/11/2018	JP MORGAN SECURITIES		6,169,258	5,820,000	83,178
718549-AF-5	PHILLIPS 66 PARTNERS LP-SENIOR UNSECURED		07/27/2018	JP MORGAN SECURITIES		56,710	60,000	938
72147K-AE-8	Pilgrim's Pride Corp-SENIOR UNSECURED		02/22/2018	GOLDMAN		2,522,000	2,600,000	62,373
72348X-AC-1	PINNACLE OPERATING CORP-NOTE		01/01/2018	VARIOUS		2,103,405	2,103,405	
724479-AM-2	PITNEY BOWES INC-SENIOR UNSECURED		07/27/2018	MARKETAXESS FINANCIA		54,776	55,000	753
724479-AN-0	Pitney Bowes Inc-SENIOR UNSECURED		07/10/2018	MORGAN		18,418,500	20,465,000	269,854
72850R-BH-4	PLAINS ALL AMER PIPELINE-SR UNSECURED		01/31/2018	BRILEY		3,840,000	3,840,000	87,285
72703P-AB-9	Planet Fitness Master Is-PLNT 2018-1A A2		07/19/2018	GUGGENHEIM CAPITAL M		40,000,000	40,000,000	
731068-B*2	Polaris Industries Inc. Senior Unsecured		07/02/2018	BOFAMILSEC		31,200,000	31,200,000	
73180#-AA-3	Polytex Environmental In Sr. Sub Note (1		09/30/2018	PIK BOND		78,647	99,053	
737679-B*0	Potomac Electric Power C First Mortgage		11/01/2018	JP MORGAN SECURITIES		18,200,000	18,200,000	
737679-DB-3	POTOMAC ELECTRIC POWER-SECURED		08/01/2018	VARIOUS		9,506,097	9,506,000	54,852
740189-AH-8	PRECISION CASTPARTS CORP-SENIOR UNSECURE		07/09/2018	BARCLAYS CAPITAL INC		3,227,152	3,275,000	62,443
74251V-AA-0	Principal Financial Grou-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		342,034	295,000	
743315-AQ-6	PROGRESSIVE CORP-SR UNSECURED		06/28/2018	VARIOUS		11,681,239	12,626,000	172,256
743315-AS-2	PROGRESSIVE CORP-SENIOR UNSECURED		05/31/2018	WELLS FARGO		9,248,292	9,300,000	52,216
743315-AT-0	Progressive Corp/The-SENIOR UNSECURED		12/26/2018	VARIOUS		11,726,588	11,784,000	162,138
74340X-BE-0	PROLOGIS LP-SR UNSECURED		07/27/2018	SUMRIDGE PARTNERS LL		54,949	55,000	516
74340X-BH-3	Prologis LP-SENIOR UNSECURED		06/20/2018	VARIOUS		18,137,185	18,100,000	2,949
743674-AY-9	Protective Life Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		582,444	423,000	
744320-BA-9	Prudential Financial Inc-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		636,573	710,000	
744320-BD-6	PRUDENTIAL FINANCIAL INC-SR UNSECURED MT		07/17/2018	WELLS FARGO		12,737,500	10,000,000	88,333
744448-BZ-3	PUBLIC SERVICE COLORADO-BOND		08/01/2018	IN-KIND TRANSFER		1,260,983	995,000	
744448-CN-9	PUBLIC SERVICE CO OF COL-SECURED		06/15/2018	WELLS FARGO		8,703,422	9,100,000	3,842
74456Q-BM-7	Public Service Electric -SECURED		09/20/2018	RBC CAPITAL MARKETS		3,340,581	3,400,000	54,698
74456Q-BT-2	Public Service Electric -SECURED		12/20/2018	WELLS FARGO		4,645,050	5,000,000	11,500
74456Q-BV-7	Public Service Electric -SECURED		05/02/2018	MIZUHO SECURITIES		26,236,584	26,400,000	
74460D-AC-3	Public Storage-SENIOR UNSECURED		07/26/2018	WELLS FARGO		7,255,402	7,700,000	89,339
745332-CC-8	PUGET SOUND ENERGY INC-SECURED		04/24/2018	JEFFERIESLLC		16,575,356	13,700,000	221,546
745867-AM-3	PULTE GROUP INC-SENIOR UNSECURED NOTE		08/29/2018	VARIOUS		4,320,975	3,850,000	58,352

EX-13.13

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
74913G-AK-3	Qwest Corp-SENIOR UNSECURED		12/17/2018	VARIOUS		393,947	375,000	1,195
74979U-AA-3	RS 2018 Private, LLC Senior Secured		05/15/2018	DIRECT		46,000,000	46,000,000	
74986E-AK-9	RREEF America REIT II, I Senior Notes Se		08/31/2018	WELLS FARGO		9,000,000	9,000,000	
74986E-AY-7	RREEF America REIT II, I Senior Notes Se		08/31/2018	WELLS FARGO		11,000,000	11,000,000	
754730-AF-6	RAYMOND JAMES FINANCIAL-SENIOR UNSECURED		03/22/2018	RAYMOND JAMES		6,059,529	5,610,000	54,768
755111-BU-4	Raytheon Co-SENIOR UNSECURED NOTE		07/16/2018	RBC CAPITAL MARKETS		28,648,506	25,301,000	220,647
75846#-AA-4	Reelcraft Ind. SR SUB NT		09/30/2018	PIK BOND		7,773	7,707	
760759-AS-9	Republic Services Inc-SENIOR UNSECURED		04/05/2018	CITIGROUP GLOBAL MAR		9,915,780	10,305,000	138,151
760759-AT-7	Republic Services Inc-SENIOR UNSECURED		05/03/2018	BANK OF AMERICA CORP		266,225	270,000	
76112B-K6-6	RESIDENTIAL ASSET MORTGA-SERIES 2005-EFC		10/25/2018	PAYUP			7,196	
76716X-AC-6	Rio Oil Finance Trust Se-SECURED		04/12/2018	DTCYID		2,700,000	2,700,000	
77046#-AA-8	Specified Air Solutions Senior Sub Note		12/19/2018	DIRECT		16,763,959	16,763,959	
771196-AU-6	ROCHE HOLDING INC-NOTE		09/19/2018	WELLS FARGO		16,115,467	11,791,000	45,854
775371-AU-1	Rohm & Haas Co-DEBENTURE		08/01/2018	IN-KIND TRANSFER		1,271,869	985,000	
776743-AF-3	Roper Technologies Inc-SENIOR UNSECURED		08/14/2018	JP MORGAN SECURITIES		23,674,404	23,700,000	
78349A-A6-2	RIIJ Barnabas Health, Inc Senior Secured		12/18/2018	CITIGROUP GLOBAL MAR		6,700,000	6,700,000	
78409V-AB-0	S&P GLOBAL INC-SENIOR UNSECURED NOTE		07/26/2018	JP MORGAN SECURITIES		18,593,353	14,405,000	178,655
78409V-AM-6	S&P Global Inc-SENIOR UNSECURED		06/12/2018	BANK OF AMERICA CORP		11,217,581	12,130,000	141,146
78442G-GM-2	SLM STUDENT LOAN TRUST 2003-4 LN BKD CTF		08/01/2018	CREDIT SUISSE SECURI		1,292,261	1,333,517	5,428
78442G-QL-3	SLM Student Loan Trust 2-SLMA 2005-7 B		08/01/2018	CREDIT SUISSE SECURI		4,942,544	5,195,841	3,436
78443G-AJ-4	SLM STUDENT LOAN TRUST 2-SERIES 06-7 CLA		05/10/2018	JP MORGAN SECURITIES		4,820,522	5,107,837	6,900
78444E-AE-9	SLM Student Loan Trust 2-SERIES 2007-7 C		02/14/2018	CREDIT SUISSE SECURI		6,234,375	6,650,000	10,140
78449Q-AD-9	SMB Private Education Lo-SMB 2018-C B		09/12/2018	JP MORGAN SECURITIES		12,222,303	12,500,000	
78480E-AA-1	SRS Holdco LLC Senior Secured		08/08/2018	DIRECT		428,737	428,737	
78486Q-AD-3	SVB FINANCIAL GROUP-SR UNSECURED		08/01/2018	MITSUBISHI UFJ SEC I		14,819,407	15,231,000	227,390
78490D-AC-8	Sofi Professional Loan P-SERIES 2018 CLA		08/07/2018	DEUTSCHE BANK SECUR		17,548,257	17,550,000	
79466L-AF-1	salesforce.com Inc-SENIOR UNSECURED		07/09/2018	VARIOUS		30,124,765	30,283,000	205,748
797440-BP-8	SAN DIEGO G & E-SECURED		10/04/2018	IN-KIND TRANSFER		688,586	748,000	
80284B-AG-9	Santander Drive Auto Rec-SDART 2015-2 D		10/04/2018	IN-KIND TRANSFER		500,179	500,000	
80285E-AF-4	Santander Drive Auto Rec-SDART 2016-1 C		10/04/2018	IN-KIND TRANSFER		1,101,555	1,100,000	
80285L-AD-3	Santander Drive Auto Rec-SDART 2017-2 B		10/04/2018	IN-KIND TRANSFER		1,226,423	1,230,000	
80285L-AF-8	Santander Drive Auto Rec-SDART 2017-2 D		10/04/2018	IN-KIND TRANSFER		199,309	200,000	
80386W-AA-3	SASOL Financing USA LLC-SENIOR UNSECURED		11/16/2018	VARIOUS		18,427,218	18,413,000	46,770
80386W-AB-1	SASOL Financing USA LLC-SENIOR UNSECURED		09/20/2018	DTCYID		1,797,642	1,800,000	
808513-AU-9	Charles Schwab Corp/The-SENIOR UNSECURED		07/19/2018	KEY CAPITAL MARKETS		9,614,800	10,000,000	200,889
808513-AX-3	Charles Schwab Corp/The-SENIOR UNSECURED		05/31/2018	VARIOUS		18,872,819	18,587,000	23,853
81373P-AA-1	Securian Financial Group-SENIOR UNSECURE		06/26/2018	GOLDMAN		48,647,971	48,900,000	148,233
828807-CZ-8	SIMON PROPERTY GROUP LP-SENIOR UNSECURED		08/08/2018	U B S SECURITIES		118,688	120,000	992
833034-AL-5	Snap-on Inc-SENIOR UNSECURED		02/20/2018	CITIGROUP GLOBAL MAR		22,238,675	22,300,000	
83401A-AC-2	Sofi Professional Loan P-SOFI 2018-D BFX		09/18/2018	MORGAN		11,898,840	11,900,000	
83404E-AC-0	Software Paradigms Inter Senior Sub Note		09/30/2018	PIK BOND		87,094	87,359	
83546D-AF-5	Sonic Capital LLC-SERIES 18-1A CLASS A2		01/23/2018	GUGGENHEIM CAPITAL M		3,600,000	3,600,000	
83715R-AG-7	SOUTH CAROLINA STUDENT L-SERIES 2014-1 C		10/18/2018	JP MORGAN SECURITIES		17,306,738	17,030,000	37,313
841215-AA-4	Southaven Combined Cycle-SECURED		02/23/2018	DTCYID		497,144	485,341	570
845437-BQ-4	Southwestern Electric Po-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		159,733	175,000	
84756N-AG-4	SPECTRA ENERGY PARTNERS-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		165,665	175,000	
84858*-AA-5	Spirit Airlines Pass Through Trust 2017-		05/03/2018	DIRECT		35,000,000	35,000,000	
85206Q-AT-9	Sprint Capital Corp-SENIOR UNSECURED		08/30/2018	BANK OF AMERICA CORP		4,440,000	4,000,000	162,847
85207U-AK-1	Sprint Corp-SENIOR UNSECURED		08/22/2018	MORGAN		2,653,125	2,500,000	96,372
85208N-AD-2	Sprint Spectrum Co LLC -FIRST LIEN		10/04/2018	IN-KIND TRANSFER		503,125	500,000	
85253#-AA-9	STAG Industrial Inc Senior Unsecure		05/16/2018	BOFAMILSEC		3,097,380	3,000,000	18,675
85253#-AD-3	STAG Industrial Operatin Gtd Senior Note		05/16/2018	DIRECT		42,800,000	42,800,000	441,696
85253#-AG-6	STAG Industrial Operatin Gtd Senior Note		06/13/2018	DIRECT		6,959,000	6,959,000	
85253#-AH-4	STAG Industrial Operatin Gtd Senior Note		06/13/2018	DIRECT		11,200,000	11,200,000	
853496-AD-9	Standard Industries Inc/-SENIOR UNSECURE		01/12/2018	BANK OF AMERICA CORP		1,114,000	1,114,000	4,410
855244-AS-8	Starbucks Corp-SENIOR UNSECURED		10/04/2018	VARIOUS		10,530,932	10,650,000	
85571B-AL-9	Starwood Property Trust -SENIOR UNSECURE		08/15/2018	EXCHANGE OFFER		3,958,086	3,985,999	
857477-AN-3	State Street Corp-SR UNSECURED		07/09/2018	MORGAN		12,532,913	12,694,000	29,090
858119-BF-6	Steel Dynamics Inc-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		355,410	359,000	
86212V-AE-4	Store Master Funding I-V-SERIES 18-1A CL		10/12/2018	CREDIT SUISSE SECURI		9,496,427	9,500,000	
86212V-AG-9	Store Master Funding I-V-SERIES 18-1A CL		10/12/2018	CREDIT SUISSE SECURI		9,399,389	9,400,000	
863572-2A-0	STRUCTURED ASSET SECURIT-SERIES 2000-5 C		08/01/2018	PAYUP			55	
863579-DV-7	STRUCTURED ADJUSTABLE RA-SERIES 2004-17		06/25/2018	PAYUP			1,896	
86359A-CG-6	STRUCTURED ASSET SECURIT-SERIES 2002-21A		08/01/2018	PAYUP		(8,305)	9,881	
86359B-UB-2	STRUCTURED ASSET SECURIT-SERIES 2004-23X		12/26/2018	PAYUP			123,339	

E13.14

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
86360N-AS-1	STRUCTURED ADJUSTABLE RA-SERIES 2006-5 C		10/01/2018	PAYUP		380	671	
863667-AE-1	Stryker Corp-SENIOR UNSECURED		07/25/2018	JEFFERIES LLC		3,490,708	3,655,000	48,287
863667-AJ-0	STRYKER CORP-SENIOR UNSECURED		07/17/2018	BANK OF AMERICA CORP		13,398,452	13,000,000	178,319
863871-AM-1	STUDENT LOAN MKTG ASSOC-ZERO CPN BND		10/04/2018	IN-KIND TRANSFER		200,010	230,000	
86745J-AA-5	Helios Issuer LLC-SERIES 2018-1A CLASS A		10/26/2018	CREDIT SUISSE SECURI		21,391,438	21,396,000	
86765B-AV-1	Sunoco Logistics Partner-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		671,727	690,000	
868008-AA-7	SUNVAIR INC SR SUB NT		09/30/2018	VARIOUS		245,955	272,408	
87165B-AC-7	Synchrony Financial-SENIOR UNSECURED		12/20/2018	MARKETAXESS FINANCIA		386,668	400,000	5,375
87165B-AG-8	SYNCHRONY FINANCIAL-SENIOR UNSECURED		12/12/2018	VARIOUS		544,753	588,000	7,959
87165B-AL-7	Synchrony Financial-SENIOR UNSECURED		08/15/2018	CREDIT SUISSE SECURI		137,186	150,000	200
871868-AA-9	Systec Corp. Senior Sub Note		01/01/2018	PIK BOND		(39,773)	(41,328)	
87342R-AE-4	BELL 2018-1 A211		11/14/2018	BARCLAYS CAPITAL INC		12,900,000	12,900,000	
875127-BD-3	Tampa Electric Co-SR UNSECURED		04/10/2018	OPPENHEIMER AND CO		4,693,796	4,700,000	80,605
875127-BE-1	Tampa Electric Co-SENIOR UNSECURED		12/26/2018	VARIOUS		30,745,287	30,925,000	36,386
875484-AH-0	Tanger Properties LP-SENIOR UNSECURED		07/18/2018	MORGAN		4,724,139	4,900,000	25,010
875484-AJ-6	TANGER PROPERTIES LP-SENIOR UNSECURED		06/25/2018	WELLS FARGO		9,594,139	10,645,000	102,970
875484-AK-3	Tanger Properties LP-SENIOR UNSECURED		09/04/2018	BRILEY		8,468,504	8,935,000	49,049
87612E-BA-3	TARGET CORP-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		563,721	580,000	
87612E-BG-0	Target Corp-SENIOR UNSECURED		01/26/2018	VARIOUS		10,253,496	10,093,000	109,341
878237-AG-1	Tech Data Corp-SENIOR UNSECURED		07/27/2018	CITIGROUP GLOBAL MAR		59,732	60,000	1,024
882384-AE-0	Texas Eastern Transmissi-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		309,924	350,000	
882508-BD-5	Texas Instruments Inc-SENIOR UNSECURED		06/01/2018	MORGAN		54,205,352	52,600,000	187,972
883556-BR-2	Thermo Fisher Scientific-SENIOR UNSECURE		06/26/2018	CREDIT SUISSE SECURI		10,450,805	11,300,000	91,671
883556-BX-9	Thermo Fisher Scientific-SENIOR UNSECURE		07/09/2018	VARIOUS		30,820,459	32,870,000	354,470
883556-BY-7	THERMO FISHER SCIENTIFIC-SENIOR UNSECURE		12/20/2018	WELLS FARGO		4,686,450	5,000,000	73,458
88579E-AC-9	3M Co-SENIOR UNSECURED NOTE		06/05/2018	CREDIT SUISSE SECURI		4,591,663	3,700,000	48,038
88579Y-AW-1	3M Co-SENIOR UNSECURED		10/04/2018	VARIOUS		10,971,850	12,730,000	102,847
88579Y-AZ-4	3M Co-SENIOR UNSECURED		06/08/2018	CREDIT SUISSE SECURI		6,401,404	6,400,000	35,827
887389-AK-0	Timken Co/The-SENIOR UNSECURED		08/22/2018	BANK OF AMERICA CORP		15,779,144	15,800,000	
89236T-EM-3	Toyota Motor Credit Corp-SENIOR UNSECURE		06/07/2018	HSBC SECURITIES INC		14,032,912	14,805,000	185,972
89417E-AD-1	Travelers Cos Inc/The-SENIOR UNSECURED N		07/12/2018	SEAPORT GROUP		5,322,888	4,193,000	22,567
89417E-AH-2	Travelers Cos Inc/The-SENIOR UNSECURED N		10/04/2018	VARIOUS		2,539,992	2,228,000	45,194
89417E-AL-3	TRAVELERS COS INC-SENIOR UNSECURED		10/04/2018	VARIOUS		9,055,560	9,670,000	24,072
89417E-AM-1	Travelers Cos Inc/The-SENIOR UNSECURED		08/01/2018	VARIOUS		22,564,921	23,250,000	244,956
89417E-AN-9	Travelers Cos Inc/The-SENIOR UNSECURED		07/19/2018	VARIOUS		11,144,242	11,305,000	171,617
89657A-AB-2	Trinity Rail Leasing LP-TRL 2018-1A A2		06/13/2018	BANK OF AMERICA CORP		37,455,638	37,480,000	
896818-AA-5	Tristar Global Energy So Senior Sub Note		09/30/2018	PIK BOND		22,722	23,933	
89837R-AD-4	Trustees of Dartmouth Co-UNSECURED		10/04/2018	IN-KIND TRANSFER		179,621	200,000	
899043-AA-1	TUFTS UNIVERSITY-UNSECURED BOND		07/24/2018	RAYMOND JAMES		1,810,605	1,681,000	23,661
90131H-AH-8	21ST CENTURY FOX AMERICA-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		1,715,013	1,595,000	
902494-AY-9	TYSON FOODS INC-SENIOR UNSECURED BOND		10/04/2018	IN-KIND TRANSFER		313,796	313,000	
902494-AZ-6	TYSON FOODS INC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		250,949	250,000	
904764-AH-0	UNILEVER CAPITAL CORP-SENIOR NOTE		08/01/2018	IN-KIND TRANSFER		833,265	685,000	
906548-CJ-9	UNION ELECTRIC CO-SECURED		08/01/2018	VARIOUS		9,591,384	9,770,000	88,787
906548-CN-0	Union Electric Co-SECURED		06/26/2018	VARIOUS		40,923,016	41,301,000	177,881
907818-EG-9	Union Pacific Corp-SR UNSECURED		10/04/2018	IN-KIND TRANSFER		453,850	496,000	
907818-EM-6	UNION PACIFIC CORP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		618,036	685,000	
907818-EV-6	Union Pacific Corp-SENIOR UNSECURED		06/05/2018	MORGAN		17,673,273	17,700,000	
907818-EW-4	Union Pacific Corp-SENIOR UNSECURED		12/19/2018	U. S. BANCORP		5,042,250	5,000,000	120,625
90783V-AA-3	UNION PAC RR CO 2005-1 PASS THRU TR CTF		12/28/2018	VARIOUS		110,949	105,391	848
90931Q-AA-5	UNITED AIR 2013-1 B PTT-PT CERTS QL B		12/10/2018	DTCY ID		1,849,541	1,818,097	30,990
90932N-AA-1	UNITED AIRLINES 2018-1 C-UNTD AIR 18-1 B		05/09/2018	CREDIT SUISSE SECURI		8,090,000	8,090,000	
90932P-AB-4	UNITED AIR 2014-1 B PTT-SERIES 2014-1 CL		12/11/2018	DTCY ID		482,216	483,910	3,959
90932Q-AA-4	UNITED AIR 2014-2 A PASS THRU TR-1ST LIE		05/21/2018	DTCY ID		112,522	114,020	950
90932Q-AB-2	UNITED AIR 2014-2 B PTT-SERIES 2014-2 CL		12/12/2018	DTCY ID		428,831	431,160	5,595
911312-AJ-5	UNITED PARCEL SERVICE IN-SENIOR UNSECURE		06/04/2018	CREDIT SUISSE SECURI		17,923,950	14,200,000	344,823
911312-AN-6	UNITED PARCEL SERVICE IN-SENIOR UNSECURE		10/04/2018	IN-KIND TRANSFER		1,244,566	1,170,000	
911312-BN-5	United Parcel Service In-SENIOR UNSECURE		06/13/2018	GOLDMAN		5,098,115	5,500,000	17,188
91159H-HM-5	US Bancorp-SUBORDINATED		05/30/2018	U. S. BANCORP		4,778,424	5,034,000	14,738
91159H-HR-4	US Bancorp-SENIOR UNSECURED		05/30/2018	GOLDMAN		8,276,159	8,614,000	25,627
913017-BS-7	UNITED TECHNOLOGIES CORP NT		08/01/2018	IN-KIND TRANSFER		445,069	385,000	
913017-BT-5	United Technologies Corp-SENIOR UNSECURE		08/01/2018	IN-KIND TRANSFER		1,354,261	1,345,000	
913017-CY-3	United Technologies Corp-SENIOR UNSECURE		12/17/2018	MARKETAXESS FINANCIA		192,387	195,000	737
91324P-CA-8	UnitedHealth Group Inc-SENIOR UNSECURED		08/08/2018	VARIOUS		9,087,876	9,420,000	54,576
91324P-CD-2	UnitedHealth Group Inc-SR UNSECURED		06/04/2018	VARIOUS		9,525,353	9,400,000	89,888

EX 3.15

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
91324P-CQ-3	UNITEDHEALTH GROUP INC-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		192,856	180,000	
91324P-CR-1	UNITEDHEALTH GROUP INC-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		82,142	75,000	
91324P-CZ-3	UnitedHealth Group Inc-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER		295,733	300,000	
91324P-DF-6	UnitedHealth Group Inc-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		1,007,321	1,085,000	
914886-AA-4	University of Southern C-SR UNSECURED		08/20/2018	VARIOUS		2,236,352	1,840,000	37,007
914886-AC-0	University of Southern C-UNSECURED		08/01/2018	IN-KIND TRANSFER		300,619	300,000	
920253-AF-8	Valmont Industries Inc-SENIOR UNSECURED		06/18/2018	VARIOUS		40,263,508	42,960,000	466,370
92340L-AD-1	VEREIT Operating Partner-SENIOR UNSECURE		10/04/2018	WELLS FARGO		193,690	195,000	
92343V-EM-2	Verizon Communications I-SENIOR UNSECURE		05/09/2018	EXCHANGE OFFER		1,283,434	995,000	
92343V-ER-1	Verizon Communications I-SENIOR UNSECURE		12/17/2018	GOLDMAN		196,078	195,000	4,174
92346L-AA-1	Veritas US Inc / Veritas-SENIOR UNSECURE		01/12/2018	GOLDMAN		7,061,805	6,823,000	330,347
927804-FR-0	VIRGINIA ELEC & POWER CO-SR UNSECURED		12/26/2018	DEUTSCHE BANK SECURI		2,434,848	2,400,000	39,457
927804-FZ-2	Virginia Electric & Powe-SENIOR UNSECURE		06/13/2018	BANK OF AMERICA CORP		9,219,834	9,300,000	81,478
92783#-AC-0	Virginia International G Gtd Senior Secu		12/31/2018	MITSUBISHI UFJ SEC I		27,777,778	27,777,778	
92783#-AD-8	Virginia International G Gtd Senior Secu		12/31/2018	MITSUBISHI UFJ SEC I		27,777,778	27,777,778	
92826C-AF-9	VISA INC-SR UNSECURED		08/01/2018	VARIOUS		28,113,880	26,700,000	315,453
92854V-AA-3	Vivint Solar Financing V-SERIES 2018-1A		06/04/2018	CREDIT SUISSE SECURI		29,795,393	29,805,000	
92890H-AD-4	WEA FINANCE LLC/WESTFIEL-UNSECURED		10/04/2018	IN-KIND TRANSFER		544,744	545,000	
929160-AY-5	Vulcan Materials Co-SENIOR UNSECURED		12/10/2018	EXCHANGE OFFER		17,978,916	18,000,000	
92922F-Q7-6	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR7		04/01/2018	PAYUP		53,669	53,683	
92928Q-AD-0	WEA Finance LLC-SENIOR UNSECURED		09/12/2018	CITIGROUP GLOBAL MAR		23,196,404	23,320,000	
92928Q-AE-8	WEA Finance LLC-SENIOR UNSECURED		09/12/2018	DEUTSCHE BANK SECURI		15,351,336	15,400,000	
94106L-AV-1	Waste Management Inc-SENIOR UNSECURED NO		06/27/2018	BARCLAYS CAPITAL INC		4,447,440	3,625,000	17,886
94106L-BB-4	Waste Management Inc-SR UNSECURED		05/31/2018	CITIGROUP GLOBAL MAR		9,042,147	9,340,000	94,101
94106L-BC-2	WASTE MANAGEMENT INC-SENIOR UNSECURED		07/25/2018	VARIOUS		38,102,127	38,504,000	483,189
94353W-AB-1	WAVE 2017-1 Trust-SERIES 2017-1A CLASS B		11/02/2018	VARIOUS		9,395,678	9,231,920	24,932
948741-AH-6	WEINGARTEN REALTY INVEST-SENIOR UNSECURE		06/25/2018	JP MORGAN SECURITIES		5,792,388	5,880,000	56,228
948741-AM-5	WEINGARTEN REALTY INVEST-SENIOR UNSECURE		06/19/2018	WELLS FARGO		1,109,881	1,109,000	12,615
94973V-BF-3	ANTHEM INC-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		193,664	185,000	
949746-RF-0	Wells Fargo & Co-SUBORDINATED		10/04/2018	IN-KIND TRANSFER		1,157,207	1,055,000	
94974B-GK-0	WELLS FARGO & COMPANY-SR UNSECURED		08/01/2018	IN-KIND TRANSFER		9,420	10,000	
94974B-GT-1	WELLS FARGO & CO-SUBORDINATED		10/04/2018	IN-KIND TRANSFER		1,029,230	1,108,000	
95000U-2A-0	Wells Fargo & Co-SENIOR UNSECURED		06/15/2018	VARIOUS		8,527,014	8,900,000	17,502
95001N-BB-3	Wells Fargo Commercial M-WFCM 2018-C45 A		06/28/2018	WELLS FARGO		15,449,160	15,000,000	29,367
95001N-BC-1	Wells Fargo Commercial M-WFCM 2018-C45 B		06/28/2018	WELLS FARGO		6,416,620	6,230,000	12,615
95040Q-AF-1	Welltower Inc-SENIOR UNSECURED		12/21/2018	VARIOUS		14,955,150	15,000,000	89,375
958254-AH-7	Western Gas Partners LP-SENIOR UNSECURED		02/21/2018	MIZUHO SECURITIES		84,520	85,000	
960386-AN-0	Wabtec Corp-SENIOR UNSECURED		09/12/2018	BANK OF AMERICA CORP		339,337	340,000	
96042F-AD-6	Westlake Automobile Rece-WLAKE 2018-2A B		10/04/2018	IN-KIND TRANSFER		818,847	820,000	
96058#-AA-3	Westminster Acquisition Senior Sub Note		09/30/2018	PIK BOND		5,136	5,207	
962166-BR-4	Weyerhaeuser Co-DEBENTURE		10/04/2018	IN-KIND TRANSFER		1,284,916	1,023,000	
96468#-AA-7	Whitebridge Pet Brands L Senior Sub Note		11/30/2018	PIK BOND		12,493	12,617	
96949L-AC-9	WILLIAMS PARTNERS LP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		2,589,516	2,535,000	
96949L-AE-5	Williams Partners LP-SENIOR UNSECURED		08/01/2018	IN-KIND TRANSFER		182,447	185,000	
96950F-AF-1	WILLIAMS PARTNERS LP-SENIOR UNSECURED NO		08/01/2018	IN-KIND TRANSFER		299,124	260,000	
96950F-AP-9	WILLIAMS PARTNERS LP-SENIOR UNSECURED NO		08/01/2018	IN-KIND TRANSFER		103,938	105,000	
97064E-AA-6	Willis Engine Structured-WESTF 2018-A A		08/16/2018	BANK OF AMERICA CORP		14,119,300	14,120,000	
974153-AA-6	Wingstop Funding 2018-1 -WSTOP 2018-1 A2		11/06/2018	BARCLAYS CAPITAL INC		8,450,000	8,450,000	
976656-BW-7	Wisconsin Electric Power-SENIOR UNSECURE		05/29/2018	MORGAN		8,333,037	7,040,000	17,600
976656-CE-6	WISCONSIN ELECTRIC POWER-SENIOR UNSECURE		07/05/2018	DEUTSCHE BANK SECURI		5,324,798	5,725,000	82,557
976656-CG-1	WISCONSIN ELECTRIC POWER-SENIOR UNSECURE		07/23/2018	JEFFERIESLLC		2,053,383	2,050,000	13,069
976656-CJ-5	WISCONSIN ELECTRIC POWER-SR UNSECURED		07/23/2018	VARIOUS		4,333,134	4,290,000	12,554
976843-BJ-0	WISCONSIN PUBLIC SERVICE-SECURED		12/21/2018	VARIOUS		25,677,479	23,367,000	222,093
980745-FF-5	Woodward, Inc. Senior Note Ser		05/31/2018	JP MORGAN SECURITIES		3,700,000	3,700,000	
980745-GF-4	Woodward, Inc. Senior Note Ser		05/31/2018	JP MORGAN SECURITIES		1,900,000	1,900,000	
980745-GH-8	Woodward, Inc. Senior Note Ser		05/31/2018	JP MORGAN SECURITIES		11,700,000	11,700,000	
980745-GI-6	Woodward, Inc. Senior Note Ser		05/31/2018	JP MORGAN SECURITIES		4,000,000	4,000,000	
98212B-AH-6	WPX Energy Inc-SENIOR UNSECURED		05/09/2018	CITIGROUP GLOBAL MAR		4,008,000	4,008,000	
98389B-AV-2	Xcel Energy Inc-SENIOR UNSECURED		06/20/2018	JP MORGAN SECURITIES		21,714,350	21,865,000	
98426#-AA-4	YIH HLDGS CORP SR SUB NT		02/07/2018	PIK NOTE BUY UP		834,844	930,087	
98978V-AH-6	Zoetis Inc-SENIOR UNSECURED NOTE		12/20/2018	VARIOUS		8,616,676	8,270,000	168,485
98978V-AK-9	Zoetis Inc-SENIOR UNSECURED		07/11/2018	WELLS FARGO		5,197,850	5,000,000	37,500
98978V-AL-7	Zoetis Inc-SENIOR UNSECURED		07/10/2018	CREDIT SUISSE SECURI		3,214,117	3,455,000	34,550
98978V-AM-5	Zoetis Inc-SENIOR UNSECURED		07/10/2018	CREDIT SUISSE SECURI		8,875,544	9,380,000	123,503
06781#-AA-3	Nustef Banking USD SR SUB NT		09/30/2018	PIK BOND		10,803	11,040	

E13.16

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
0090BP-AC-1	Air Canada 2017-1 Class -SECURED	A.	09/25/2018	VARIOUS		15,653,814	16,267,000	133,401
013716-AW-5	RIO TINTO ALCAN INC-BOND	A.	07/16/2018	MORGAN		5,971,141	5,023,000	37,707
01626P-AG-1	Alimentation Couche-Tard-SENIOR UNSECURE	A.	10/04/2018	IN-KIND TRANSFER		253,312	275,000	
06368B-GS-1	Bank of Montreal-SUBORDINATED	A.	12/19/2018	VARIOUS		31,153,701	33,443,000	53,983
064159-HB-5	BANK OF NOVA SCOTIA-SUBORDINATED	A.	07/06/2018	VARIOUS		14,250,186	14,251,000	34,003
11271L-AB-8	BROOKFIELD FINANCE INC-SENIOR UNSECURED	A.	05/30/2018	VARIOUS		13,060,212	13,700,000	116,055
11271L-AC-6	Brookfield Finance Inc-SENIOR UNSECURED	A.	06/19/2018	DEUTSCHE BANK SECURI		23,670,886	24,800,000	389,068
13480B-AC-8	Canacol Energy Ltd-SENIOR UNSECURED	A.	04/26/2018	DTCY ID		1,000,000	1,000,000	
136375-CK-6	Canadian National Railwa-SENIOR UNSECURE	A.	06/27/2018	VARIOUS		11,538,240	13,300,000	173,787
136375-CP-5	Canadian National Railwa-SENIOR UNSECURE	A.	07/03/2018	VARIOUS		25,900,693	27,770,000	392,108
136385-AL-5	CANADIAN NATURAL RESOURC-SENIOR UNSECURE	A.	10/04/2018	IN-KIND TRANSFER		500,785	425,000	
136385-AY-7	CANADIAN NATURAL RESOURC-SENIOR UNSECURE	A.	10/04/2018	IN-KIND TRANSFER		1,053,387	1,010,000	
13645R-AX-2	CANADIAN PACIFIC RR CO-SR UNSECURED	A.	08/01/2018	IN-KIND TRANSFER		2,087,229	1,700,000	
15135U-AR-0	Genovus Energy Inc-SENIOR UNSECURED	A.	07/27/2018	BARCLAYS CAPITAL INC		127,426	125,000	863
335934-AK-1	FIRST QUANTUM MINERALS L-SENIOR UNSECURE	A.	08/16/2018	VARIOUS		3,660,464	3,700,000	101,762
335934-AL-9	First Quantum Minerals L-SENIOR UNSECURE	A.	08/31/2018	VARIOUS		3,413,935	3,500,000	104,792
35905B-AA-5	Frontera Energy Corp-SENIOR UNSECURED	A.	06/20/2018	DTCY ID		1,383,788	1,400,000	
380956-AE-2	GOLDCORP INC-SENIOR UNSECURED	A.	10/04/2018	IN-KIND TRANSFER		1,462,319	1,413,000	
496902-AQ-0	Kinross Gold Corp-SENIOR UNSECURED	A.	08/22/2018	VARIOUS		10,737,402	11,332,000	31,400
57701R-AH-5	Mattamy Group Corp-SENIOR UNSECURED	A.	08/16/2018	BMO CAPITAL MARKETS		1,470,000	1,500,000	37,646
629288-AA-5	NHL Canada Funding LP Senior Note Canadi		07/12/2018	DIRECT		700,935	700,935	
629288-AC-1	NHL Canada Funding LP Senior Note Canadi		07/12/2018	DIRECT		8,287,293	8,287,293	
67077M-AA-6	Nutrien Ltd-SENIOR UNSECURED	A.	04/12/2018	EXCHANGE OFFER		454,817	475,000	
67077M-AB-4	Nutrien Ltd-SENIOR UNSECURED	A.	04/12/2018	EXCHANGE OFFER		3,057,093	3,000,000	
67077M-AC-2	Nutrien Ltd-SENIOR UNSECURED	A.	04/12/2018	EXCHANGE OFFER		147,106	150,000	
67077M-AD-0	Nutrien Ltd-SENIOR UNSECURED	A.	04/12/2018	EXCHANGE OFFER		190,261	200,000	
67077M-AF-5	Nutrien Ltd-SENIOR UNSECURED	A.	04/18/2018	EXCHANGE OFFER		14,750,126	12,820,000	
67077M-AJ-7	Nutrien Ltd-SENIOR UNSECURED	A.	04/12/2018	EXCHANGE OFFER		8,292,035	8,300,000	
67077M-AN-8	Nutrien Ltd-SENIOR UNSECURED	A.	04/12/2018	EXCHANGE OFFER		421,395	435,000	
67077M-AP-3	Nutrien Ltd-SENIOR UNSECURED	A.	10/04/2018	VARIOUS		20,757,593	16,290,000	
67077M-AQ-1	Nutrien Ltd-SENIOR UNSECURED	A.	04/12/2018	EXCHANGE OFFER		30,910,643	26,601,000	
67077M-AR-9	Nutrien Ltd-SENIOR UNSECURED	A.	04/12/2018	EXCHANGE OFFER		12,302,901	11,720,000	
717046-C8-3	Peyto Exploration & Deve Senior Unsecure		01/02/2018	DIRECT		39,767,756	39,767,756	
725906-AN-1	Placer Dome Inc-SENIOR UNSECURED NOTE	A.	08/01/2018	VARIOUS		3,698,629	3,145,000	59,609
775109-AZ-4	ROGERS COMMUNICATIONS IN-SENIOR UNSECURE	A.	05/30/2018	CITIGROUP GLOBAL MAR		9,683,366	8,621,000	78,307
775109-BB-6	ROGERS COMMUNICATIONS IN-SENIOR UNSECURE	A.	08/01/2018	IN-KIND TRANSFER		242,850	230,000	
775109-BG-5	Rogers Communications In-SENIOR UNSECURE	A.	02/05/2018	RBC CAPITAL MARKETS		13,518,128	13,600,000	
780082-AD-5	Royal Bank of Canada-SUBORDINATED	A.	06/29/2018	BRILEY		14,050,600	14,000,000	282,100
86722T-AB-8	SUNCOOR ENERGY INC-SENIOR UNSECURED NOTE	A.	08/01/2018	IN-KIND TRANSFER		776,857	600,000	
891160-IMJ-9	Toronto-Dominion Bank/Th-SUBORDINATED	A.	12/19/2018	VARIOUS		45,118,760	47,709,000	458,505
89352H-AY-5	TransCanada PipeLines Lt-SENIOR UNSECURE	A.	10/04/2018	IN-KIND TRANSFER		851,704	845,000	
G22708-AA-8	Colliers International G Senior Unsecure		05/30/2018	JP MORGAN SECURITIES		69,276,000	69,275,985	
00131L-AE-5	AIA GROUP LTD-SENIOR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		255,577	250,000	
00131L-AF-2	AIA Group Ltd-SENIOR UNSECURED	D.	03/27/2018	DTCY ID		398,752	400,000	
00164B-BE-6	ALM VII R-2 Ltd-ALM 2013-7R2A A1B2	D.	09/21/2018	CREDIT SUISSE SECURI		6,400,000	6,400,000	
00183F-AA-3	Anno 2017 Joint Holding Senior Secured	B.	06/29/2018	DIRECT		30,332,960	30,332,970	
00289L-AA-3	Abengoa Transmission Sur -SECURED NOTE	D.	10/31/2018	HSBC SECURITIES INC		7,487,983	6,715,680	6,488
00401M-AB-2	ABU DHABI CRUDE OIL PIPE-SECURED	D.	07/18/2018	MERRILL LYNCH INTERN		12,208,375	12,750,000	166,622
00434G-2A-7	ACCESS BANK PLC-SENIOR UNSECURED	D.	07/25/2018	DTCY ID		1,484,000	1,400,000	40,017
00652M-AC-6	ADANI PORTS AND SPECIAL-SENIOR UNSECURED	D.	11/23/2018	VARIOUS		4,900,579	5,000,000	67,460
00652M-AD-4	ADANI PORTS AND SPECIAL-SENIOR UNSECURED	D.	06/04/2018	VARIOUS		7,323,200	8,000,000	105,889
00653M-AA-9	ADCB Finance Cayman Ltd-SENIOR UNSECURED	D.	11/14/2018	VARIOUS		11,381,000	11,500,000	39,167
00772B-AF-8	AerCap Ireland Capital D-SENIOR UNSECURE	D.	09/21/2018	MORGAN		583,723	575,000	9,344
00774M-AE-5	AerCap Ireland Capital D-SENIOR UNSECURE	D.	02/16/2018	VARIOUS		12,866,545	13,450,000	39,552
00774M-AF-2	AerCap Ireland Capital D-SENIOR UNSECURE	D.	06/05/2018	CITIGROUP GLOBAL MAR		398,996	400,000	
00776A-AA-7	Aerborne Funding II Limi Senior Secured	D.	08/01/2018	DIRECT		74,891,877	74,891,877	
00830Y-AB-7	Africa Finance Corp-SENIOR UNSECURED	D.	12/13/2018	JPMILON		4,747,500	5,000,000	34,444
00900P-AE-5	AIMCO CLO Series 2018-B-SERIES 18-BA CLA	D.	12/03/2018	RBC CAPITAL MARKETS		8,300,000	8,300,000	
00900P-AG-0	AIMCO CLO Series 2018-B-SERIES 18-BA CLA	D.	12/03/2018	RBC CAPITAL MARKETS		5,000,000	5,000,000	
00913R-AE-6	Air Liquide Finance SA-SENIOR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		258,774	290,000	
009279-AC-4	AIRBUS SE-SENIOR UNSECURED	D.	07/11/2018	VARIOUS		34,737,204	35,500,000	310,459
00928Q-AM-3	Aircastle Ltd-SENIOR UNSECURED	D.	12/20/2018	MARKETAXESS FINANCIA		380,741	375,000	5,285
00928Q-AQ-4	AIRCATTLE LTD-SENIOR UNSECURED	D.	06/29/2018	VARIOUS		13,094,813	13,605,000	96,652
00928Q-AR-2	Aircastle Ltd-SENIOR UNSECURED	D.	09/20/2018	GOLDMAN		149,747	150,000	
013822-AA-9	Alcoa Nederland Holding -SENIOR UNSECURE	D.	10/04/2018	IN-KIND TRANSFER		213,000	200,000	

E13.17

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
015398-AC-4	Alfa SAB de CV-SENIOR UNSECURED	D	09/13/2018	HSBC SECURITIES INC		5,124,500	5,000,000	164,236
01750C-AA-1	Allegro CLO VII Ltd-ALLEG 2018-1A A	D	05/02/2018	GOLDMAN		34,500,000	34,500,000	
020564-AA-8	ALPEK SA DE CV-SR UNSECURED	D	11/11/2018	JEFFERIES INTL LTD		4,843,750	5,000,000	110,000
020564-AB-6	ALPEK SA DE CV-SENIOR UNSECURED NOTE	D	12/21/2018	VARIOUS		7,291,275	7,255,000	149,483
02154V-AA-9	Altice Luxembourg SA-SENIOR UNSECURED	D	11/07/2018	DTCY ID		564,750	600,000	10,850
02315Q-AA-6	Ambac LSNI LLC-FIRST LIEN	D	02/12/2018	VARIOUS		586,291	586,291	
02364W-AW-5	America Movil SAB de CV-SENIOR NOTE	D	08/01/2018	IN-KIND TRANSFER		607,373	515,000	
03328Y-AA-2	ANCHORAGE CAPITAL CLO 1-ANCHC 2018-1RA	D	12/06/2018	MORGAN		15,184,461	15,450,000	82,346
03328Y-AE-4	Anchorage Capital CLO Lt-ANCHC 2018-1RA	D	03/16/2018	BANK OF AMERICA CORP		13,900,000	13,900,000	
03328Y-AG-9	Anchorage Capital CLO Lt-ANCHC 2018-1RA	D	03/16/2018	BANK OF AMERICA CORP		5,200,000	5,200,000	
03329L-AA-9	Anchorage Credit Funding-SERIES 15-2A CL	D	05/23/2018	RAYMOND JAMES		30,000,000	30,000,000	465,833
03330A-AC-6	Anchorage Capital CLO 3-ANCHC 2014-3RA	D	01/19/2018	JP MORGAN SECURITIES		3,200,000	3,200,000	
03330A-AE-2	Anchorage Capital CLO 3-ANCHC 2014-3RA	D	01/19/2018	JP MORGAN SECURITIES		7,500,000	7,500,000	
03330E-AA-2	ANCHORAGE CREDIT FUNDING-ANCHF 2016-3A A	D	06/26/2018	GREENSLEDGE CAPITAL		971,000	1,000,000	6,417
03330P-AA-7	ANCHORAGE CREDIT FUNDING-SERIES 18-5A CL	D	01/26/2018	GREENSLEDGE CAPITAL		14,000,000	14,000,000	
03331J-AA-0	Anchorage Capital CLO Lt-ANCHC 2018-10A	D	08/21/2018	GREENSLEDGE CAPITAL		20,000,000	20,000,000	
03331J-AJ-1	Anchorage Capital CLO Lt-ANCHC 2018-10A	D	08/21/2018	GREENSLEDGE CAPITAL		11,050,000	11,050,000	
03762Y-AH-0	Apidos Clo XXV-APID 2016-25A A2R	D	10/24/2018	JP MORGAN SECURITIES		6,800,000	6,800,000	
03765W-BC-1	Apollo Credit Funding IV-SERIES 4A CLASS	D	06/12/2018	BANK OF AMERICA CORP		15,000,000	15,000,000	
03767M-AE-8	Apidos CLO-SERIES 18-29A CLASS A1B	D	05/11/2018	BANK OF AMERICA CORP		7,200,000	7,200,000	
03767M-AG-3	Apidos CLO-SERIES 18-29A CLASS A2	D	05/11/2018	BANK OF AMERICA CORP		14,750,000	14,750,000	
03767M-AJ-7	Apidos CLO-APID 2018-29A B	D	05/11/2018	BANK OF AMERICA CORP		4,500,000	4,500,000	
03938L-AQ-7	ArceorMittal-SENIOR UNSECURED NOTE	D	12/18/2018	CITIGROUP GLOBAL MAR		406,764	400,000	7,875
04015U-AJ-7	Ares XXXVIII CLO Ltd-SERIES 15-38A CLASS	D	02/20/2018	BANK OF AMERICA CORP		6,700,000	6,700,000	
04015U-AK-4	Ares XXXVIII CLO Ltd-SERIES 2015-38A CLA	D	02/20/2018	BANK OF AMERICA CORP		2,750,000	2,750,000	
04016V-AC-9	ARES XLVII CLO Ltd-SERIES 18-47A CLASS A	D	03/13/2018	GOLDMAN		25,900,000	25,900,000	
04017E-AE-2	ARES XXXIIR CLO LTD-SERIES 14-32RA CLASS	D	04/06/2018	DEUTSCHE BANK SECURI		13,580,038	13,625,000	
04017J-AE-1	ARES CLO Ltd-ARES 2018-49A B	D	07/06/2018	NATIXIS CAP MKT		12,000,000	12,000,000	
04017T-AE-5	ARES CLO Ltd-SERIES 18-28RA CLASS B	D	08/17/2018	BANK OF AMERICA CORP		16,000,000	16,000,000	
04017T-AC-3	Ares XXXIR CLO Ltd-SERIES 14-31RA CLASS	D	05/16/2018	BARCLAYS CAPITAL INC		28,400,000	28,400,000	
04017T-AE-9	Ares XXXIR CLO Ltd-SERIES 14-31RA CLASS	D	05/16/2018	BARCLAYS CAPITAL INC		20,000,000	20,000,000	
04623T-AA-3	ASSURANT CLO I LTD-ASRNT 2018-1A A	D	03/09/2018	MORGAN		16,275,000	16,275,000	
04624W-AC-1	ASSURANT CLO III LTD-SERIES 2018-2A CLAS	D	07/27/2018	JP MORGAN SECURITIES		95,000,000	95,000,000	
04941T-AS-9	Atlas Senior Loan Fund V-SERIES 16-7A CL	D	11/21/2018	JP MORGAN SECURITIES		23,500,000	23,500,000	
04941Y-AC-3	Atlas Senior Loan Fund X-SERIES 18-11A C	D	06/08/2018	JEFFERIESLLC		34,912,500	35,000,000	
04941Y-AJ-8	Atlas Senior Loan Fund X-ATCLO 2018-11A	D	06/08/2018	JEFFERIESLLC		10,000,000	10,000,000	
04942J-AE-1	Atlas Senior Loan Fund X-ATCLO 2018-10A	D	02/05/2018	JEFFERIESLLC		11,600,000	11,600,000	
04965D-AE-5	Atresmedia Corporacion d Senior Unsecure	D	07/11/2018	CITIGROUP GLOBAL MAR		33,000,000	33,000,000	
04965F-AG-6	Atrium XV-SERIES 15A CLASS B	D	11/16/2018	CREDIT SUISSE SECURI		9,550,000	9,550,000	
04965L-AE-8	ATRIUM XIV LLC-ATRM 14A A2A	D	07/19/2018	CREDIT SUISSE SECURI		20,000,000	20,000,000	
05400F-AL-5	Avolon Aerospace Funding Senior Secured	D	01/31/2018	NVLIC		6,549,894	6,549,894	
055451-AR-9	BHP Billiton Finance USA-SR UNSECURED	D	06/18/2018	BARCLAYS CAPITAL INC		10,276,500	10,200,000	135,575
055451-AV-0	BHP Billiton Finance USA-SR UNSECURED	D	10/04/2018	VARIOUS		73,132,204	64,044,000	872,336
05578Q-AB-9	BPCE SA-SUBORDINATED	D	10/04/2018	IN-KIND TRANSFER		629,240	620,000	
05581K-AB-7	BNP PARIBAS-SENIOR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		243,835	250,000	
05674X-AA-9	BAHIA SUL HOLDINGS GMBH-SENIOR UNSECURED	D	05/29/2018	CITIGROUP		7,129,500	7,000,000	152,056
05682V-AA-3	BAIN CAPITAL CREDIT CLO -SERIES 18-2A CL	D	06/01/2018	BARCLAYS CAPITAL INC		28,500,000	28,500,000	
05682V-AC-9	Bain Capital Credit CLO -SERIES 18-2A CL	D	06/01/2018	BARCLAYS CAPITAL INC		15,000,000	15,000,000	
05683H-AC-9	BAIN CAPITAL CREDIT CLO -SERIES 2017-2A	D	11/26/2018	BANK OF AMERICA CORP		12,500,000	12,500,000	44,151
05683L-AC-0	Bain Capital Credit CLO -BCC 2018-1A A2	D	03/12/2018	CITIGROUP GLOBAL MAR		8,800,000	8,800,000	
05683L-AG-1	Bain Capital Credit CLO -SERIES 1A CLASS	D	03/12/2018	CITIGROUP GLOBAL MAR		3,900,000	3,900,000	
05875H-AC-7	BALLYROCK CLO 2018-1 LTD-SERIES 2018-1A	D	04/04/2018	CITIGROUP GLOBAL MAR		13,900,000	13,900,000	
05875H-AE-3	Ballyrock CLO 2018-1 Ltd-SERIES 2018-1A	D	04/04/2018	CITIGROUP GLOBAL MAR		4,600,000	4,600,000	
05890M-AA-1	BANCO DE CREDITO E INVER-SENIOR UNSECURE	D	11/13/2018	VARIOUS		8,934,550	10,000,000	32,083
05968D-AB-6	Banco Internacional del -UNSECURED	D	11/14/2018	VARIOUS		10,379,350	10,895,200	75,241
05968L-AK-8	BANCOLUMBIA SA-SUBORDINATED	D	10/16/2018	VARIOUS		398,315	410,000	9,883
05969B-AC-7	Banco Santander Mexico S-SUBORDINATED	D	12/13/2018	VARIOUS		20,697,500	20,785,000	123,132
05971B-AD-1	Banco BTG Pactual SA/Lux-SENIOR UNSECURE	D	04/18/2018	DTCY ID		1,284,450	1,300,000	16,393
061202-AA-5	BANK OF CHINA-SUBORDINATED NOTE	D	07/09/2018	UBS LIMITED		7,160,000	7,000,000	50,556
06120T-AA-6	Bank of China Ltd-SUBORDINATED	D	10/16/2018	VARIOUS		383,477	376,000	7,990
06849U-AD-7	BARRICK PD AU FIN PTY LT-NOTE	D	10/04/2018	IN-KIND TRANSFER		173,620	159,000	
08179H-AC-4	Benefit Street Partners -BSP 2017-12A B	D	04/12/2018	CITIGROUP GLOBAL MAR		2,575,000	2,575,000	
08179L-AC-5	Benefit Street Partners -SERIES 18-14A C	D	02/23/2018	WELLS FARGO		13,400,000	13,400,000	
08179M-AC-3	Benefit Street Partners -BSP 2018-15A A2	D	08/01/2018	BANK OF AMERICA CORP		4,400,000	4,400,000	
08180X-AQ-5	Benefit Street Partners -BSP 2015-8A A1B	D	01/25/2018	WELLS FARGO		6,425,000	6,425,000	

El 3.18

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
08180X-AU-6	Benefit Street Partners -BSP 2015-8A BR	D.	01/25/2018	WELLS FARGO		4,200,000	4,200,000	
08181B-AS-8	Benefit Street Partners -SERIES 16-9A CL	D.	07/16/2018	CITIGROUP GLOBAL MAR		11,200,000	11,200,000	
08181J-AA-0	Benefit Street Partners -SERIES 18-58A C	D.	04/19/2018	GREENSLUDGE CAPITAL		22,445,000	22,445,000	
09228Y-AC-6	Blackbird Capital Aircra-SERIES 2016-1A	D.	08/01/2018	VARIOUS		6,023,339	5,865,000	14,926
09628J-AN-1	BlueMountain CLO 2015-3 -BLUEM 2015-3A A	D.	03/27/2018	BANK OF AMERICA CORP		13,900,000	13,900,000	
09628N-AQ-5	BlueMountain CLO 2015-4 -SERIES 15-4A CL	D.	04/16/2018	BANK OF AMERICA CORP		20,000,000	20,000,000	
09629L-AE-5	BLUEMOUNTAIN CLO XXIII L-BLUEM 2018-23A	D.	10/17/2018	CITIGROUP GLOBAL MAR		10,000,000	10,000,000	
10010Y-AA-0	BOSPHORUS 2015 LLC PASSTHRU CTF SER 2015	D.	03/08/2018	BARCLAYS CAPITAL INC		798,712	836,348	17,271
10553Y-AF-2	BRASKEM FINANCE LTD-SENIOR UNSECURED	D.	12/13/2018	VARIOUS		13,685,000	13,000,000	273,408
12117F-AB-7	Bureau Veritas SA Senior Unsecure	C.	07/16/2018	BARCLAYS BANK PLC		63,500,000	63,500,000	
124166-AE-9	Buttermilk Park CLO Ltd-BMILK 2018-1A B1	D.	08/27/2018	BANK OF AMERICA CORP		12,400,000	12,400,000	
12481Q-AE-5	Cbam 2018-5 Ltd-SERIES 18-5A CLASS B1	D.	02/23/2018	CREDIT SUISSE SECURI		11,100,000	11,100,000	
12503G-AB-7	CBO FINANCE LTD-SUBORDINATED	D.	11/20/2018	HSBC SECURITIES INC		7,990,301	7,767,000	8,091
12550G-AE-3	CIFC Funding Ltd-CIFC 2018-5A B	D.	11/20/2018	BANK OF AMERICA CORP		5,000,000	5,000,000	
12551J-AG-1	CIFC Funding 2017-IV Ltd-SERIES 17-4A CL	D.	11/27/2018	MORGAN		9,925,400	10,000,000	61,196
12551R-AC-2	CIFC Funding 2018-I Ltd-SERIES 18-1A CLA	D.	01/31/2018	MORGAN		7,350,000	7,350,000	
12551R-AE-8	CIFC Funding 2018-I Ltd-SERIES 18-1A CLA	D.	01/31/2018	MORGAN		4,200,000	4,200,000	
12674T-AB-2	C&W Senior Financing DAC-SENIOR UNSECURE	D.	10/04/2018	DTCYID		900,000	900,000	
12805P-AJ-5	CAL Funding III Ltd-CAI 2018-2A A	D.	09/12/2018	BANK OF AMERICA CORP		14,948,321	14,950,000	
13876J-AC-6	Canyon Capital CLO Ltd-CANVC 2012-1RA A	D.	07/10/2018	JP MORGAN SECURITIES		45,000,000	45,000,000	
13876J-AE-2	Canyon Capital CLO Ltd-CANVC 2012-1RA B	D.	07/10/2018	JP MORGAN SECURITIES		14,000,000	14,000,000	
14307P-AE-5	Carlyle Global Market St-SERIES C17A CLA	D.	04/09/2018	GOLDMAN		25,900,000	25,900,000	
14312L-AN-7	Carlyle Global Market St-SERIES 2016-2A	D.	07/20/2018	CITIGROUP GLOBAL MAR		12,000,000	12,000,000	26,060
14314L-AE-5	Carlyle Global Market St-CGMS 2014-2RA A	D.	05/07/2018	BNP PARIBAS		5,000,000	5,000,000	
14315L-AC-8	Carlyle Global Market St-SERIES 14-3RA C	D.	05/23/2018	CITIGROUP GLOBAL MAR		10,500,000	10,500,000	
14315R-AE-1	Carlyle Global Market St-SERIES 18-4A CL	D.	11/30/2018	CITIGROUP GLOBAL MAR		7,000,000	7,000,000	
14317R-AC-3	CARLYLE US CLO 2018-3 LT-CGMS 2018-3A A1	D.	09/20/2018	MORGAN		8,000,000	8,000,000	
15033E-AC-2	Cedar Funding IX CLO Ltd-SERIES 18-9A CL	D.	03/21/2018	CITIGROUP GLOBAL MAR		19,300,000	19,300,000	
16409T-AC-3	CHENANGO PARK CLO LTD-SERIES 18-1A CLASS	D.	04/11/2018	BNP PARIBAS		16,200,000	16,200,000	
17180W-AC-9	CIFC Funding 2018-II Ltd-CIFC 2018-2A A2	D.	04/24/2018	CITIGROUP GLOBAL MAR		15,000,000	15,000,000	
17181T-AA-9	CIFC Funding 2018-IV Ltd-SERIES 18-4A CL	D.	08/20/2018	CREDIT SUISSE SECURI		19,583,281	19,600,000	
17181T-AC-5	CIFC Funding 2018-IV Ltd-SERIES 18-4A CL	D.	08/20/2018	CREDIT SUISSE SECURI		11,200,000	11,200,000	
17275G-AA-4	CIRUS-2018-1A A	D.	11/02/2018	GREENSLUDGE CAPITAL		50,000,000	50,000,000	
19123M-AC-7	Coca-Cola European Partn-SENIOR UNSECURE	D.	04/16/2018	EXCHANGE OFFER		3,692,650	3,500,000	
192714-AC-7	COLBUN SA-SENIOR UNSECURED	D.	07/20/2018	VARIOUS		8,086,905	8,610,000	84,065
200303-AA-3	COMCEL TRUST SR NT	D.	09/19/2018	DTCYID		205,250	200,000	1,681
20557F-AG-6	Computershare Ltd Senior Unsecured Notes	C.	11/20/2018	BOFAMILSEC		40,100,000	40,100,000	
210314-AA-8	Consortio Transmataro S-SENIOR UNSECURE	D.	11/21/2018	VARIOUS		10,345,426	10,408,000	50,589
21623P-AC-1	COOK PARK CLO LTD-COOK 2018-1A A2	D.	03/09/2018	MORGAN		13,000,000	13,000,000	
21987B-AR-9	CODELCO INC-SENIOR UNSECURED NOTE	D.	08/01/2018	IN-KIND TRANSFER		321,685	340,000	
21987B-AU-2	CODELCO INC-SR UNSECURED	D.	08/01/2018	IN-KIND TRANSFER		347,429	340,000	
22615E-AE-0	Crestline Denali CLO Ltd-SERIES 2018-1A	D.	01/24/2018	BNP PARIBAS		6,400,000	6,400,000	
22615M-AL-6	Crestline Denali CLO XIV-SERIES16-1A CLA	D.	11/01/2018	BNP PARIBAS		23,000,000	23,000,000	
22616T-AA-4	Crestline Denali CLO XVI-DEN17 2018-1A A	D.	09/21/2018	BARCLAYS CAPITAL INC		42,500,000	42,500,000	
22616T-AC-0	Crestline Denali CLO XVI-DEN17 2018-1A B	D.	09/21/2018	BARCLAYS CAPITAL INC		15,000,000	15,000,000	
23330J-AA-9	DP WORLD LTD-SENIOR UNSECURED BOND	D.	05/25/2018	VARIOUS		12,096,500	10,000,000	191,800
24023M-AA-2	DBS Group Holdings Ltd-SUBORDINATED	D.	06/04/2018	CITIGROUP		7,000,000	7,000,000	
24824T-AQ-3	Denali Capital Clo XII L-DEN12 2016-1A A	D.	04/05/2018	BNP PARIBAS		23,100,000	23,100,000	
251526-BY-4	Deutsche Bank AG/New Yor-SENIOR UNSECURE	D.	06/01/2018	EXCHANGE OFFER		195,120	200,000	
25156P-AC-7	DEUTSCHE TELEKOM INT FIN-UNSECURED NOTE	D.	08/01/2018	IN-KIND TRANSFER		562,997	415,000	
25243Y-AH-2	DIAGEO CAPITAL PLC-UNSECURED BOND	D.	06/29/2018	STIFEL NICOLAUS		9,198,339	7,475,000	113,122
25243Y-AV-1	DIAGEO CAPITAL PLC-SR UNSECURED	D.	08/01/2018	VARIOUS		5,304,794	5,375,000	24,754
25243Y-AZ-2	Diageo Capital PLC-SENIOR UNSECURED	D.	06/20/2018	U B S SECURITIES		3,741,070	3,700,000	13,541
26244Q-AB-9	DRYDEN SENIOR LOAN FUND-SERIES 17-49A CL	D.	04/12/2018	CITIGROUP GLOBAL MAR		3,303,300	3,300,000	27,702
26245R-AA-8	Dryden 58 Clo Ltd-DRSLF 2018-58A A1	D.	12/06/2018	BNP PARIBAS		21,670,000	22,000,000	290,233
26251B-AN-6	Dryden XXVIII Senior Loa-DRSLF 2013-28A	D.	04/12/2018	CITIGROUP GLOBAL MAR		3,552,130	3,550,000	20,642
26251L-AC-8	DRYDEN 64 CLO LTD-DRSLF 2018-64A A	D.	03/20/2018	MORGAN		22,850,000	22,850,000	
26251L-AE-4	Dryden 64 CLO Ltd-DRSLF 2018-64A B	D.	03/20/2018	MORGAN		13,900,000	13,900,000	
268317-AL-8	ELECTRICITE DE FRANCE SA-SR UNSECURED	D.	08/01/2018	IN-KIND TRANSFER		466,268	445,000	
27831B-AE-3	Eaton Vance CLO 2018-1 L-EATON 2018-1A B	D.	09/21/2018	WELLS FARGO		8,000,000	8,000,000	
279158-AC-3	Ecopetrol SA-SENIOR UNSECURED NOTE	D.	10/16/2018	VARIOUS		819,666	774,000	3,537
279158-AJ-8	Ecopetrol SA-SR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		861,447	868,000	
279158-AL-3	Ecopetrol SA-SENIOR UNSECURED	D.	10/04/2018	IN-KIND TRANSFER		151,504	146,000	
282523-AH-2	1828 CLO Ltd-GUGG4 2016-1A A1S1	D.	10/05/2018	GREENSLUDGE CAPITAL		25,000,000	25,000,000	
282523-AM-1	1828 CLO Ltd-GUGG4 2016-1A A1JR	D.	10/05/2018	GREENSLUDGE CAPITAL		11,500,000	11,500,000	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
283837-AA-0	EI Puerto de Liverpool S-SENIOR UNSECURE	D	11/07/2018	VARIOUS		7,653,750	8,000,000	75,928
29082H-AA-0	EMBRAER NETHERLANDS FINA-SENIOR UNSECURE	D	12/10/2018	VARIOUS		3,784,120	3,738,000	88,704
29082H-AB-8	EMBRAER NETHERLANDS FINA-SENIOR UNSECURE	D	10/04/2018	IN-KIND TRANSFER		209,804	204,000	
29245V-AA-3	EMPRESA NACIONAL DE TELE-SR UNSECURED 14	D	10/16/2018	VARIOUS		17,975,104	18,339,000	227,217
29246Q-AB-1	Empresa de Transporte de-SENIOR UNSECURE	D	11/21/2018	VARIOUS		29,316,939	29,445,000	419,960
31446Y-AB-8	Fenix Power Peru SA-SENIOR UNSECURED	D	11/14/2018	VARIOUS		8,879,632	9,426,471	91,003
31503A-AA-2	FERMACA ENTERPRISES SR SEC0 NT	D	04/05/2018	HSBC SECURITIES INC		11,776,347	10,904,025	39,117
31572U-AE-6	Fibria Overseas Finance -SENIOR UNSECURE	D	07/19/2018	ITAL BBA INTERNATION		1,838,250	1,800,000	18,638
31572U-AG-1	Fibria Overseas Finance -SENIOR UNSECURE	D	07/25/2018	CITIGROUP		8,058,000	8,500,000	12,278
316502-AA-1	Fidus Re Ltd-UNSECURED	D	04/13/2018	GOLDMAN		100,000,000	100,000,000	
35177P-AX-5	ORANGE SA-SR UNSECURED	D	08/01/2018	IN-KIND TRANSFER		687,315	630,000	
36164Q-NA-2	GE CAPITAL INTL FUNDING-SENIOR UNSECURED	D	04/10/2018	SUMRIDGE PARTNERS LL		195,304	200,000	3,608
36190C-AA-5	GNL QUINTERO SA SR NT	D	10/04/2018	VARIOUS		14,614,320	14,820,000	160,790
36248M-AJ-6	GT Loan Financing I Ltd -SERIES 2013-1A	D	07/09/2018	GREENSLIDGE CAPITAL		40,000,000	40,000,000	
36248M-AL-1	GT Loan Financing I Ltd -SERIES 2013-1A	D	07/09/2018	GREENSLIDGE CAPITAL		7,000,000	7,000,000	
36249S-AA-1	GTL TRADE FINANCE INC-GTD BOND	D	07/23/2018	VARIOUS		8,224,250	8,000,000	82,502
36728K-AA-8	Gas Natural de Lima y Ca-SENIOR UNSECURE	D	11/21/2018	HSBC SECURITIES INC		10,508,540	10,723,000	74,279
38136M-AC-2	GLM 2017-2A A	D	12/04/2018	RBC CAPITAL MARKETS		17,949,800	18,040,000	81,608
38137M-AK-3	Goldentree Loan Opportun-GLD12 2016-12A	D	06/29/2018	WELLS FARGO		15,000,000	15,000,000	
38137P-AS-9	Goldentree Loan Opportun-SERIES 2015-10A	D	08/08/2018	MORGAN		8,800,000	8,800,000	
38137P-AU-4	Goldentree Loan Opportun-SERIES 2015-10A	D	08/08/2018	MORGAN		13,850,000	13,850,000	
38138B-AG-5	Goldentree Loan Managem-GLM 2018-3A B1	D	04/26/2018	BANK OF AMERICA CORP		6,000,000	6,000,000	
38176D-AJ-8	Golub Capital Partners C-GOCAP 2015-26A	D	03/29/2018	WELLS FARGO		27,700,000	27,700,000	
382879-AA-2	Gorey To Enniscomrthy M11 Senior Secured	B	12/31/2018	SOCIETEGEN		20,879,947	20,879,945	
38729R-AC-2	Greenwood Park CLO Ltd-SERIES 18-1A CLAS	D	01/29/2018	GOLDMAN		8,800,000	8,800,000	
39808P-AL-0	Greywolf CLO V Ltd-GWOLF 2015-1A A1R	D	01/17/2018	GOLDMAN		19,900,000	19,900,000	
39808P-AN-6	Greywolf CLO V Ltd-GWOLF 2015-1A A2R	D	01/17/2018	GOLDMAN		8,000,000	8,000,000	
39809G-AC-9	GREYWOLF CLO VI Ltd-GWOLF 2018-1A A2	D	03/27/2018	JP MORGAN SECURITIES		9,200,000	9,200,000	
40049J-AZ-0	GRUPO TELEVISIA SAB-SENIOR UNSECURED BOND	D	07/23/2018	STANDARD CHARTERED B		5,670,000	5,000,000	9,201
40049J-BA-4	GRUPO TELEVISIA SAB SR NT	D	10/04/2018	IN-KIND TRANSFER		853,659	922,000	
40049J-BC-0	GRUPO TELEVISIA SAB SR UNSECURED	D	07/12/2018	HSBC SECURITIES INC		3,168,655	3,000,000	84,729
40435W-AA-8	HTA Group Ltd/Mauritius-SENIOR UNSECURED	D	10/10/2018	DTCYID		409,000	400,000	3,447
40436Q-AL-6	HPS Loan Management 9-20-HLM 9A-2016 A1B	D	06/29/2018	BNP PARIBAS		10,000,000	10,000,000	
40436Q-AN-2	HPS Loan Management 9-20-HLM 9A-2016 A2R	D	06/29/2018	BNP PARIBAS		12,750,000	12,750,000	
40437L-AE-2	HPS LOAN MANAGEMENT 13-2-HLM 13A-18 A2	D	08/30/2018	DEUTSCHE BANK SECURI		4,000,000	4,000,000	
40437L-AG-7	HPS Loan Management 13-2-HLM 13A-18 B	D	08/30/2018	DEUTSCHE BANK SECURI		10,490,000	10,490,000	
41154X-AG-0	Harbor Park CLO, Ltd-HAR-HARB 2018-1A B1	D	11/15/2018	MORGAN		5,200,000	5,200,000	
41154X-AL-9	Harbor Park CLO, Ltd-HARB 2018-1A C	D	11/15/2018	MORGAN		4,000,000	4,000,000	
42086P-AC-7	Kingsland Ltd-SERIES 18-8A CLASS A	D	02/22/2018	CITIGROUP GLOBAL MAR		219,780,000	220,000,000	
42086Q-AA-9	Kingsland VI Ltd-KING 2013-6A AR	D	04/24/2018	CITIGROUP GLOBAL MAR		100,000,000	100,000,000	
423012-AE-3	HEINEKEN NV-SENIOR UNSECURED NOTE	D	07/30/2018	DEUTSCHE BANK SECURI		3,074,112	3,200,000	42,667
423012-AG-8	HEINEKEN NV-SENIOR UNSECURED	D	07/31/2018	VARIOUS		21,272,324	21,170,000	237,689
44330G-AE-3	Highbridge Loan Managem-SERIES 4A-2014	D	01/17/2018	GOLDMAN		11,900,000	11,900,000	1,078
44330Q-AB-7	Highbridge Loan Managem-SERIES 12A-18 C	D	05/16/2018	BANK OF AMERICA CORP		10,250,000	10,250,000	
449258-AA-0	IGG US CLO 2018-1 LTD-SERIES 2018-1A CLA	D	02/01/2018	BANK OF AMERICA CORP		11,900,000	11,900,000	
455881-AD-4	IND & COMM BK OF CHINA TIER 2 CAP NT SER	D	07/09/2018	UBS LIMITED		7,085,600	7,000,000	98,583
46507M-AE-2	ISRAEL ELECTRIC CORP LTD-SECURED NOTE	D	03/28/2018	BARCLAYS CAPITAL INC		4,502,000	4,000,000	75,625
46507N-AE-0	ISRAEL ELECTRIC CORP LTD-SECURED	D	10/16/2018	VARIOUS		219,404	200,000	4,392
46507V-AB-8	ISRAEL ELECTRIC CORP LTD-SECURED	D	11/21/2018	VARIOUS		9,075,750	7,600,000	256,697
46507W-AB-6	Israel Electric Corp Ltd-SECURED	D	10/16/2018	VARIOUS		626,549	523,000	13,623
46650C-AA-7	JBS Investments II GmbH-SENIOR UNSECURED	D	10/18/2018	VARIOUS		9,882,241	9,950,000	
478375-AU-2	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	10/04/2018	IN-KIND TRANSFER		542,945	575,000	
479142-D8-7	Johnson Matthey PLC Senior Note Series A	B	12/19/2018	DIRECT		38,624,000	38,623,986	
479142-E* 8	Johnson Matthey PLC Senior Note Series C	B	12/19/2018	DIRECT		22,720,000	22,719,992	
48244X-AB-8	KDAC AVIATION FIN SR SEC0 NT SER B 2017-	D	11/19/2018	GUGGENHEIM		1,797,673	1,763,370	1,742
48250R-BN-5	KKR CLO 12 Ltd-KKR 12 BR2	D	08/30/2018	DEUTSCHE BANK SECURI		6,200,000	6,200,000	
48250W-AG-0	KKR CLO 14 Ltd-KKR 14 AR	D	07/18/2018	JP MORGAN SECURITIES		21,000,000	21,000,000	
48250W-AJ-4	KKR CLO 14 Ltd-KKR 14 BR	D	07/18/2018	JP MORGAN SECURITIES		15,000,000	15,000,000	
48251M-AS-5	KKR CLO 15 Ltd-KKR 15 A2R	D	11/20/2018	CREDIT SUISSE SECURI		15,000,000	15,000,000	
48252W-AC-7	KKR CLO LTD 22-SERIES 22A CLASS B	D	06/21/2018	CREDIT SUISSE SECURI		9,434,612	9,500,000	
48252Y-AE-9	KKR CLO 23 Ltd-KKR 23 B	D	10/05/2018	BNP PARIBAS		8,400,000	8,400,000	
48667Q-AN-5	KazMunayGas National Co -SENIOR UNSECURE	D	07/18/2018	VARIOUS		8,075,000	8,000,000	94,736
48668N-AA-9	KazTransGas JSC-SENIOR UNSECURED	D	06/05/2018	VARIOUS		11,242,000	12,000,000	96,736
500769-HR-8	Kreditanstalt fuer Wiede-SENIOR UNSECURE	D	10/04/2018	IN-KIND TRANSFER		824,730	850,000	
50188G-AT-0	LCM XVIII LP-LCM 18A A1R	D	12/06/2018	WELLS FARGO		34,475,000	35,000,000	166,212

EIF 3.20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
50189G-AY-1	LCM XVIII LP-LCM 18A A2R	D	04/12/2018	NATIXIS CAP MKT		18,500,000	18,500,000	
50247W-AB-3	LYB International Financ-SENIOR UNSECURE	D	05/31/2018	U B S SECURITIES		3,422,844	3,600,000	32,200
518171-AB-8	LATAM AIR 2015-1 PTT A-SECURED	D	10/02/2018	DTCYID		495,906	513,360	2,935
542798-AC-7	Long Point Park CLO Ltd-LNGPT 2017-1A A1	D	03/14/2018	NATIXIS CAP MKT		23,634,220	23,600,000	148,582
562081-AM-3	LYONDELLBASELL IND NV-SENIOR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		1,100,099	1,241,000	
56818R-BA-3	Madison Park Funding XIV-MDPK 2014-14A B	D	10/12/2018	MORGAN		15,000,000	15,000,000	
56818R-BC-9	Madison Park Funding XIV-MDPK 2014-14A C	D	10/12/2018	MORGAN		12,500,000	12,500,000	
56818R-AN-0	Madison Park Funding XVI-MDPK 2015-18A B	D	12/07/2018	WELLS FARGO		9,825,000	10,000,000	56,514
56819D-AE-6	Madison Park Funding XXX-MDPK 2018-31A A	D	11/08/2018	BANK OF AMERICA CORP		20,000,000	20,000,000	
56819T-AU-5	Madison Park Funding XX -SERIES 2016-20A	D	06/15/2018	BARCLAYS CAPITAL INC		7,500,000	7,500,000	
56819X-AC-6	Madison Park Funding XXI-MDPK 2016-22A B	D	12/06/2018	WELLS FARGO		11,988,000	12,000,000	70,068
56820C-AE-5	MADISON PARK FUNDING XXI-MDPK 2018-29A A	D	09/28/2018	MORGAN		14,000,000	14,000,000	
56820C-AG-0	Madison Park Funding XXI-MDPK 2018-29A B	D	09/28/2018	MORGAN		10,000,000	10,000,000	
56820N-AE-1	MADISON PARK FUNDING LTD-MDPK 2016-24A C	D	12/06/2018	MORGAN		8,125,000	8,125,000	56,058
56821A-AC-2	Madison Park Funding Ltd-SERIES 18-28A C	D	06/01/2018	WELLS FARGO		11,750,000	11,750,000	
56821A-AE-8	Madison Park Funding Ltd-SERIES 18-28A C	D	06/01/2018	WELLS FARGO		9,500,000	9,500,000	
56821T-AC-1	Madison Park Funding Ltd-SERIES 18-30A C	D	02/23/2018	JP MORGAN SECURITIES		7,400,000	7,400,000	
56951P-BC-0	Magnetite VII Ltd-MAGNE 2012-7A A2R2	D	01/29/2018	CITIGROUP GLOBAL MAR		8,790,000	8,790,000	
56952Y-AR-8	Magnetite VIII Ltd-MAGNE 2014-8A BR2	D	04/20/2018	GOLDMAN		15,000,000	15,000,000	
56952Y-AT-4	Magnetite VIII Ltd-MAGNE 2014-8A CR2	D	04/20/2018	GOLDMAN		4,500,000	4,500,000	
56955A-AA-4	Magnetite XX Ltd-MAGNE 2018-20A A	D	12/06/2018	WELLS FARGO		17,297,280	17,600,000	81,425
56564R-AB-6	MAPS 2018-1 Ltd-SERIES 18-1A CLASS B	D	10/24/2018	VARIOUS		8,627,146	8,537,198	4,902
56608K-AA-1	Marble Point CLO XIV Ltd-MIP14 2018-2A A	D	12/06/2018	JP MORGAN SECURITIES		29,967,000	30,000,000	
591555-AD-9	Metinvest BV-SENIOR UNSECURED	D	04/04/2018	DTCYID		1,584,224	1,600,000	
59284M-AD-6	MEXICO CITY AIRPORT TRUS-SECURED	D	10/04/2018	IN-KIND TRANSFER		823,400	920,000	
60447K-AA-8	MINSUR SA-SENIOR UNSECURED NOTE	D	10/04/2018	VARIOUS		6,210,000	6,000,000	64,583
606822-AV-6	Mitsubishi UFJ Financial-SENIOR UNSECURE	D	07/17/2018	MTSUBISHI UFJ SEC I		13,795,472	13,900,000	220,232
606822-BB-9	Mitsubishi UFJ Financial-SENIOR UNSECURE	D	07/17/2018	MORGAN		20,000,000	20,000,000	
62848F-AC-6	MYERS PARK CLO LTD-MYERS 2018-1A A2	D	08/16/2018	BARCLAYS CAPITAL INC		5,000,000	5,000,000	
62856R-AC-9	Myriad International Hol-SR UNSECURED	D	08/23/2018	VARIOUS		15,592,500	14,750,000	308,688
628788-AA-9	NORWEGIAN AIR 16-1 A PTT-SECURED	D	08/20/2018	VARIOUS		5,327,852	5,480,187	66,500
629470-AU-2	NXP BV / NXP Funding LLC-SENIOR UNSECURE	D	12/12/2018	MARKETAXESS FINANCIA		395,012	400,000	596
62983P-AA-3	NAKILAT INC-SECURED BOND	D	11/20/2018	VARIOUS		21,211,635	19,355,000	460,881
62983P-AB-1	Nakilat Inc-SECURED 144A	D	11/19/2018	VARIOUS		8,512,914	7,615,309	115,056
64130P-AE-3	Neuberger Berman CLO Ltd-NEUB 2018-28A B	D	04/27/2018	NATIXIS CAP MKT		7,000,000	7,000,000	
64132M-AC-2	Neuberger Berman CLO Ltd-NEUB 2018-30A A	D	12/07/2018	NATIXIS CAP MKT		10,000,000	10,000,000	
65120F-AC-8	NEWCREST FINANCE PTY LTD-SENIOR UNSECURE	D	07/27/2018	JP MORGAN SECURITIES		60,280	60,000	840
67104L-AE-7	OHA Loan Funding 2013-2 -OHALF 2013-2A A	D	05/11/2018	GREENSLEDGE CAPITAL		79,100,000	79,100,000	
67104L-AF-4	OHA Loan Funding 2013-2 -OHALF 2013-2A B	D	05/11/2018	GREENSLEDGE CAPITAL		25,000,000	25,000,000	
67104L-AG-2	OHA Loan Funding 2013-2 -OHALF 2013-2A C	D	05/11/2018	GREENSLEDGE CAPITAL		8,000,000	8,000,000	
67112K-AB-5	OCP CLO Ltd-SERIES 18-15A CLASS A2	D	05/23/2018	BANK OF AMERICA CORP		14,250,000	14,250,000	
67112K-AC-3	OCP CLO Ltd-SERIES 18-15A CLASS A3	D	05/23/2018	BANK OF AMERICA CORP		12,000,000	12,000,000	
67115W-AE-0	OHA Credit Funding 1 LTD-SERIES 18-1A CL	D	08/24/2018	WELLS FARGO		10,400,000	10,400,000	
67115W-AG-5	OHA Credit Funding 1 LTD-SERIES 18-1A CL	D	08/24/2018	WELLS FARGO		8,000,000	8,000,000	
67400F-AE-1	OAKTREE CLO 2018-1 LTD SR SEC0 NT CL A-2	D	10/24/2018	CITIGROUP GLOBAL MAR		8,650,000	8,650,000	
675757-AB-4	Odebrecht Drilling Norbe-FIRST LIEN	D	01/17/2018	VARIOUS		752,735	1,462,125	4,978
675757-AC-2	Odebrecht Drilling Norbe VIII SR SEC0 NT	D	09/01/2018	VARIOUS		105,660	240,683	965
67576G-AC-1	Odebrecht Offshore Drill-FIRST LIEN	D	01/01/2018	VARIOUS		551,584	571,590	
67576G-AD-9	Odebrecht Offshore Drill-ODBRCHT OFFSHRE	D	01/01/2018	VARIOUS		367,983	1,569,225	
67576J-AB-7	OOGCOR 0 PERP	D	01/01/2018	VARIOUS		5,142	259,588	
67707C-AE-8	Oak Hill Credit Partners-OAKC 2014-10RA	D	11/20/2018	BARCLAYS CAPITAL INC		9,900,000	9,900,000	
67707C-AJ-7	Oak Hill Credit Partners-OAKC 2014-10RA	D	11/20/2018	BARCLAYS CAPITAL INC		15,000,000	15,000,000	
69033C-AC-3	OVERSEA-CHINESE BANKING-SUBORDINATED	D	11/14/2018	WSIL		7,477,500	7,500,000	130,156
69033D-AC-1	OVERSEA-CHINESE BANKING-SUBORDINATED	D	10/16/2018	VARIOUS		415,726	418,000	5,774
69369E-AD-1	Pertamina Persero PT-SENIOR UNSECURED NO	D	07/24/2018	VARIOUS		15,250,000	15,000,000	153,333
69370P-AC-5	Pertamina Persero PT-SENIOR UNSECURED	D	10/31/2018	DEUTSCHE BANK AG		15,689,760	16,000,000	
69688A-AA-9	Palmer Square CLO 2013-2-SERIES 13-2A CL	D	09/11/2018	JP MORGAN SECURITIES		16,000,000	16,000,000	
69703P-AC-3	Palmer Square CLO 2018-1-PLMRS 2018-1A A	D	02/12/2018	CREDIT SUISSE SECURI		10,000,000	10,000,000	
69703P-AE-9	Palmer Square CLO 2018-1-PLMRS 2018-1A B	D	02/12/2018	CREDIT SUISSE SECURI		3,900,000	3,900,000	
714264-AK-4	Pernod Ricard SA-SENIOR UNSECURED NOTE	D	07/23/2018	BANK OF AMERICA CORP		22,933,774	20,600,000	31,472
714264-AM-0	PERNOD RICARD SA-SENIOR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		689,060	726,000	
714295-AA-0	PERRIGO FINANCE PLC-SR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		179,484	200,000	
715457-AB-3	PERU ENHANCED PASS-THRU	D	11/21/2018	JEFFERIES INTL LTD		7,043,000	8,000,000	
715604-AA-2	Peru LNG SrI-SENIOR UNSECURED	D	03/15/2018	DTCYID		1,100,000	1,100,000	
71638Y-AA-4	Petkim Petrkimya Holdin-SENIOR UNSECURE	D	01/19/2018	GOLDMAN SACHS INTERN		12,704,920	12,773,000	

ET 3.21

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
716420-AB-3	PETRA DIAMONDS US TREAS-2ND LIEN	D	01/11/2018	DTCYID		306,000	300,000	4,531
71647N-AQ-2	PETROBRAS GLOBAL FINANCE-SENIOR UNSECURE	D	10/16/2018	VARIOUS		749,502	669,000	23,252
71647N-AV-1	Petrobras Global Finance-SENIOR UNSECURE	D	09/21/2018	EXCHANGE OFFER		21,774,350	22,449,000	
71647N-AW-9	PETROBRAS GLOBAL FINANCE-SENIOR UNSECURE	D	01/01/2018	EXCHANGE OFFER			500	
71647N-AY-5	Petrobras Global Finance-SENIOR UNSECURE	D	09/21/2018	EXCHANGE OFFER		10,439,530	11,072,500	
716540-AX-0	PETROLEOS MEXICANOS-BOND	D	10/04/2018	IN-KIND TRANSFER		103,148	100,000	
716540-AZ-5	PETROLEOS MEXICANOS-SR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		164,028	175,000	
716540-BE-1	PETROLEOS MEXICANOS-SENIOR UNSECURED NOT	D	10/04/2018	IN-KIND TRANSFER		83,000	100,000	
716540-BR-2	PETROLEOS MEXICANOS-SR UNSECURED	D	10/16/2018	VARIOUS		2,627,234	2,894,000	3,072
716540-BX-9	PETROLEOS MEXICANOS-SENIOR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		169,383	203,000	
716540-CA-8	Petroleos Mexicanos-SENIOR UNSECURED	D	08/03/2018	BBVA SECURITIES INC.		393,375	375,000	199
716540-CB-6	PETROLEOS MEXICANOS-SENIOR UNSECURED	D	10/16/2018	VARIOUS		2,174,699	2,059,000	6,827
716540-CC-4	PETROLEOS MEXICANOS-SENIOR UNSECURED	D	10/04/2018	VARIOUS		11,301,144	11,690,000	268,749
716540-CE-0	Petroleos Mexicanos-SENIOR UNSECURED	D	03/28/2018	EXCHANGE OFFER		14,934	15,000	
716540-CG-5	Petroleos Mexicanos-SENIOR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		1,015,590	1,000,000	
716540-CJ-9	Petroleos Mexicanos-SENIOR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		1,106,104	1,221,000	
74348B-AA-9	Promerica Financial Corp-SECURED	D	11/08/2018	DTCYID		987,540	1,000,000	
74735K-2A-9	CORED00 INTL FINANCE-SR UNSECURED 144A	D	11/20/2018	HSBC SECURITIES INC		4,767,500	5,000,000	41,528
74735P-AB-7	CG0G CONSTELLATION S A SR NT	D	11/09/2018	PIK BOND		16,606	37,425	
74947L-AA-2	REC Ltd-SENIOR UNSECURED	D	10/31/2018	STANDARD CHARTERED B		9,943,700	10,000,000	
74979V-AE-3	RR Ltd-RRAM 2018-5A A2	D	09/13/2018	JP MORGAN SECURITIES		8,000,000	8,000,000	
74982L-AN-0	RACEP 2013-8A	D	11/26/2018	CITIGROUP GLOBAL MAR		21,377,755	21,350,000	18,904
74988L-AA-2	ALM XIV Ltd-SERIES 14-14A CLASS A1R2	D	01/18/2018	BNP PARIBAS		15,900,000	15,900,000	
74988L-AC-8	ALM XIV Ltd-SERIES 14-14A CLASS A2R2	D	01/18/2018	BNP PARIBAS		11,900,000	11,900,000	
74988L-AJ-3	ALM XIV Ltd-SERIES 14-14A CLASS BR2	D	01/18/2018	BNP PARIBAS		3,800,000	3,800,000	
75405U-AA-4	RAS LAFFAN LNG 3-SECURED NOTE	D	07/24/2018	GOLDMAN SACHS INTERN		545,400	505,000	9,500
75625Q-AD-1	Reckitt Benckiser Treasu-SENIOR UNSECURE	D	07/10/2018	GOLDMAN		18,927,800	20,000,000	24,444
75625Q-AE-9	Reckitt Benckiser Treasu-SENIOR UNSECURE	D	07/12/2018	VARIOUS		25,835,512	27,576,000	38,637
75735K-AA-7	Rede D'or Finance Sarl-SENIOR UNSECURED	D	01/11/2018	DTCYID		1,400,000	1,400,000	
75887X-AA-5	Regatta Funding Ltd.-REG11 2018-1A A	D	05/15/2018	MORGAN		27,000,000	27,000,000	
75887X-AC-1	Regatta Funding Ltd.-REG11 2018-1A B	D	05/15/2018	MORGAN		13,000,000	13,000,000	
75888F-AE-5	Regatta XIII Funding LLC-SERIES 18-2A CL	D	07/02/2018	CITIGROUP GLOBAL MAR		13,300,000	13,300,000	
75888M-AG-5	Regatta XIV Funding Ltd-SERIES 18-3A CLA	D	08/20/2018	BNP PARIBAS		4,250,000	4,250,000	
76706A-AA-2	Rio Energy SA / UGEN SA -SECURED	D	07/27/2018	DTCYID		1,454,121	1,500,000	6,837
76720I-AL-0	RIO TINTO FIN USA LTD-SR UNSECURED	D	06/12/2018	CITIGROUP GLOBAL MAR		26,143,454	22,775,000	105,166
76720A-AD-8	RIO TINTO FIN USA PLC-SR UNSECURED	D	06/28/2018	BARCLAYS CAPITAL INC		15,870,598	14,700,000	180,935
76720A-AG-1	RIO TINTO FIN USA PLC-SR UNSECURED	D	12/20/2018	VARIOUS		9,585,851	9,710,000	145,289
77342J-AA-1	Rockford Tower CLO 2018-SERIES 18-1A CL	D	04/19/2018	BARCLAYS CAPITAL INC		50,000,000	50,000,000	
77342J-AC-7	Rockford Tower CLO 2018-SERIES 18-1A CL	D	04/19/2018	BARCLAYS CAPITAL INC		7,500,000	7,500,000	
77342K-AA-8	ROCKFORD TOWER CLO 2018-ROCKT 2018-2A A	D	08/06/2018	BANK OF AMERICA CORP		19,976,000	20,000,000	
77342K-AC-4	Rockford Tower CLO 2018-2 Ltd	D	08/06/2018	BANK OF AMERICA CORP		6,400,000	6,400,000	
77879R-AB-2	ROTOR Engines Securitization - Senior Se	D	03/28/2018	DIRECT		46,402,079	47,837,195	99,329
78386F-AC-0	SACI Falabella-SENIOR UNSECURED	D	11/21/2018	HSBC SECURITIES INC		4,875,000	5,000,000	73,524
78386F-AD-8	SACI Falabella-SENIOR UNSECURED	D	11/16/2018	VARIOUS		10,395,500	11,500,000	19,531
78520L-AB-6	SABIC Capital II BV-SENIOR UNSECURED	D	11/15/2018	VARIOUS		22,097,989	22,350,000	48,750
79410U-AQ-4	SALEM FIELDS CLO LTD SR SEC2 NT CL A-2-R	D	10/19/2018	CITIGROUP GLOBAL MAR		10,000,000	10,000,000	
80007R-AA-3	Sands China Ltd-SENIOR UNSECURED	D	11/14/2018	AUSTRALIA & NEW ZEAL		4,927,950	5,000,000	61,972
80007R-AD-7	Sands China Ltd-SENIOR UNSECURED	D	10/02/2018	VARIOUS		9,949,500	10,000,000	81,000
80106Q-AD-6	Sanofi-SENIOR UNSECURED	D	06/28/2018	VARIOUS		36,324,595	36,535,000	13,090
80306A-AB-6	SAPPHIRE AVIATION FINANC-SERIES 18-1A CL	D	09/28/2018	DTCYID		6,431,684	6,265,972	4,902
817228-AA-3	Senior plc Senior Unsecured Notes	C	09/12/2018	DIRECT		27,500,000	27,500,000	
81733L-AA-5	SEPLAT Petroleum Develop-SENIOR UNSECURE	D	03/12/2018	DTCYID		594,078	600,000	
81883A-AC-3	Shackleton 2015-VII-R CL-SERIES 2015-7RA	D	07/12/2018	MTSUBISHI UFJ SEC I		14,000,000	14,000,000	
82481L-AD-1	SHIRE ACQUISITIONS INVES-SENIOR UNSECURE	D	08/01/2018	IN-KIND TRANSFER		27,772	30,000	
82620K-AM-5	Siemens Financieringsmaa-SENIOR UNSECURE	D	12/19/2018	VARIOUS		2,774,597	3,265,000	25,886
82620K-AT-0	SIEMENS FINANCIERINGSMAT-SENIOR UNSECURE	D	12/19/2018	VARIOUS		37,210,656	36,160,000	585,639
83608G-AQ-9	Sound Point CLO II Ltd-SNDPT 2013-1A A2R	D	01/22/2018	GOLDMAN		8,000,000	8,000,000	
83609Y-AC-0	Sounds Point CLO IV-R LT-SERIES 13-3RA C	D	04/19/2018	CREDIT SUISSE SECURI		26,000,000	26,000,000	
83609Y-AE-6	Sounds Point CLO IV-R LT-SERIES 13-3RA C	D	04/19/2018	CREDIT SUISSE SECURI		10,000,000	10,000,000	
846502-AC-6	SPARC EM SPC SR SEC2 NT SER 2017-1	D	07/06/2018	VARIOUS		1,976,000	2,200,000	
85572R-AB-5	Start Ltd/Bermuda-STARR 2018-1 B	D	06/20/2018	DTCYID		15,895,900	16,000,000	
85771P-AL-6	Statoil ASA-SENIOR UNSECURED BOND	D	10/04/2018	IN-KIND TRANSFER		374,868	390,000	
85771P-AQ-5	Statoil ASA-SR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		108,830	100,000	
85805R-AB-4	SEVERSTAL (STEEL CAP)-SENIOR UNSECURED	D	07/16/2018	UNICREDIT		2,093,000	2,000,000	29,828
858102-AX-4	Steele Creek CLO 2016-1 -SERIES 2016-1A	D	05/29/2018	MORGAN		133,500,000	133,500,000	

EX-3.22

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
85816L-AA-6	Steele Creek Clo 2018-2 -SERIES 2018-2A	D	07/27/2018	BARCLAYS CAPITAL INC		15,968,000	16,000,000	
85816W-AC-8	Steele Creek CLO 2014-1 -SERIES 14-1RA C	D	02/14/2018	GOLDMAN		130,000,000	130,000,000	
86425Q-AA-6	SUAM FINANCE BV-SENIOR UNSECURED 144A	D	10/03/2018	DTCYID		400,150	400,000	9,100
86964W-AB-8	Suzano Austria GmbH-SENIOR UNSECURED	D	11/28/2018	DTCYID		1,208,400	1,200,000	17,267
86964W-AC-6	Suzano Austria GmbH-SENIOR UNSECURED	D	09/17/2018	VARIOUS		17,905,818	18,075,000	
87164K-AA-2	Syngenta Finance NV-SENIOR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		420,592	435,000	
87232A-AE-4	TFLAT 2018-1A B	D	12/19/2018	BARCLAYS CAPITAL INC		10,000,000	10,000,000	
87248K-AL-8	TICP CLO VI 2016-5 Ltd-TICP 2016-5A BR	D	06/28/2018	MIZUHO SECURITIES		15,200,000	15,200,000	
87248K-AS-3	TICP CLO VI 2016-5 LTD-TICP 2016-5A A2R	D	06/28/2018	MIZUHO SECURITIES		8,000,000	8,000,000	
87249C-AC-5	TICP CLO X LTD-SERIES 18-10A CLASS B	D	03/05/2018	BANK OF AMERICA CORP		6,700,000	6,700,000	
87249C-AE-1	TICP CLO X LTD-SERIES 18-10A CLASS C	D	03/05/2018	BANK OF AMERICA CORP		3,600,000	3,600,000	
87249Q-AA-8	TICP CLO Ltd-TICP 2018-11A A	D	08/17/2018	JP MORGAN SECURITIES		25,000,000	25,000,000	
87271L-AJ-1	TIAA CLO I Ltd-TIA 2016-1A AR	D	07/18/2018	WELLS FARGO		113,000,000	113,000,000	
87406Q-AU-0	Takeda Pharmaceutical Co-SENIOR UNSECURE	D	12/17/2018	RBC CAPITAL MARKETS		203,786	200,000	639
87938V-AD-4	TELEFONICA EUROPE BV-SENIOR UNSECURED	D	10/04/2018	IN-KIND TRANSFER		531,914	415,000	
87938W-AU-7	TELEFONICA EMISIONES SAU-SENIOR UNSECURE	D	10/04/2018	IN-KIND TRANSFER		412,766	425,000	
87938W-AW-3	Telefonica Emisiones SAU-SENIOR UNSECURE	D	02/27/2018	GOLDMAN		27,975,000	27,975,000	
87973P-AE-4	Temasek Financial I Ltd-SENIOR UNSECURED	D	07/25/2018	DTCYID		1,194,912	1,200,000	
88034Q-AA-5	TENGIZCHEVROIL FIN CO IN-SENIOR UNSECURE	D	11/20/2018	VARIOUS		9,350,000	10,000,000	68,889
88167A-AC-5	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D	12/18/2018	VARIOUS		1,090,606	1,175,000	5,433
88167A-AD-3	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D	04/30/2018	DTCYID		2,249,155	2,600,000	26,724
88167A-AE-1	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D	06/29/2018	JP MORGAN SECURITIES		19,760,335	24,547,000	197,603
88315L-AA-6	Textainer Marine Contain-TMCL 2018-1A A	D	08/01/2018	WELLS FARGO		31,918,204	32,300,000	
88322Y-AC-5	Thaioil Treasury Center -SENIOR UNSECURE	D	11/15/2018	CITIGROUP		16,833,740	17,000,000	
88322Y-AD-3	Thaioil Treasury Center -SENIOR UNSECURE	D	11/15/2018	VARIOUS		17,173,905	17,373,000	
88432U-AC-0	Wind River CLO Ltd-SERIES 18-3A CLASS A2	D	10/26/2018	CITIGROUP GLOBAL MAR		15,000,000	15,000,000	
88432U-AE-6	Wind River CLO Ltd-SERIES 18-3A CLASS B	D	10/26/2018	CITIGROUP GLOBAL MAR		9,500,000	9,500,000	
88434H-AE-3	THL Credit Wind River 20-SERIES 18-2A CL	D	08/17/2018	WELLS FARGO		14,400,000	14,400,000	
88434H-AG-8	THL Credit Wind River 20-WINDR 2018-2A B	D	08/17/2018	WELLS FARGO		11,600,000	11,600,000	
886065-AB-7	Thunderbolt Aircraft Lea-TBOLT 2018-A B	D	07/24/2018	VARIOUS		12,031,268	12,000,000	
89233Q-AC-5	Toyota Industries Corp-SENIOR UNSECURED	D	07/16/2018	VARIOUS		29,875,792	29,200,000	352,876
892331-AD-1	Toyota Motor Corp-SENIOR UNSECURED	D	07/10/2018	JP MORGAN SECURITIES		35,000,000	35,000,000	
89366L-AD-6	TRANSELEC SA-SR UNSECURED	D	11/27/2018	VARIOUS		18,680,850	19,020,000	137,568
89382P-AA-3	Transocean Pontus Ltd-FIRST LIEN	D	07/10/2018	GOLDMAN		252,450	255,000	
89387Y-AC-5	Transportadora de Gas In-SENIOR UNSECURE	D	11/23/2018	VARIOUS		15,020,000	15,000,000	20,042
89400P-AG-8	Transurban Finance Co Pt-SECURED	D	10/04/2018	IN-KIND TRANSFER		456,421	495,000	
89641U-AB-7	TRINITY ACQUISITION PLC-SENIOR UNSECURED	D	09/07/2018	FIRST TENNESSEE		3,267,889	2,934,000	12,979
89852T-AN-8	Tryon Park CLO Ltd-TPCLO 2013-1A A1JR	D	04/06/2018	BANK OF AMERICA CORP		13,085,000	13,085,000	
899415-AE-3	Tullow Oil PLC-SENIOR UNSECURED	D	03/16/2018	DTCYID		1,700,000	1,700,000	
902118-BT-4	Tyco International Finan-SR UNSECURED	D	01/10/2018	CITIGROUP GLOBAL MAR		11,823,506	11,675,000	196,124
90352J-AC-7	UBS GROUP FUNDING SWITZE-SENIOR UNSECURE	D	08/01/2018	IN-KIND TRANSFER		346,336	345,000	
904752-AA-0	Unigel Luxembourg SA-SECURED	D	05/15/2018	DTCYID		999,430	1,000,000	
92334N-AC-7	VEOLIA ENVIRONNEMENT SA-SENIOR UNSECURED	D	10/23/2018	JEFFERIESLLC		18,750,718	15,500,000	260,081
92558V-AC-8	Vibrant CLO Ltd-SERIES 18-9A CLASS A2	D	07/03/2018	BNP PARIBAS		23,500,000	23,500,000	
927651-AB-3	VIRGIN AUST 2013-1B TRST-SECURED	D	01/30/2018	DTCYID		276,066	270,653	361
92857W-BD-1	VODAFONE GROUP PLC-SENIOR UNSECURED NOTE	D	10/04/2018	IN-KIND TRANSFER		425,845	480,000	
92857W-BK-5	Vodafone Group PLC-SENIOR UNSECURED	D	06/27/2018	VARIOUS		13,307,627	13,400,000	26,991
92857W-BM-1	Vodafone Group PLC-SENIOR UNSECURED	D	12/17/2018	VARIOUS		9,387,778	9,320,000	9,053
92915P-AK-1	Voya CLO 2014-1 Ltd-INGIM 2014-1A ABR2	D	03/29/2018	CITIGROUP GLOBAL MAR		16,600,000	16,600,000	
92917A-AA-4	VOYA 2018-1A A1	D	12/06/2018	RBC CAPITAL MARKETS		23,601,000	24,000,000	
92917A-AE-6	Voya CLO Ltd-SERIES 18-1A CLASS B	D	02/23/2018	JP MORGAN SECURITIES		5,060,000	5,060,000	
92917J-AE-7	Voya CLO 2018-2 Ltd-VOYA 2018-2A B1	D	05/17/2018	MORGAN		12,000,000	12,000,000	
92936M-AD-9	WPP FINANCE 2010-SENIOR UNSECURED NOTE	D	10/04/2018	IN-KIND TRANSFER		372,182	393,000	
94949J-AA-3	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A1	D	08/29/2018	CITIGROUP GLOBAL MAR		44,941,500	45,000,000	
94949J-AC-9	Wellfleet CLO 2018-2 Ltd-WELF 2018-2A A2	D	08/29/2018	CITIGROUP GLOBAL MAR		10,800,000	10,800,000	
94949R-AW-7	Wellfleet CLO 2016-1 Ltd-WELF 2016-1A CR	D	04/27/2018	MORGAN		4,000,000	4,000,000	
94950J-AA-9	Wellfleet CLO Ltd-SERIES 18-1A CLASS A	D	05/21/2018	MORGAN		60,000,000	60,000,000	
94950J-AC-5	Wellfleet CLO Ltd-SERIES 18-1A CLASS B	D	05/21/2018	MORGAN		13,500,000	13,500,000	
94951D-AC-7	Wellfleet CLO 2018-3 Ltd-SERIES 18-3A CL	D	11/16/2018	BANK OF AMERICA CORP		8,000,000	8,000,000	
94951D-AJ-2	Wellfleet CLO 2018-3 Ltd-SERIES 18-3A CL	D	11/16/2018	BANK OF AMERICA CORP		7,500,000	7,500,000	
98105F-AG-9	Woori Bank-SUBORDINATED	D	07/31/2018	VARIOUS		6,975,020	7,000,000	
984851-AD-7	YARA INTERNATIONAL ASA-SENIOR UNSECURED	D	07/18/2018	BRILEY		4,848,883	5,040,000	23,408
984851-AF-2	Yara International ASA-SENIOR UNSECURED	D	12/21/2018	VARIOUS		46,124,932	46,170,000	47,962
000000-00-0	Dubai World Tranche B1 2% + 1.75% PIK	D	01/01/2018	VARIOUS		1,707	29	
AU5737-92-2	DP World Ltd-SENIOR UNSECURED	B	09/18/2018	HSBC SECURITIES INC		27,304,228	27,633,906	

EX-3.23

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
D8T8A2-AA-3	Via Solutions Nord GmbH Senior Secured	B.	12/31/2018	VARIOUS		10,267,014	10,267,015	
E5444#-AB-0	Futbol Club Barcelona Senior Note Series	B.	08/28/2018	JP MORGAN SECURITIES		53,531,040	53,531,063	
ESR239-AA-6	Financiera Marsyc SA-SECURED	B.	02/01/2018	DIRECT		56,155,500	56,155,518	
E75021-AA-3	Naviera Armas SA-SECURED	B.	11/01/2018	VARIOUS		2,767,464	2,743,570	31,913
E8T529-AA-2	Sonnedix Espana Finance Senior Secured	B.	06/11/2018	DIRECT		41,847,400	41,847,416	
E8T529-AC-8	Sonnedix Espana Finance Senior Secured N	B.	12/10/2018	DIRECT		7,150,363	7,150,362	
F5474S-AF-5	La Financiere Atalian SA-SENIOR UNSECURE	B.	08/17/2018	VARIOUS		6,302,713	6,352,578	119,080
F5662#-AB-4	Laurent-Perrier Group Senior Unsecured N	B.	11/29/2018	CANEYANFILTD		14,520,320	14,520,324	
F6076*-AA-8	Marle SAS Maurice Euro Cl A Bonds	B.	01/01/2018	VARIOUS		33,950	34,745	
F6857T-AC-3	Novafives SAS-FIRST LIEN	B.	10/23/2018	VARIOUS		4,908,031	5,314,654	89,729
F8494#-AB-2	Sodiaal International S. Senior Unsecure	B.	07/30/2018	CANEYANFILTD		116,580,000	116,580,009	
G0108A-AT-8	ADCB Finance Cayman Ltd-SENIOR UNSECURED	D.	11/28/2018	HSBC SECURITIES INC		19,640,000	20,000,000	116,667
G0231E-AD-5	Algeco Global Finance PI-FIRST LIEN	B.	10/22/2018	VARIOUS		6,062,400	5,759,997	71,760
G0446*-AA-3	Angel Trains Rolling Sto Senior Secured	B.	06/30/2018	VARIOUS		45,122,423	45,122,397	
G05162-AF-2	ARROW GLOBAL FINANCE-SECURED	B.	08/20/2018	VARIOUS		1,746,794	1,907,319	42,377
G1315R-AD-3	BRASKEM FINANCE LTD-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		216,054	209,000	33
G1591#-BC-5	Britvic PLC Senior Notes Se	B.	06/05/2018	BARCLAYS CAPITAL INC		4,925,810	4,925,813	
G1591#-BF-8	Britvic PLC Senior Notes Se	B.	06/05/2018	BARCLAYS CAPITAL INC		5,325,200	5,325,204	
G1819#-AA-8	Canal & River Trust Senior Note Ser	B.	01/19/2018	NATWESTB		10,407,750	10,407,748	
G1819#-AB-6	Canal & River Trust Senior Note Ser	B.	01/19/2018	NATWESTB		34,692,500	34,692,493	
G1870*-AA-6	Cambridge Housing Societ Senior Secured	B.	11/28/2018	SANTANDER INVESTMENT		38,205,000	38,204,977	
G1987Z-AB-6	COBL FUNDING 1-SR UNSECURED	D.	10/16/2018	VARIOUS		4,041,788	3,909,000	19,905
G1987Z-AD-2	COBL Funding 1-SENIOR UNSECURED	D.	11/14/2018	AUSTRALIA & NEW ZEAL		4,700,000	5,000,000	9,167
G2019U-AD-3	CBQ FINANCE LTD-SENIOR UNSECURED	D.	11/28/2018	GOLDMAN SACHS INTERN		19,860,000	20,000,000	249,167
G2119W-AA-4	China Evergrande Group-SECURED	D.	05/07/2018	VARIOUS		585,144	600,000	4,217
G2119W-AF-3	CHINA EVERGRANDE GROUP-SECURED	D.	03/19/2018	BNP PARIBAS		589,500	600,000	10,375
G2140A-AJ-6	CIFI Holdings Group Co L-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		516,477	527,000	17,411
G2140A-AL-1	CIFI Holdings Group Co L-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		249,969	251,000	7,289
G24524-AH-6	COUNTRY GARDEN HLDG CO-SR UNSECURED REGS	D.	10/16/2018	VARIOUS		251,410	251,000	607
G24524-AL-7	Country Garden Holdings -SR UNSECURED	D.	06/26/2018	MORGAN STANLEY & CO		205,750	200,000	4,542
G2553Z-AH-5	CPUK FINANCE LTD-UNSECURED	B.	10/22/2018	NOMURA INTL PLC		2,613,800	2,613,802	19,737
G2685#-AG-4	Great Portland Estates Senior Note Ser	B.	06/05/2018	NATWESTB		14,644,300	14,644,310	
G2685#-AH-2	Great Portland Estates Senior Note Ser	B.	06/05/2018	NATWESTB		10,650,400	10,650,407	
G2854#-AA-0	Dudgeon Offshore Wind Lt Senior Secured	B.	12/14/2018	DIRECT		21,471,000	21,470,990	
G3076*-AE-6	Envol Investments Limite Senior Secured	B.	06/28/2018	ROYAL BANK OF SCOTLA		34,749,000	34,749,008	
G3165U-AB-7	C&W Senior Financing DAC-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		211,613	209,000	218
G3330K-AE-3	Franshion Brilliant Ltd-SENIOR UNSECURED	D.	07/13/2018	UBS LIMITED		4,810,040	5,000,000	64,600
G3426#-AB-5	GIP III Jupiter LTD Senior Secured Notes	B.	11/30/2018	DIRECT		74,248,674	74,248,677	
G4035E-AA-1	GOLD FIELDS OROGEN HOLD BVI-NT REGS	D.	11/13/2018	VARIOUS		995,500	1,000,000	4,780
G4133#-AE-3	Grosvenor Limited Senior Notes Series A	B.	11/07/2018	NATWESTB		11,121,400	11,121,404	
G4487E-AA-4	Hikma Pharmaceuticals PL-SENIOR UNSECURE	D.	01/16/2018	MERRILL LYNCH INTERN		1,874,397	1,866,000	21,589
G4691#-AJ-4	IMI PLC Senior Unsecure	D.	04/04/2018	DIRECT		12,100,000	12,100,000	
G4948F-AC-0	Iron Mountain UK PLC-SENIOR UNSECURED	B.	09/04/2018	VARIOUS		9,758,418	10,266,002	114,172
G4R1UX-AY-7	Heathrow Funding Limited Senior Secured	B.	09/28/2018	DIRECT		72,055,454	72,055,454	
G5084T-AG-2	Jerrold Finco Plc-FIRST LIEN	B.	10/22/2018	VARIOUS		8,979,554	8,998,501	86,180
G5265#-AB-6	Kingspan Securities 2017 Gtd Senior Note	B.	01/31/2018	BANK OF AMERICA		18,609,000	18,608,990	
G5265#-AC-4	Kingspan Securities 2017 Gtd Senior Note	B.	01/31/2018	BANK OF AMERICA		12,406,000	12,405,994	
G5635P-AF-6	Longfor Properties Co Lt-SENIOR UNSECURE	D.	07/05/2018	UBS LIMITED		3,640,000	4,000,000	86,500
G5635P-AG-4	Longfor Properties Co Lt-SENIOR UNSECURE	D.	12/13/2018	VARIOUS		6,802,420	7,000,000	54,492
G5825A-AA-0	MARB BondCo PLC-SENIOR UNSECURED	D.	08/24/2018	DTCYID		286,500	300,000	9,508
G5825A-AB-8	MARB BondCo PLC-SENIOR UNSECURED	D.	08/03/2018	DTCYID		384,500	400,000	1,375
G5975L-AA-4	Melco Resorts Finance Lt-SENIOR UNSECURE	D.	05/08/2018	DTCYID		187,000	200,000	4,171
G5864M-AA-4	MAF Global Securities Lt-SENIOR UNSECURE	D.	12/13/2018	HSBC SECURITIES INC		30,222,000	30,000,000	700,000
G632A7-AB-2	MOTO FINANCE PLC-MOTOIN 4 1/2 10/01/22	B.	10/22/2018	HSBC SECURITIES INC		1,175,485	1,195,814	5,830
G6463B-AB-1	New Metro Global Ltd-SENIOR UNSECURED	D.	02/01/2018	CREDIT SUISSE INTERN		13,760,000	13,760,000	
G6711K-AC-9	Odebrecht Offshore Drill-FIRST LIEN	D.	01/01/2018	EXCHANGE OFFER		61,482	88,920	
G6718S-ON-4	OCADO GROUP PLC-SECURED	B.	10/22/2018	NOMURA INTL PLC		3,171,670	3,183,610	45,632
G6753Y-AA-2	Ooredoo International Fi-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		395,821	418,000	4,964
G6853#-AE-6	Oxford Brookes Universit Senior Note Ser	B.	08/02/2018	MASSACHUSETTS MUTUAL		49,192,500	49,192,521	
G6892#-AA-5	Paradigm Homes Charitabl Senior Secured	B.	04/25/2018	SANTANDER INVESTMENT		80,926,830	80,926,843	
G7028A-AB-9	PETRA DIAMONDS US TREAS-2ND LIEN	D.	12/21/2018	VARIOUS		901,580	944,000	22,346
G70709-AB-9	Phosagro OAO Via Phosagr-SENIOR UNSECURE	D.	10/10/2018	VTB CAPITAL PLC, LON		752,000	800,000	14,743
G7161D-AD-6	Poly Real Estate Finance-SENIOR UNSECURE	D.	04/02/2018	STATE STREET BANK AN		395,000	400,000	2,589
G7302V-DK-7	QNB Finance Ltd-SENIOR UNSECURED	D.	11/09/2018	MIZUHO INTL PLC		806,800	800,000	2,409
G7302V-HA-5	QNB Finance Ltd-SENIOR UNSECURED	D.	11/26/2018	LIQUIDITY FINANCE LL		20,412,240	20,400,000	

E13.24

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
G7605#-AD-5	Roadster Finance DAC Senior Secured Note	B.	12/05/2018	DIRECT		73,020,563	73,020,561	
G7611#-AA-7	Rock Rail East Anglia pl Senior Secured	B.	03/15/2018	DIRECT		10,203,159	10,203,155	
G7612#-AA-2	Rock Rail Southwestern p Senior Secured	B.	12/31/2018	DIRECT		9,419,074	9,419,069	
G7737#-AC-8	SGN MidCo Limited Gtd Senior Secu	B.	03/14/2018	DIRECT		9,779,700	9,779,705	
G7737#-AD-6	SGN MidCo Limited Gtd Senior Secu	B.	03/14/2018	DIRECT		6,985,500	6,985,504	
G7801R-AB-5	Sands China Ltd-SENIOR UNSECURED	D.	10/10/2018	DTCYID		1,586,464	1,600,000	14,350
G7895#-AE-6	Scottish Mortgage Invest Senior Note Ser	B.	06/04/2018	SANTANDER INVESTMENT		40,044,000	40,044,995	
G7996#-AE-0	Sagro plc Senior Note Series B	B.	10/12/2018	DIRECT		21,413,750	21,413,747	
G8081B-AA-1	SF Holding Investment Lt-SENIOR UNSECURE	D.	07/23/2018	VARIOUS		9,989,060	10,000,000	
G83113-AC-7	SPARC EM SPC PANAMA METR-SECURED	D.	06/05/2018	HSBC SECURITIES INC		1,391,900	1,550,000	
G8401#-AJ-0	SSP Financing Limited Gtd Senior Note Se	B.	10/15/2018	LLOYDS TSB		13,157,000	13,156,995	
G84640-AA-2	Novolipetsk Steel Via St-SENIOR UNSECURE	D.	10/11/2018	VTB CAPITAL PLC, LON		460,625	500,000	1,333
G85860-AA-7	Sunny Optical Technology-SENIOR UNSECURE	D.	11/14/2018	VARIOUS		9,956,393	10,187,000	62,552
G87602-AA-9	TENGIZCHEVROIL FIN CO IN-SECURED	D.	10/16/2018	VARIOUS		196,476	209,000	1,417
G8883U-AA-9	Tianqi Finco Co Ltd-SENIOR UNSECURED	D.	06/26/2018	UBS - LONDON		184,400	200,000	625
G8T472-JL-0	Thomas Cook Group PLC-SENIOR UNSECURED	B.	10/05/2018	VARIOUS		5,165,232	4,960,605	95,869
G92886-AB-1	University of East Angli Senior Unsecure	B.	09/27/2018	DIRECT		93,834,480	93,834,469	
G9302#-AD-1	University of Stirling Senior Note Ser	B.	02/20/2018	BARCLAYS BANK PLC		28,088,000	28,087,994	
G9302#-AE-9	University of Stirling Senior Note Ser	B.	02/20/2018	BARCLAYS BANK PLC		14,044,000	14,044,997	
G9308#-AA-1	University of Lancaster Senior Note Ser	B.	04/25/2018	SANTANDER INVESTMENT		45,425,250	45,425,257	
G9309#-AA-6	University of Durham Senior Unsecured No	B.	08/28/2018	SANTANDER INVESTMENT		18,051,600	18,051,589	
G9365L-AA-4	Viridian Group FinanceCo-FIRST LIEN	B.	08/20/2018	VARIOUS		6,083,045	6,396,504	132,333
G9370P-AA-8	Virgin Media Receivables-FIRST LIEN	B.	10/22/2018	VARIOUS		13,212,864	12,887,502	347,757
G9720#-AA-7	Wireless Infrastructure Senior Secured N	B.	08/15/2018	DIRECT		60,386,750	60,386,781	
G9847C-AA-2	Yankuang Group Cayman Lt-SENIOR UNSECURE	D.	04/02/2018	STATE STREET BANK AN		490,000	500,000	8,181
G9884T-AD-3	Yuzhou Properties Co Ltd-FIRST LIEN	D.	10/16/2018	VARIOUS		193,523	209,000	2,822
G9884T-AG-6	Yuzhou Properties Co Ltd-FIRST LIEN	D.	10/16/2018	VARIOUS		333,337	335,000	11,395
K94545-CE-6	TDC A/S-SENIOR UNSECURED	B.	10/23/2018	VARIOUS		22,640,427	20,419,787	765,023
L0178W-AF-9	Alice Financing SA-FIRST LIEN	D.	10/16/2018	VARIOUS		751,118	753,000	2,079
L0269F-AH-2	Aroundtown SA Senior Unsecured Notes	B.	09/26/2018	DIRECT		88,232,267	88,232,267	
L1369W-AG-4	Cabot Financial Luxemou-FIRST LIEN	B.	10/25/2018	VARIOUS		8,885,553	8,950,764	169,904
L19570-AD-2	Consolidated Energy Fina-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		217,099	209,000	4,830
L21779-AA-8	CSN RESOURCES SA-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		510,720	532,000	8,165
L3438G-AC-1	Evrax Group SA-SENIOR UNSECURED	D.	10/11/2018	VTB CAPITAL PLC, LON		296,550	300,000	1,120
L41565-AA-7	Garrett LX I Sarl / Garr-SENIOR UNSECURE	B.	10/23/2018	VARIOUS		6,520,559	6,690,520	11,810
L5828L-AB-5	Klabin Finance SA-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		340,750	376,000	1,375
L5829P-AA-7	Kernel Holding SA-SENIOR UNSECURED	D.	01/22/2018	CITIGROUP GLOBAL MAR		994,950	900,000	38,063
L7877X-AB-5	QOGG CONSTELLATION SA-1ST LIEN	D.	01/01/2018	PIK BOND		2,839	3,754	
L8030B-AA-7	Samsonite Finco Sarl-SENIOR UNSECURED	B.	08/23/2018	VARIOUS		3,961,830	4,035,299	46,971
L8800M-AF-0	SEVERSTAL (STEEL CAP)-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		927,906	909,000	26,552
L9031#-AA-9	Terminal Investment Limi Gtd Secd Sr USD	D.	04/19/2018	DIRECT		11,509,000	11,509,000	
L9031#-AB-7	Terminal Investment Limi Gtd Secd Sr USD	D.	04/19/2018	DIRECT		34,196,000	34,196,000	
M0208J-AF-1	African Export-Import Ba-SENIOR UNSECURE	D.	05/31/2018	STATE STREET BANK AN		605,025	600,000	9,896
M0908Q-AA-9	African Export-Import Ba-SENIOR UNSECURE	D.	07/11/2018	DEKA INVESTMENT GMBH		1,646,875	1,700,000	4,480
M25354-AC-1	CBQ Finance Ltd-SUBORDINATED	D.	10/16/2018	VARIOUS		430,358	418,000	12,888
M2851H-AA-2	DP WORLD LTD-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		474,466	420,000	8,311
M4587R-AD-1	QNB Finansbank AS-SENIOR UNSECURED	D.	10/02/2018	DEKA INVESTMENT GMBH		185,150	200,000	3,656
M4752S-DU-7	Turkiye Garanti Bankasi -SR UNSECURED	D.	10/16/2018	VARIOUS		399,365	409,000	9,185
M4752S-EV-4	Turkiye Garanti Bankasi -SENIOR UNSECURE	B.	10/16/2018	VARIOUS		142,974	144,725	1,338
M7871F-AA-1	Petkim Petrokimya Holdin-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		198,277	216,000	2,820
M8933F-DJ-3	Turkiye Is Bankasi-SR UNSECURED	D.	10/16/2018	VARIOUS		388,740	418,000	9,637
M90345-AA-3	Turkiye Sise ve Cam Fabr-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		242,694	251,000	4,652
N30420-AA-6	Equate Petrochemical BV-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		286,071	293,000	5,638
N3783A-AA-7	GTH FINANCE BV-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		371,200	376,000	12,873
N44153-AA-7	JHS Netherlands Holdco B-SENIOR UNSECURE	D.	05/01/2018	VARIOUS		1,657,000	1,600,000	1,425
N50846-AA-9	Koole Terminals Subholdi Senior Secured	B.	03/22/2018	DIRECT		58,084,400	58,084,418	
N54468-AF-5	MARFRIG HOLDINGS EUROPE -SENIOR UNSECURE	D.	10/16/2018	VARIOUS		1,031,703	1,018,000	24,823
N5657T-AE-6	METINVEST BV-SECURED	D.	01/01/2018	PIK BOND		(25,932)	(24,964)	
N5657T-AL-0	Metinvest BV-SENIOR UNSECURED	D.	06/29/2018	NOMURA INTL PLC		373,000	400,000	6,028
N8539T-AH-7	Teva Pharmaceutical Fina-SENIOR UNSECURE	B.	10/16/2018	VARIOUS		768,579	725,941	707
N8353V-AJ-9	VEON Holdings BV-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		239,173	251,000	4,142
N9417J-AB-7	VTR Finance BV-FIRST LIEN	D.	02/06/2018	VARIOUS		9,209,250	9,410,000	
P09252-AM-2	BANCO DE BOGOTA SA-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		281,098	293,000	2,589
P35966-AA-3	EVM ENERGIA DEL VALLE DE MEXICO USD SR S	D.	09/24/2018	DIRECT		32,523,532	32,523,532	
P3713L-AA-6	Elementia SAB de CV-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		200,849	209,000	2,906

EX 3.25

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
P99198-AA-7	Fermaca Enterprises S de-FIRST LIEN	D.	10/16/2018	VARIOUS		525,086	510,411	1,446
P46756-AH-8	Genneta SA-SENIOR UNSECURED	D.	11/16/2018	DTCYID		421,200	450,000	10,354
P4909L-AA-8	GNL Quintero SA-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		206,388	209,000	2,045
P4954W-AA-8	Grupo Idesa SA de CV-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		399,921	463,000	11,951
P6629M-AD-4	Mexico City Airport Trus-SECURED	D.	10/16/2018	VARIOUS		176,378	200,000	2,322
P6784B-AA-2	Nexa Resources Peru SAA-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		598,431	606,000	1,401
P7862B-AY-3	Petroleos Mexicanos-SENIOR UNSECURED	B.	12/21/2018	ZKB		13,976,393	12,677,003	595,993
P7873P-AE-6	Pampa Energia SA-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		270,351	293,000	5,102
P8512U-AA-3	Rio Energy SA / UGEN SA -SECURED	D.	09/06/2018	DTCYID		142,500	200,000	1,490
P9308R-AZ-6	Transportadora de Gas de-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		239,078	251,000	7,718
P989MJ-AY-7	YPF SA-SENIOR UNSECURED	D.	07/24/2018	DTCYID		1,786,500	1,800,000	49,000
P989MJ-BG-5	YPF SA-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		506,869	502,000	2,726
Q3920#-AL-3	Fonterra Co-operative Gr Senior Unsecur	D.	12/18/2018	BOFAMSEC		30,000,000	30,000,000	
Q3R733-AD-4	Firstmac Mortgage Fundin-FMACB 2018-2 B	B.	06/08/2018	JPMORGAN CHASE BANK,		7,602,000	7,602,002	
Q3R733-AE-2	Firstmac Mortgage Fundin-FMACB 2018-2 C	B.	06/08/2018	JPMORGAN CHASE BANK,		1,064,280	1,064,280	
Q3R733-AF-9	Firstmac Mortgage Fundin-FMACB 2018-2 AB	B.	06/08/2018	JPMORGAN CHASE BANK,		9,122,400	9,122,402	
Q3R736-AD-7	Firstmac Mortgage Fundin-FMACB 2018-3 B	B.	10/19/2018	WESTPAC		7,126,000	7,125,999	
Q3R736-AF-2	Firstmac Mortgage Fundin-FMACB 2018-3 AB	B.	10/19/2018	WESTPAC		24,370,920	24,370,917	
Q54773-AD-0	La Trobe Financial Capit-SERIES 18-1 CLA	B.	03/27/2018	MACQUARIE BANK		15,416,000	15,416,005	
Q6568B-AA-9	Network Finance Company Gtd Senior Secu	D.	02/14/2018	MITSUBISHI UFJ SEC I		42,000,000	42,000,000	
Q73855-AJ-9	Pepper Residential Secur-PEPAU 22X B	B.	11/30/2018	WESTPAC		21,891,000	21,891,003	
Q7389H-AC-4	Pepper I-Prime 2018-1 Tr-SERIES 18-1 CLA	B.	05/25/2018	NATIONAL AUSTRALIA B		6,799,500	6,799,499	
Q7389H-AE-0	Pepper I-Prime 2018-1 Tr-SERIES 18-1 CLA	B.	05/25/2018	NATIONAL AUSTRALIA B		3,777,500	3,777,499	
Q7389H-AH-3	Pepper Residential Secur-PEPAU 2018-1 B	B.	05/25/2018	NATIONAL AUSTRALIA B		6,044,000	6,043,999	
Q7389M-AH-2	Pepper Residential Secur-SERIES 20X CLAS	B.	03/21/2018	DIRECT		29,332,200	29,332,191	
Q7389N-AC-1	Pepper Residential Secur-PEPAU 21X A2	B.	07/26/2018	NATIONAL AUSTRALIA B		29,564,000	29,563,998	
Q7389N-AH-0	Pepper Residential Secur-PEPAU 21X B	B.	07/26/2018	NATIONAL AUSTRALIA B		14,782,000	14,781,999	
Q7443L-AC-9	Sapphire XIX Series 2018-SAPP 2018-2 A2B	B.	08/30/2018	MACQUARIE BANK		14,532,000	14,532,001	
Q7443P-AC-0	Sapphire Trust-SAPP 2018-3 A2	B.	11/27/2018	MACQUARIE BANK		18,075,000	18,074,998	
Q7444F-AD-2	AFG 2018-1 Trust-AFG 2018-1 AB	B.	06/20/2018	AUSTRALIA & NEW ZEAL		4,984,200	4,984,198	
Q7444F-AF-7	AFG 2018-1 Trust-AFG 2018-1 C	B.	06/20/2018	AUSTRALIA & NEW ZEAL		2,713,620	2,713,619	
Q7444F-AJ-9	AFG 2018-1 Trust-AFG 2018-1 B	B.	06/20/2018	AUSTRALIA & NEW ZEAL		3,747,380	3,747,379	
Q7444N-AD-5	La Trobe Financial Capit-LTFC 2018-2 A2	B.	11/14/2018	NATIONAL AUSTRALIA B		45,200,071	45,200,081	
Q7444N-AK-9	La Trobe Financial Capit-LTFC 2018-2 B	B.	11/14/2018	NATIONAL AUSTRALIA B		8,912,995	8,912,997	
Q7S00B-AB-3	RESIMAC Bastille Trust S-RESI 2018-INCX	B.	08/10/2018	EQUITIES ARM OF CITI		54,735,000	54,735,017	
Q7S00P-AC-3	RedZed Trust Series 2018-REDZE 2018-1 A2	B.	09/12/2018	COMMONWEALTH BANK OF		14,332,000	14,331,996	
Q7S1BB-AB-4	RESIMAC Premier Series 2-RESI 2017-3 AB	B.	01/01/2018	DIRECT		8,858,450	8,858,447	
Q7S1BB-AD-0	RESIMAC Premier Series 2-CLASS C	B.	01/01/2018	DIRECT		8,473,300	8,473,297	
Q7S1BB-AF-5	RESIMAC Premier Series 2-CLASS B	B.	01/01/2018	DIRECT		20,027,800	20,027,792	
Q9035L-AE-5	Triton Trust No 8 Bond S-TRTN 2018-1 A3	B.	07/13/2018	NATIONAL AUSTRALIA B		19,459,738	19,459,736	
Q9035L-AG-0	Triton Trust No 8 Bond S-TRTN 2018-1 B	B.	07/13/2018	NATIONAL AUSTRALIA B		9,853,970	9,853,969	
Q9035L-AH-8	Triton Trust No 8 Bond S-TRTN 2018-1 C	B.	07/13/2018	NATIONAL AUSTRALIA B		4,778,805	4,778,804	
Q9035L-AL-9	Triton Trust No 8 Bond S-TRTN 2018-1 AB	B.	07/13/2018	NATIONAL AUSTRALIA B		7,634,974	7,634,973	
Q9883F-AA-9	Z Energy Limited Senior Secured	D.	01/04/2018	BANK OF AMERICA		20,000,000	20,000,000	
Q9883F-AB-7	Z Energy Limited Senior Secured	D.	01/04/2018	BANK OF AMERICA		12,000,000	12,000,000	
S0103B-AF-5	African Bank Ltd-SENIOR UNSECURED	D.	04/11/2018	FIRSTSTRAND BANK LTD (		1,475,000	1,500,000	20,467
S0103B-AH-1	African Bank Ltd-SENIOR UNSECURED	D.	02/08/2018	VARIOUS		409,350	400,000	9,073
S29371-GG-0	FirstRand Bank Ltd-SUBORDINATED	D.	10/16/2018	VARIOUS		1,100,613	1,113,000	8,800
T92777-AM-2	Telecom Italia SpA/Milan-SENIOR UNSECURE	B.	10/02/2018	VARIOUS		14,487,365	13,769,598	136,202
T9820G-AB-8	Wind Tre SpA-FIRST LIEN	B.	08/17/2018	JP MORGAN CHASE		3,723,841	3,977,399	10,703
U0567P-AA-4	Turkish Airlines 2015-1 -SECURED	D.	10/16/2018	VARIOUS		232,247	262,961	951
V0000J-AC-8	EASTERN & SOUTHERN AFRIC-SENIOR UNSECURE	D.	10/16/2018	VARIOUS		209,489	209,000	999
V0055B-AG-0	Africa Finance Corp-SENIOR UNSECURED	D.	07/11/2018	DEKA INVESTMENT GMBH		772,000	800,000	7,750
V6277K-AA-2	Neerg Energy Ltd-FIRST LIEN	D.	02/08/2018	VARIOUS		707,000	700,000	20,783
V6560A-AD-4	OCP SA-SENIOR UNSECURED	D.	10/16/2018	VARIOUS		219,097	209,000	6,825
V93278-AA-3	UNITED BANK FOR AFRICA P-SENIOR UNSECURE	D.	07/09/2018	GOLDMAN SACHS INTERN		197,000	200,000	1,421
W1004B-AC-1	Akelius Residential Prop Senior Note Ser	D.	12/03/2018	BARCLAYS CAPITAL INC		5,000,000	5,000,000	
W1004B-AD-9	Akelius Residential Prop Senior Note Ser	D.	12/03/2018	BARCLAYS CAPITAL INC		18,000,000	18,000,000	
000000-00-0	SSCP SPRING MIDCO 1 Term Loan	B.	03/31/2018	PIK BOND		14,273	14,280	
Y06942-LR-8	Bank of East Asia Ltd/TH-SUBORDINATED	D.	11/20/2018	UBSAGLN		2,997,000	3,000,000	1,063
Y06942-UF-4	Bank of East Asia Ltd/TH-SUBORDINATED	D.	11/16/2018	VARIOUS		4,300,468	4,400,000	40,978
Y1917Z-EC-5	DAH SING BANK LTD-SUBORDINATED	D.	12/13/2018	CITIGROUP		358,750	350,000	8,116
Y27187-AE-6	GLOBAL LOGISTIC PROP-SR UNSECURED EMTN	D.	12/06/2018	VARIOUS		1,055,456	1,200,000	775
Y39656-AC-0	Industrial & Commercial -SUBORDINATED	D.	10/16/2018	VARIOUS		210,515	209,000	708
Y39694-AA-5	Indika Energy Capital II-FIRST LIEN	D.	10/10/2018	DTCYID		277,350	300,000	7,442

EX-13.26

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
Y48595-DU-7	KEB Hana Bank-SUBORDINATED NOTE	D	10/16/2018	VARIOUS		410,531	418,000	99
Y62014-AA-6	Nakilat Inc-FIRST LIEN	D	10/16/2018	VARIOUS		460,929	418,000	7,467
Y6862H-AB-5	Perusahaan Listrik Negar-SENIOR UNSECURE	B	10/18/2018	HSBC SECURITIES INC		8,821,541	8,890,796	
Y7082R-OP-8	Power Finance Corp Ltd-SENIOR UNSECURED	D	07/11/2018	VARIOUS		9,925,607	11,100,000	29,135
Y7136Y-AA-8	PERUSAHAAN GAS NEGARA-SENIOR UNSECURED	D	10/10/2018	MERRILL LYNCH INTERN		901,710	900,000	18,578
Y7139H-BL-7	Bank Rakyat Indonesia Pe-SENIOR UNSECURE	D	07/16/2018	STANDARD CHARTERED B		7,975,680	8,000,000	
Y7766C-AB-1	China Construction Bank -SUBORDINATED	D	11/21/2018	VARIOUS		8,555,361	8,550,000	95,643
Y78650-KG-3	REC Ltd-SENIOR UNSECURED	D	12/10/2018	VARIOUS		10,212,187	11,280,000	187,735
Y8T6JP-AA-4	Southern Gas Corridor CJ-SENIOR UNSECURE	D	10/16/2018	VARIOUS		274,309	251,000	1,055
Y93541-AA-1	Vanke Real Estate Hong K-SENIOR UNSECURE	D	07/23/2018	VARIOUS		8,346,900	9,000,000	89,408
Y93541-AB-9	Vanke Real Estate Hong K-SENIOR UNSECURE	D	05/24/2018	HSBC SECURITIES INC		4,929,600	5,000,000	23,632
Y93541-AC-7	Vanke Real Estate Hong K-SENIOR UNSECURE	D	07/25/2018	GOLDMAN SACHS INTERN		300,600	300,000	2,037
G21599-AA-6	China Hongqiao Group Ltd-CN HONGQIAO LTD	D	06/11/2018	VARIOUS		221,100		
247916-AK-5	Denbury Resources Inc	D	10/09/2018	VARIOUS		3,411,333		
3899999. Subtotal - Bonds - Industrial and Miscellaneous (Unaffiliated)						15,924,460,198	15,830,895,768	56,276,852
020002-BB-6	ALLSTATE CORP-SUBORDINATED BOND		11/16/2018	VARIOUS		968,813	950,000	12,798
026874-DM-6	American International G-JR SUBORDINATED		04/20/2018	VARIOUS		392,500	390,000	894
03350F-AA-4	Andeavor Logistics LP-JR SUBORDINATED		10/03/2018	VARIOUS		427,498	425,000	4,005
59156R-AM-0	MetLife Inc-NOTE		10/04/2018	IN-KIND TRANSFER		896,186	790,000	
744320-AM-4	Prudential Financial Inc-JUNIOR SUBORDIN		11/16/2018	GOLDMAN		968,810	950,000	23,008
05962G-AJ-8	BANCO MERCANTIL DE NORTE-JR SUBORDINATED	D	10/01/2018	BSANT		5,779,800	5,700,000	105,034
06428J-AA-7	Bank of China Hong Kong -JR SUBORDINATED	D	10/04/2018	VARIOUS		10,021,200	10,000,000	40,972
98105F-AC-8	WOORI BANK-SUBORDINATED	D	11/09/2018	BAMLINTLTD		6,972,000	7,000,000	12,931
G012B1-AA-1	AHLI UNITED SUKUK LTD-JR SUBORDINATED	D	10/16/2018	VARIOUS		206,720	209,000	5,460
G0226H-AC-7	Alfa Bank AO Via Alfa Bo-ALFA BANK	D	10/16/2018	VARIOUS		212,461	226,000	3,666
P1400B-AE-9	Banco Mercantil del Nort-JR SUBORDINATED	D	10/16/2018	VARIOUS		424,274	418,000	885
P4949B-AN-4	Grupo Bimbo SAB de CV-SUBORDINATED	D	10/16/2018	VARIOUS		252,255	251,000	3,692
P5816P-AA-8	Itau Unibanco Holding SA-JR SUBORDINATED	D	10/16/2018	VARIOUS		331,148	346,000	7,300
Y19019-AA-9	CHINA LIFE INSURANCE-SUBORDINATED	D	01/08/2018	VARIOUS		3,276,300	3,260,000	2,536
4899999. Subtotal - Bonds - Hybrid Securities						31,129,965	30,915,000	223,181
056188-AA-9	Barings Capital Finance LLC - Investment		12/21/2018	DIRECT		393,575,000	393,575,000	
056188-MM-0	Barings Capital Finance LLC - Investment		12/31/2018	DIRECT		49,000,000	49,000,000	
08161C-AR-2	BENCHMARK 2018-B2 Mortga-SERIES 2018-B2		02/09/2018	JP MORGAN SECURITIES		38,914,923	50,862,000	154,421
08161C-AT-8	BENCHMARK 2018-B2 Mortga-SERIES 2018-B2		02/09/2018	JP MORGAN SECURITIES		9,855,424	18,837,000	57,191
08161C-AV-3	BENCHMARK 2018-B2 Mortga-SERIES 2018-B2		02/09/2018	JP MORGAN SECURITIES		7,750,933	18,838,000	57,194
08161C-AX-9	BENCHMARK 2018-B2 Mortga-SERIES 2018-B2		02/09/2018	JP MORGAN SECURITIES		19,376,224	56,512,898	171,578
08161H-AS-9	BENCHMARK 2018-B4-BMARK 2018-B4 FRR		06/29/2018	DEUTSCHE BANK SECURI		27,917,033	34,924,000	54,901
08161H-AU-4	BENCHMARK 2018-B4-BMARK 2018-B4 FRR		06/28/2018	DEUTSCHE BANK SECURI		11,665,874	21,721,000	34,145
08161H-AW-0	BENCHMARK 2018-B4-BMARK 2018-B4 GRR		06/28/2018	DEUTSCHE BANK SECURI		4,785,148	11,585,000	18,212
08161H-AY-6	BENCHMARK 2018-B4-BMARK 2018-B4 HRR		06/28/2018	DEUTSCHE BANK SECURI		14,053,844	40,547,279	63,740
08162U-AE-0	BMARK 2018-B8		12/10/2018	JP MORGAN SECURITIES		20,556,193	22,894,000	
08162U-AG-5	BMARK 2018-B8		12/10/2018	JP MORGAN SECURITIES		12,450,741	22,292,000	
08162U-AJ-9	BMARK 2018-B8		12/10/2018	JP MORGAN SECURITIES		4,749,109	10,490,000	
08162U-AL-4	BMARK 2018-B8		12/10/2018	JP MORGAN SECURITIES		16,644,579	40,649,462	
465968-AP-0	JPMCC Commercial Mortgage-SERIES 2017-JP7		01/01/2018	JP MORGAN SECURITIES		3,137,820	4,000,000	15,189
465968-AR-6	JPMCC Commercial Mortgage-SERIES 2017-JP7		01/01/2018	JP MORGAN SECURITIES		3,088,536	6,600,000	25,063
465968-AT-2	JPMCC Commercial Mortgage-SERIES 2017-JP7		01/01/2018	JP MORGAN SECURITIES		639,314	1,600,000	6,076
465968-AV-7	JPMCC Commercial Mortgage-SERIES 2017-JP7		01/01/2018	JP MORGAN SECURITIES		1,926,322	5,600,000	21,265
57628H-AH-1	MASSMUTUAL ASSET FINANCE LLC Senior Secu		12/31/2018	DIRECT		871,378,380	871,378,380	
576328-AY-0	MASSMUTUAL HOLDING LLC REFINANCE NOTE		12/15/2018	DIRECT		380,058,363	380,058,363	2,734,309
72403*-AK-8	PIONEERS GATE LLC 2017 2 GSCF 2011-2A-1		01/01/2018	DIRECT		2,916,330		
72403*-AL-6	PIONEERS GATE LLC 2016-4 Solar Tetris Wa		12/15/2018	DIRECT		42,238,727	42,238,727	
72403*-AR-3	PIONEERS GATE LLC 2017-3 AEF (Amur)		10/05/2018	DIRECT		3,060,000	3,060,000	
72403*-AV-4	PIONEERS GATE LLC 2018-2 ONDK Note		12/26/2018	DIRECT		101,330,336	101,330,336	
72403*-AW-2	PIONEERS GATE LLC 2018-3 BWKey Note		04/25/2018	DIRECT		56,833,949	56,833,949	
72403*-AX-0	PIONEERS GATE LLC 2018-1 MPCF Note		12/26/2018	DIRECT		80,538,387	80,538,387	
72403*-AY-8	PIONEERS GATE LLC 2018-4 CSWC Lev II		12/24/2018	DIRECT		104,600,000	104,600,000	
72403*-AZ-5	PIONEERS GATE LLC 2018-5 OPTN (Eillington		12/28/2018	DIRECT		43,547,330	43,547,330	
056162-AL-4	Babson CLO Ltd 2015-1-BABSN 2015-IA XR	D	02/07/2018	JP MORGAN SECURITIES		200,000	200,000	
056162-AN-0	Babson CLO Ltd 2015-1-BABSN 2015-IA AR	D	02/07/2018	JP MORGAN SECURITIES		12,575,000	12,575,000	
056162-AQ-3	Babson CLO Ltd 2015-1-BABSN 2015-IA BR	D	02/07/2018	JP MORGAN SECURITIES		2,045,000	2,045,000	
056162-AS-9	Babson CLO Ltd 2015-1-BABSN 2015-IA CR	D	02/07/2018	JP MORGAN SECURITIES		9,095,000	9,095,000	
056162-AU-4	Babson CLO Ltd 2015-1-SERIES 2015-IA CLA	D	02/07/2018	JP MORGAN SECURITIES		400,000	400,000	
05616J-AE-3	BABSON CLO LTD 2015-1 SUB NT	D	02/07/2018	JP MORGAN SECURITIES		966,600	1,790,000	

E13.27

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
05616J-AL-7	Babson CLO Ltd 2015-I-SERIES 15-1A CLASS	D	02/07/2018	JP MORGAN SECURITIES		755,000	755,000	
05616J-AN-3	Babson CLO Ltd 2015-I-SERIES 15-1A CLASS	D	02/07/2018	JP MORGAN SECURITIES		150,000	150,000	
05618B-AA-6	BABSON CLO LTD 2013-I SUB NT	D	01/22/2018	VARIOUS		4,646,346	4,646,346	
05618J-AE-1	BABSON CLO LTD 2014-III-SUB NT 144A	D	06/08/2018	MORGAN		1,107,000	3,690,000	
06759M-AE-1	Babson CLO Ltd 2016-I-BABSN 2016-1A A2R	D	07/25/2018	MORGAN		7,200,000	7,200,000	
06760G-AA-9	Barings CLO Ltd 2018-I-SERIES 18-1A CLAS	D	02/23/2018	BANK OF AMERICA CORP		16,475,000	16,475,000	
06760G-AB-7	Barings CLO Ltd 2018-I-SERIES 18-1A CLAS	D	02/23/2018	BANK OF AMERICA CORP		20,100,000	20,100,000	
06760G-AC-5	Barings CLO Ltd 2018-I-SERIES 18-1A CLAS	D	02/23/2018	BANK OF AMERICA CORP		8,050,000	8,050,000	
06760G-AD-3	Barings CLO Ltd 2018-I-SERIES 18-1A CLAS	D	02/23/2018	BANK OF AMERICA CORP		1,650,000	1,650,000	
06760H-AA-7	Barings CLO Ltd 2018-I-SERIES 18-1A CLAS	D	02/23/2018	BANK OF AMERICA CORP		1,100,000	1,100,000	
06760H-AB-5	Barings CLO Ltd 2018-I-SERIES 18-1A CLAS	D	02/23/2018	BANK OF AMERICA CORP		2,135,244	2,440,000	
06760J-AE-5	Barings CLO Ltd 2018-II-SERIES 2018-2A C	D	04/04/2018	JP MORGAN SECURITIES		16,200,000	16,200,000	
06760P-AE-1	Babson CLO Ltd/Cayman Is-BABSN 2018-3A A	D	05/18/2018	MORGAN		23,000,000	23,000,000	
06760X-AC-8	BARINGS CLO LTD 2018-IV-SERIES 18-4A CLA	D	10/26/2018	MORGAN		16,000,000	16,000,000	
06760Y-AC-6	Barings CLO Ltd 2018-IV-SERIES 18-4A CLA	D	10/26/2018	MORGAN		9,443,000	10,000,000	
06761C-AC-3	Babson CLO Ltd 2016-II-BABSN 2016-2A BR	D	12/07/2018	MORGAN		10,000,000	10,000,000	
06761N-AE-5	Barings Middle Market CL-BMM 2018-II COM	D	11/13/2018	NATIXIS CAP MKT		110,000,000	110,000,000	
N7516#-AB-9	ROCKALL CLO BV Variable Funding Note - US	D	10/31/2018	DIRECT		5,850,000	5,850,000	
N7516#-AC-7	ROCKALL CLO BV Variable Funding Note - G	B	12/17/2018	VARIOUS		752,058	752,058	
BCC00G-68-8	Duchess VII CLO BV	D	09/30/2018	VARIOUS		490,513		
5599999. Subtotal - Bonds - Parent, Subsidiaries and Affiliates						2,606,374,580	2,778,276,515	3,413,284
464287-24-2	ISHARES IBOX \$ INVESTHE-ETF		05/02/2018	WEEDEN & CO	87,000,000	9,965,389		
8199999. Subtotal - Bonds - SVO Identified Funds						9,965,389		
00118#-AG-2	Arrowhead Electrical Pro Term Loan EUR		07/06/2018	BANK LOANS BARINGS		11,237,414	11,350,919	
00190N-AJ-8	PODS LLC		06/08/2018	BANK LOANS BARINGS		1,866,178	1,869,300	
00226#-AA-2	AGA Acq Hldg 2nd Lien Term Ln		10/01/2018	BANK LOANS BARINGS		20,491,198	21,016,613	
00449#-AG-0	Accruent, LLC 2L DDTL		01/01/2018	BANK LOANS BARINGS			537	
00453#-AA-8	Accurus Aerospace Corporation		10/26/2018	BANK LOANS BARINGS		24,625,000	25,000,000	
00488P-AK-1	Acrisure, LLC TL B (Increment		09/10/2018	BANK LOANS BARINGS		2,012,500	2,000,000	
00489#-AA-6	ACRES Commercial Mortgage LLC - Term Loa		12/19/2018	DIRECT		32,351,693	32,351,693	
00889#-AD-6	AIM Aerospace Sr. Term Loan		04/18/2018	BANK LOANS BARINGS		23,443,000	23,800,000	
01881U-AE-5	Alliant Holdings LP TL B (Apr '18)		05/16/2018	BANK LOANS BARINGS		2,550,000	2,550,000	
02074#-AA-3	Alpha Guardian (fka Cann First-Out DDTL		11/19/2018	BANK LOANS BARINGS		420,384	420,384	
02337N-AB-5	Trimark Inc. 1st Lien Term L		03/06/2018	BANK LOANS BARINGS		37,482	37,576	
02535F-AJ-5	AMERICAN DENTAL PARTNERS		11/14/2018	DIRECT		7,191,714	7,200,513	
03759D-AD-0	Apex Tool Group LLC - 2018 Term Loan B		09/05/2018	BANK LOANS BARINGS		3,185,301	3,176,030	
04014*-AA-4	APES CRE LENDER LLC Term Loan		12/17/2018	DIRECT		97,877,500	97,877,500	
04542N-B*-6	Asset Intl inc Second Lien Term Loan		01/01/2018	BANK LOANS BARINGS		16,617,500	17,000,000	
04621H-AK-9	AssuredPartners Capital, 1st Lien TL		09/12/2018	BANK LOANS BARINGS		2,002,220	2,000,000	
05072#-AC-4	Audio Precision Inc Term Loan		10/31/2018	BANK LOANS BARINGS		8,274,830	8,443,704	
09238F-AK-7	Blackhawk Network Holdin Term Loan B		06/20/2018	BANK LOANS BARINGS		1,591,597	1,596,586	
09578#-AA-7	Blue Ocean Inc Fd Registered Note		12/24/2018	DIRECT		23,405,374	18,968,640	
09858#-AC-6	Boomerang Tube, LLC Exit TLB		01/01/2018	PIK NOTE BUY UP		21,125	4,443	
09858#-AD-4	Boomerang Tube LLC Subordinated No		01/01/2018	PIK NOTE BUY UP		3,362	3,131	
09858#-AF-9	Boomerang Tube LLC Term A Ln		11/01/2018	BANK LOANS BARINGS		150,314	150,314	
11702#-AA-4	Brunswick Asset Financing LLC - Term A L		12/10/2018	DIRECT		10,853,659	10,853,659	
12602#-AA-3	CFS FUNDING TRUST I Floating Rate V		12/21/2018	VARIOUS		63,860,960	64,462,210	
12738#-AB-8	Cadence Aerospace, LLC Incremental TL		07/05/2018	BANK LOANS BARINGS		3,302,046	3,335,400	
13345*-AA-5	CAMERON LNG CONSTRUCTION FA		11/28/2018	DIRECT		9,767,108	9,767,108	
14317#-AA-3	Carlyle US CLO 2017-5 Re Term Loan		01/30/2018	BANK LOANS BARINGS		19,165,000	19,165,000	
14317*-AA-7	Carlyle US CLO 2013-4 Re Term Loan		03/01/2018	BANK LOANS BARINGS		15,350,000	15,350,000	
150311-ZZ-4	BDP International Inc.		12/19/2018	BANK LOANS BARINGS		9,858,621	10,059,817	
16117L-BS-7	Charter Communications I New Term Loan B		01/08/2018	BANK LOANS BARINGS		2,546,813	2,550,000	
18065#-YZ-9	Claritas LLC		12/21/2018	BANK LOANS BARINGS		26,803,624	27,490,896	
20824#-AA-8	ROI Solutions Senior Term Loa		08/01/2018	BANK LOANS BARINGS		2,398,687	2,398,687	
21775#-AC-9	CORA Health Services, In Mezzanine Term		09/30/2018	VARIOUS		15,092,480	15,092,480	
22834K-AB-7	Crown Finance US, Inc. USD TLB (Feb '18		10/11/2018	BANK LOANS BARINGS		1,989,600	1,994,986	
23248R-AB-0	Cvent, Inc. Re-priced TL B		01/01/2018	BANK LOANS BARINGS		2,543,625	2,550,000	
24380#-AA-6	Deer District LLC Senior Secured		01/01/2018	VARIOUS		70,122	70,122	
25213Y-AK-1	DexKo Global Inc.		01/25/2018	BANK LOANS BARINGS		1,030,117	1,021,496	
25463#-AA-1	Direct Travel, Inc. Term Loan		03/22/2018	BANK LOANS BARINGS		650,730	657,303	
25463E-AD-8	Direct Travel, Inc. Delayed Draw B		07/05/2018	BANK LOANS BARINGS		336,539	336,539	
26376M-AH-5	DuBois Chemicals, Inc. Second Lien Ter		09/19/2018	BANK LOANS BARINGS		14,091,729	14,234,070	
27031*-AB-2	EARTHCOLOR INC TERM LOAN		06/29/2018	PIK NOTE BUY UP		568,321	568,321	

E13.28

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
28249G-AC-0	EIF Channelview Cogenera TL B		05/24/2018	BANK LOANS BARINGS		914,352	918,947	
28488#-ZZ-4	Electric Power Systems Senior Term Loa		12/28/2018	BANK LOANS BARINGS		5,294,014	5,374,634	
29373U-AC-5	Envision Healthcare Corp TL due 2025		09/28/2018	BANK LOANS BARINGS		2,992,500	3,000,000	
30255Q-AB-7	FLNG LIQUIFACTION 2 LLC TERM LOAN		12/21/2018	BANK LOANS BARINGS		7,228,160	7,228,160	
31659#-AB-1	Fieldwood Energy LLC Exit 1st Lien TL		09/21/2018	BANK LOANS BARINGS		4,023,420	4,116,576	
31659H-AN-1	Fieldwood Energy LLC Exit 2nd Lien TL		10/11/2018	BANK LOANS BARINGS		2,615,924	3,167,005	
31740M-AC-5	Finl & Risk US Hldgs Term Ln B		11/20/2018	BANK LOANS BARINGS		2,992,500	3,000,000	
31788#-AA-9	FineLine Systems Second Lien Ter		08/31/2018	BANK LOANS BARINGS		8,976,789	9,067,464	43,577
32007U-BX-6	First Data Corporation 2024 Term Loan		09/12/2018	BANK LOANS BARINGS		2,999,700	3,000,000	
33887#-AB-3	Flavor Producers First Lien Term		10/12/2018	BANK LOANS BARINGS		227,722	230,022	
33971#-AA-2	FLNG LIQUEFACTION 3, LLC CONSTRUCTION LO		12/21/2018	BANK LOANS BARINGS		10,396,595	10,396,595	
36165Y-AD-2	BBB Industries LLC Second Lien TL		08/08/2018	BANK LOANS BARINGS		24,250,000	25,000,000	
36249V-AG-1	GYP Holdings III 2018 Incr Term Loan		06/14/2018	BANK LOANS BARINGS		1,575,897	1,576,245	
36250L-AP-9	GTT Communications, Inc. USD TL B (Apr'1		06/07/2018	BANK LOANS BARINGS		2,537,250	2,550,000	
36254E-AC-0	Paya Inc		12/17/2018	DIRECT		10,936,650	11,103,198	
36877#-AA-8	Spring Renewables Investments LLC		12/26/2018	BANK LOANS BARINGS		97,890,000	97,890,000	
37958Y-AK-5	GlobalTranz 2nd Lien Term Loan		10/25/2018	BANK LOANS BARINGS		12,443,452	12,632,946	
38133U-AC-7	Golden West Packaging Gr Term Loan		02/16/2018	BANK LOANS BARINGS		2,552,879	2,565,708	
38268P-AC-5	Convergint Technologies DD First Lien T		09/28/2018	BANK LOANS BARINGS		24,152	24,152	
41049#-XX-6	Hanley Wood LLC		12/10/2018	BANK LOANS BARINGS		26,812,500	27,500,000	
41151P-AM-7	Harbor Freight Tools USA Inc.		01/24/2018	BANK LOANS BARINGS		9,473,966	9,450,340	
42806D-A*-0	Hertz Vehicle Financing Series 2013-A V		03/09/2018	BANK LOANS BARINGS		42,500,000	42,500,000	
42958#-AB-6	Higginbotham Insurance A 1st Lien TL		02/02/2018	BANK LOANS BARINGS		2,198,350	2,209,397	
43110E-AF-3	Highline Aftermarket Acq TL B		05/16/2018	BANK LOANS BARINGS		2,662,008	2,664,077	
43129#-AA-4	The Hilb Group, LLC Term Loan - Las		06/27/2018	BANK LOANS BARINGS		433,311	433,709	
43129#-AB-2	The Hilb Group, LLC DDTL - Last Out		12/03/2018	BANK LOANS BARINGS		747,623	747,623	
43455J-AT-5	Hoffmaster Group Inc. Repriced 1st Li		10/16/2018	BANK LOANS BARINGS		2,013,057	1,998,071	
43534#-AB-1	Hollandia Produce LP Equipment Term		04/09/2018	BANK LOANS BARINGS		323,956	323,956	
43534#-AC-9	Hollandia Produce LP Equipment Acqui		04/09/2018	BANK LOANS BARINGS		37,750	37,750	
43534#-AD-7	Hollandia Produce LP Real Estate Ter		04/09/2018	BANK LOANS BARINGS		483,018	483,018	
44332E-AP-1	Hub International Limite USD TL B (Apr'1		09/04/2018	BANK LOANS BARINGS		2,787,712	2,784,232	
44908X-AT-5	Hyland Software Inc. TL B (add-on)		11/06/2018	BANK LOANS BARINGS		1,285,466	1,283,101	
45249#-AA-0	Image Intl Holdco Initial Term Ln		07/10/2018	BANK LOANS BARINGS		25,053,750	25,500,000	
45790L-AD-4	Integrity Marketing Acquisition, LLC		11/29/2018	DIRECT		5,230,070	5,256,352	
47579S-AT-7	Jeld-Wen Inc. Amended TL B		01/03/2018	BANK LOANS BARINGS		1,259,994	1,259,994	
48252#-AA-8	KKR Eagle Asset Term Loan A		11/29/2018	VARIOUS		58,408,024	58,408,024	
48268J-AC-8	KSLB HLDGS LLC Term Loan		07/30/2018	BANK LOANS BARINGS		11,846,864	12,119,554	
48275#-AA-3	KREF Lending VII 2018-1 Term Loan		04/13/2018	DIRECT		188,385,000	188,385,000	
48275#-AB-1	KREF Lending VII 2018-2 Term Loan		05/31/2018	DIRECT		180,148,500	180,148,500	3
48275#-AC-9	KREF Lending VII 2018-3 Term Loan		07/23/2018	DIRECT		184,824,875	184,824,875	
48275#-AD-7	KREF Lending VII 2018-5 Term Loan		12/05/2018	DIRECT		162,687,500	162,687,500	
48275#-AE-5	KREF Lending VII 2018-4 Term Loan		11/16/2018	DIRECT		190,000,000	190,000,000	
48770T-AJ-2	Kellermeyer Bergensons Services		11/20/2018	DIRECT		2,254,350	2,260,000	
50219N-AD-3	Dohmen Life Science Serv Second Lien Ter		05/16/2018	BANK LOANS BARINGS		14,864,725	15,185,659	
50219N-AF-8	Dohmen Life Science Serv Second Lien DDT		05/22/2018	BANK LOANS BARINGS		2,866,629	2,868,403	
50546#-AA-2	LAC INTER LLC Term Loan		10/01/2018	BANK LOANS BARINGS		10,812,839	11,061,728	
51187G-AC-6	Lakeland Tours, LLC TL B due 2024		06/15/2018	BANK LOANS BARINGS		653,937	655,451	
53186#-AA-3	Life Extension Institute Term Loan B		07/27/2018	BANK LOANS BARINGS		1,621,365	1,637,743	
53227#-AA-0	Lightspeed Systems, Inc. Senior Term Loa		02/02/2018	BANK LOANS BARINGS		7,486,709	7,718,257	
54047#-AA-6	Loftware, Inc. First Lien Term		03/02/2018	BANK LOANS BARINGS		7,497,000	7,650,000	
55282C-AB-2	MAG DS Corp - 1st Lien Term Loan		06/01/2018	DIRECT		13,333,336	13,468,016	28,933
55368#-AG-5	MSHC Inc (HVAC Holdings/ 2L DDTL		06/28/2018	BANK LOANS BARINGS		3,845,238	3,845,238	
55368#-AH-3	MSHC Inc (HVAC Holdings/ Second Lien DDT		08/30/2018	BANK LOANS BARINGS		4,285,570	4,285,570	
55371#-AA-3	MRI Software LLC Delayed Draw Te		10/09/2018	BANK LOANS BARINGS		113,493	113,493	
55371#-AG-0	MRI Software LLC Third Increment		03/07/2018	BANK LOANS BARINGS		143,530	144,980	
55371#-AH-8	MRI Software LLC June '18 Incr		07/03/2018	BANK LOANS BARINGS		698,386	705,441	
55371#-AK-1	MRI Software SIXTH AMENDMENT TERM LN		11/07/2018	BANK LOANS BARINGS		279,140	281,960	
56356X-AE-9	Welbilt Inc Term Loan B		10/23/2018	BANK LOANS BARINGS		2,135,972	2,131,538	
58506P-AH-4	MedPlast Holdings, Inc. Second Lien TL		07/20/2018	BANK LOANS BARINGS		20,825,000	21,250,000	
59408B-AQ-9	Michaels Stores Term Loan B		05/23/2018	BANK LOANS BARINGS		6,021,194	6,030,421	
59801E-AC-0	Midnite Air		12/05/2018	BANK LOANS BARINGS		11,096,540	11,323,000	
62871N-AK-1	NAB Hldgs 2018 Refi Term Loan		01/03/2018	BANK LOANS BARINGS		655,945	654,714	
64072U-AG-7	CSC Holdings LLC TL B (Jan'18)		02/05/2018	BANK LOANS BARINGS		1,677,817	1,686,249	
64108#-AC-9	Net Health Systems, Inc. Incremental TL		09/07/2018	BANK LOANS BARINGS		2,561,000	2,600,000	
64755#-AB-5	New Mountain Learning, L DDTL		08/31/2018	BANK LOANS BARINGS		848,405	848,405	

E13.29

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
65341*-AC-1	NextCare Inc - Term Loan		02/21/2018	DIRECT		6,224,560	6,287,434	36,773
65684*-AA-4	North American Dental Gr Term Loan		10/26/2018	BANK LOANS BARINGS		2,571,345	2,571,345	
65684*-AB-2	North American Dental Group LLC		11/27/2018	BANK LOANS BARINGS		2,625,542	2,625,542	
67090U-AB-9	QL SP 2018-B, LLC Class A Term Lo		06/07/2018	BANK LOANS BARINGS		29,992,962	30,000,000	25,317
67090U-AC-7	QL SP 2018-B, LLC Class B Term Lo		06/07/2018	BANK LOANS BARINGS		19,999,682	20,000,000	16,878
67611Y-AF-2	Odyssey Logistics 2018 1st Lien Term Loa		05/09/2018	BANK LOANS BARINGS		1,960,437	1,953,113	
682858-AB-7	ONICON INC. TERM LOAN		12/13/2018	BANK LOANS BARINGS		8,348,718	8,466,650	
682858-ZZ-7	Onicon Incorporated		12/13/2018	BANK LOANS BARINGS		8,247,058	8,393,949	
69398*-AA-3	Professional Datasolutio First Lien Term		04/11/2018	BANK LOANS BARINGS		5,049,042	5,125,355	
70558C-AC-6	Pegasus TransTech Corpor Holdco PIK Note		10/15/2018	PIK NOTE BUY UP		310,859	310,859	
70757D-AV-1	Penn National Gaming Inc New TL B2 due 2		10/22/2018	BANK LOANS BARINGS		1,770,738	1,775,176	
71913Y-AC-6	Phoenix Services Interna TL B due Februa		03/12/2018	BANK LOANS BARINGS		1,342,554	1,349,301	
72152F-AB-7	Pilot Air Freight, LLC Incremental Sr		07/25/2018	BANK LOANS BARINGS		12,894,244	13,024,489	
72152F-AC-5	Pilot Air Freight, LLC Sr. Term Loan		07/25/2018	BANK LOANS BARINGS		7,369,140	7,443,576	
72347L-AE-4	PINNACLE OPERATING CORP. TERM LOAN 5/13		12/31/2018	VARIOUS		42,985	42,985	
74274N-AC-7	Proampac PG Borrower LLC - 2016 1st Lien		05/15/2018	BANK LOANS BARINGS		434,719	434,719	
74950N-AB-0	Worldwide Express Second Lien Ter		11/16/2018	BANK LOANS BARINGS		18,742,500	19,125,000	
74979X-AC-3	RPX Corp 2018 Term Loan		06/19/2018	BANK LOANS BARINGS		9,430,370	9,848,950	
75972J-AB-0	Renaissance Learning, In Term Loan B		06/07/2018	BANK LOANS BARINGS		1,808,709	1,813,242	
75972J-AE-4	Renaissance Learning, In 2nd Lien TL		06/08/2018	BANK LOANS BARINGS		20,825,000	21,250,000	
76155*-AC-7	RevSpring, Inc. Second Lien		10/11/2018	BANK LOANS BARINGS		6,645,830	6,851,371	
76761*-AA-7	Rock-it Cargo 2018 Term Loan		07/31/2018	BANK LOANS BARINGS		8,207,608	8,418,059	
78411E-AE-8	SpecialtyCare, Inc. Second Lien Ter		03/23/2018	BANK LOANS BARINGS		10,098,000	10,200,000	
78466Y-AL-2	SRS Distribution, Inc. Term Loan B		06/05/2018	BANK LOANS BARINGS		1,877,280	1,881,985	
786486-AF-7	SambaSafety, Inc. 2018 Incrementa		01/17/2018	BANK LOANS BARINGS		879,614	904,488	
80386*-AA-0	SASOL CHEMICALS (USA) LL TERM LOAN		01/02/2018	BANK LOANS BARINGS		2,152,691	2,152,691	
81608*-AC-6	SEKO Worldwide, LLC DDTL		12/07/2018	BANK LOANS BARINGS		967,075	967,075	
81753*-AA-3	Risk Retention Equity		03/22/2018	DIRECT		1,777,778	1,777,778	
82888*-AA-9	Simpli.fi, Inc. Incremental Ter		04/26/2018	BANK LOANS BARINGS		4,887,028	4,961,450	
83401*-AA-9	SoFi Funding IX LLC Class B Warehou		12/27/2018	BANK LOANS BARINGS		129,564,894	129,564,894	
84763N-AB-6	PPC Industries Inc. First Lien Term		02/05/2018	BANK LOANS BARINGS		366,528	366,987	
84986E-AB-7	Spring Renewables Invest Senior Term Loa		04/04/2018	BANK LOANS BARINGS		171,270,000	173,000,000	46,505
87104N-AG-6	Switch LTD TLB		01/01/2018	BANK LOANS BARINGS		506,495	505,863	
87164G-AM-5	Syniverse Holdings, Inc. Term Loan B		09/14/2018	BANK LOANS BARINGS		1,987,500	2,000,000	
87289B-AJ-3	TOP DLF VIII 2018 CLO Combo Note		12/07/2018	DIRECT		14,666,667	14,666,667	
89364M-BL-7	TransDigm Group Incorpor Repriced TL F		09/19/2018	BANK LOANS BARINGS		3,514,797	3,519,196	
896168-AA-5	Trident (former US Joine Unitranch		06/04/2018	BANK LOANS BARINGS		24,926,250	25,500,000	
90322*-AA-0	UroGPO, LLC Term Loan		02/15/2018	BANK LOANS BARINGS		3,423,630	3,493,500	
90331B-YY-6	U.S. Legal Support Inc - Term Loan		11/30/2018	BANK LOANS BARINGS		5,191,536	5,297,486	
90343K-AR-3	U.S. Silica Company TLB due Apr 202		05/22/2018	BANK LOANS BARINGS		2,537,250	2,550,000	
90372F-AB-3	Ubeo LLC Term Ln 2nd Amend		11/07/2018	BANK LOANS BARINGS		8,152,368	8,318,743	
91746*-AA-2	U.S. Retirement & Benefi Second Lien		03/29/2018	BANK LOANS BARINGS		19,992,000	20,400,000	
91746*-AB-0	USRP HLDGS INC 2nd Lien DD Term Loan		12/03/2018	BANK LOANS BARINGS		3,366,000	3,366,000	
91820U-AM-2	VFH Parent LLC - 2018 Term Loan		09/19/2018	BANK LOANS BARINGS		189,590	188,529	
91834*-AA-5	Van Pool Transportation DDTL		07/30/2018	BANK LOANS BARINGS		798,772	798,772	
91834*-AC-1	VP Holding Co Term A Loan		05/22/2018	BANK LOANS BARINGS		7,058,003	7,202,044	
91846E-AB-2	Vx Cargo 2018-1 Trust - Term Loan		12/04/2018	BANK LOANS BARINGS		15,499,657	15,500,000	
91846E-AC-0	Vx Cargo 2018-1 Trust - Term Loan		12/04/2018	BANK LOANS BARINGS		29,499,758	29,500,000	
92531S-AZ-6	Vertafore Inc. Term Loan B		07/16/2018	BANK LOANS BARINGS		2,537,250	2,550,000	
92535M-A*-3	Verscend Holding Corp. TL B		09/07/2018	BANK LOANS BARINGS		1,797,388	1,810,970	
92565E-AB-9	VICI Properties Inc. First Lien TL B		01/01/2018	BANK LOANS BARINGS		1,281,808	1,285,021	
96141*-ZZ-0	World 50 Inc.		12/21/2018	BANK LOANS BARINGS		2,644,053	2,677,522	
F6813*-AC-8	OPALE GROUP Category B Bond		05/31/2018	BANK LOANS BARINGS		5,501,639	5,642,707	
G4700H-AE-0	I-Logic Technologies Bidco Limited		10/15/2018	BANK LOANS BARINGS		2,428,571	2,428,571	
76761*-AA-7	Rock-it Cargo 2018 Term Loan		07/31/2018	BANK LOANS BARINGS		11,700,000	12,000,000	
G8766*-AA-4	Textainer Marine Contain Series 2018-I C		02/15/2018	BANK LOANS BARINGS		53,700,000	53,700,000	
V3845*-AA-3	Graftech International L Term Loan B due		08/29/2018	BANK LOANS BARINGS		2,015,000	2,000,000	
68620*-AA-1	Original Cakerie US TERM LN		02/23/2018	BANK LOANS BARINGS		2,166,902	2,183,409	
74275*-AA-1	PROCERA NETWORKS 2nd Lien Term Ln	A.	11/02/2018	BANK LOANS BARINGS		22,700,925	23,283,000	
C1539*-AA-9	Canadian Hospital Specia Second Lien Ter		01/31/2018	BANK LOANS BARINGS		10,256,418	10,465,733	
C7077U-AD-5	PH Vitres Autos Term Loan		02/22/2018	BANK LOANS BARINGS		3,466,654	3,519,445	
C9413P-AZ-6	Valeant Pharm Initial Term Loan		09/25/2018	BANK LOANS BARINGS		2,989,313	2,985,960	
008065-AB-3	AEROVIAS DE MEXICO SA USD TERM LN	C.	06/06/2018	BANK LOANS BARINGS		17,434,375	17,500,000	
069721-DB-1	Questel Acquisition Fac	B.	09/21/2018	BANK LOANS BARINGS		6,634,171	6,634,169	
583919-NF-6	National Fostering Agenc PIK Note	B.	11/30/2018	VARIOUS		10,771,040	10,889,060	

E13.30

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
863921-LR-1	Technicis (NIKITA) Unitranche		07/18/2018	BANK LOANS BARINGS		7,910,115	8,133,795	79,383
863922-FB-1	Technicis (NIKITA) Incremental fac	B.	10/19/2018	BANK LOANS BARINGS		324,893	334,080	
000000-00-0	Avoca WH 4 07/02/19 Class B	B.	08/09/2018	DIRECT		10,906,640	10,906,636	
000000-00-0	Avoca WH 4 07/02/19 Class C	B.	08/09/2018	DIRECT		5,218,480	5,218,478	
000000-00-0	PRETORIA ENERGY COMPANY HOLDINGS LIMITED	B.	12/10/2018	DIRECT		28,266,750	28,266,758	
D2501*-AA-4	DAVASO HLDG Euro Fac B Loan	B.	06/26/2018	BANK LOANS BARINGS		22,049,015	22,730,945	
D3785*-AC-1	Ipsen International Hold Term Loan B	B.	08/22/2018	BANK LOANS BARINGS		26,845,957	27,605,089	
F1953*-AA-3	ALIENOR S A S Term Ln Fac	B.	08/06/2018	BANK LOANS BARINGS		57,810,000	57,810,018	
F3358*-AA-0	HTL Bio (Newco AH) Unitranche	B.	10/08/2018	BANK LOANS BARINGS		24,849,616	25,165,521	
F4832*-AA-4	Groupe Holder S.A.S. Bank Loan	B.	07/12/2018	BANK LOANS BARINGS		29,205,000	29,204,993	
F5900*-AA-8	MacqPisto SAS Senior Term Loa	B.	08/06/2018	BANK LOANS BARINGS		36,998,400	36,998,411	
F6512*-AA-6	NEOXCO Floating Rate Bond A	B.	05/31/2018	BANK LOANS BARINGS		4,733,564	4,805,646	
F6512*-AB-4	NEOXCO Euro Bond B	B.	05/31/2018	BANK LOANS BARINGS		556,890	565,370	
F7638*-AA-3	Questel Term Loan B (EU)	B.	06/28/2018	BANK LOANS BARINGS		3,661,806	3,741,310	
F7638*-AB-1	Questel Term Loan B (US)	D.	06/28/2018	BANK LOANS BARINGS		3,504,442	3,580,528	
G0128*-AA-8	AGILITY TRAINS WEST LIMI GBP TERM LOAN	B.	12/28/2018	VARIOUS		14,742,422	14,742,444	
G0128*-AA-6	AGILITY TRAINS EAST LIMI GBP TERM LOAN	B.	12/28/2018	VARIOUS		7,012,818	7,012,817	
G0391*-AA-4	Anord Mardix Term Loan - USD	D.	02/20/2018	BANK LOANS BARINGS		10,178,453	10,493,250	
G0391*-AB-2	Anord Mardix Term Loan - GBP	B.	02/20/2018	BANK LOANS BARINGS		14,714,706	15,169,793	
G0698*-AB-2	AUGUSTA (BIDCO) LTD Fac B2 Loan	B.	09/21/2018	BANK LOANS BARINGS		490,067	490,068	
G0756*-AA-5	BigHand Ltd. TLB - Last Out	B.	04/04/2018	BANK LOANS BARINGS		20,807,453	21,395,851	
G1150*-AA-5	Tracsare Bidco Limited	B.	11/29/2018	BANK LOANS BARINGS		22,818,543	23,166,029	
G1150*-AA-5	Tracsare Bidco Limited	B.	11/29/2018	BANK LOANS BARINGS		2,516,433	6,618,865	
G1737*-AA-9	BUCHAREST BIDCO LTD Fac B Term Loan	B.	07/05/2018	BANK LOANS BARINGS		13,586,588	14,006,796	
G2959*-AA-8	A2 Dominion Housing Group Limited	B.	05/03/2018	DIRECT		42,783,300	42,783,276	
G3296*-AA-8	FCC Energy Limited Senior Secured	B.	06/18/2018	BANK LOANS BARINGS		52,964,000	52,963,998	
G4035*-AA-0	Inspiring Learning Unitranche	B.	10/29/2018	VARIOUS		34,836	34,836	
G4945*-AB-5	IRIDIUM BIDCO LTD GBP FAC B3 LN	B.	01/11/2018	BANK LOANS BARINGS		721,966	752,069	
G5244*-AB-0	Keys Group (Kestrel Bidc Capex/Acquisiti	B.	10/05/2018	BANK LOANS BARINGS		6,524,717	6,524,715	
G6562A-AF-4	Nomad Foods Europe Midco Limited	C.	01/01/2018	BANK LOANS BARINGS		1,876,495	1,876,965	
G6902*-AA-3	PARC ADFER LTD GBP TERM LN FAC	B.	12/31/2018	DIRECT		8,999,674	8,999,675	
G6S84*-AA-3	MINTAKA BIDCO LTD Unitranche Fac	B.	06/27/2018	BANK LOANS BARINGS		12,605,889	12,962,356	
G7329*-AA-8	Reward Gateway Term Loan B	B.	05/15/2018	BANK LOANS BARINGS		13,214,318	13,553,154	
G7329*-AB-6	Reward Gateway Term Loan C	B.	06/29/2018	BANK LOANS BARINGS		1,289,181	1,322,237	
G7445*-AA-5	Red Funnel Ferry Senior Term Loa	B.	09/12/2018	BANK LOANS BARINGS		47,142,990	47,143,016	
G7584*-AA-6	RIVA HOLDCO 2 LTD Euro Fac B Ln	B.	07/19/2018	BANK LOANS BARINGS		24,214,943	24,899,686	
G8286*-AA-7	Money Penny	B.	11/30/2018	BANK LOANS BARINGS		13,939,584	14,370,700	
L1957L-AB-7	Consolidated Energy Fina First Lien TL	D.	05/21/2018	BANK LOANS BARINGS		717,138	718,935	
L5002*-AA-0	GLACIS ACQ FAC B1 TERM LN	B.	11/14/2018	BANK LOANS BARINGS		22,720,555	23,066,561	
L5582B-AT-4	ION Trading Technologies Incremental USD	D.	09/07/2018	BANK LOANS BARINGS		2,753,241	2,782,996	
L7300K-AJ-3	ORTHO-CLINICAL DIAGNOSTICS SA Term Loan	C.	06/08/2018	BANK LOANS BARINGS		3,219,698	3,218,089	
L8039*-AC-9	Siblu (SSCP Eleanor Fina Acquisition/Cap	B.	10/10/2018	BANK LOANS BARINGS		4,957,625	4,957,627	
L9339L-AG-8	TRINSEO MATLS OPERATING SCA Term Loan B	C.	05/22/2018	BANK LOANS BARINGS		299,547	298,428	
M1102*-AA-9	ANKARA ETLIK HASTANE SAG TERM LOAN	B.	07/31/2018	BANK LOANS BARINGS		2,151,626	2,151,626	
M1102*-AA-7	ANKARA ETLIK HASTANE IFC B LN FAC	B.	07/31/2018	BANK LOANS BARINGS		1,659,047	1,659,047	
M1102*-AB-5	ANKARA ETLIK HASTANE SAGLIK SA-EUR SACE	B.	07/31/2018	VARIOUS		869,188	869,188	
N3136*-AA-0	EVIDES N V EURO TERM LN	B.	06/27/2018	BANK LOANS BARINGS		46,332,011	46,332,011	
N6946*-AB-7	NSI N V EURO LN FAC	B.	10/24/2018	BANK LOANS BARINGS		52,179,940	52,179,936	
P3596*-AA-3	EVN ENERGIA DEL VALLE DE MEXICO USD SR S	D.	07/31/2018	DIRECT		18,990,000	18,990,000	
000000-00-0	Aspire Schools Financing Services (QLD)	B.	02/23/2018	DIRECT		37,641,478	37,641,482	
Q3787*-AA-1	Findex Group Ltd Term Loan B	B.	05/31/2018	BANK LOANS BARINGS		16,272,053	16,775,317	
Q5425*-AA-2	KIWINANA WTE FIN CO Tranche A Fac	B.	12/10/2018	DIRECT		2,416,509	2,416,509	
Q5S45R-AC-2	Liberty - Series No. 2018 - 4 Class B	B.	10/31/2018	NATIONAL AUSTRALIA B		14,356,160	14,356,162	
Q5S45R-AH-1	Liberty - Series No. 2018 - 4 Class C	B.	10/31/2018	NATIONAL AUSTRALIA B		7,354,881	7,354,881	
Q6880*-AB-6	Novotech Aus Bidco Pty Ltd B3 Fac	B.	10/31/2018	BANK LOANS BARINGS		3,147,130	3,244,464	
Q7322*-AA-2	Panther Bidco Fac B Ln	B.	08/28/2018	BANK LOANS BARINGS		10,860,715	11,082,364	25,474
Q7322*-AB-0	Panther Bidco Fac C Ln	B.	12/28/2018	BANK LOANS BARINGS		1,585,437	1,585,436	
Q7447*-AA-6	PERPETUAL TRUSTEE CO LTD - MORTGAGE HOUS	B.	11/15/2018	DIRECT		11,252,000	11,252,000	
Q7447*-AA-6	PERPETUAL TRUSTEE CO LTD - MORTGAGE HOUS	B.	09/24/2018	DIRECT		9,798,300	9,798,300	
R9747*-AA-8	VICTORY PRTRNS VIII NOK Fac B Ln	B.	10/04/2018	BANK LOANS BARINGS		9,420,960	9,687,363	
R9747*-AB-6	VICTORY PRTRNS VII Euro Fac B Ln	B.	10/04/2018	BANK LOANS BARINGS		14,094,531	14,493,089	
R9747*-AC-4	VICTORY PRTRNS VIII Capex Fac	B.	11/09/2018	BANK LOANS BARINGS		1,085,540	1,085,540	
T3829*-AA-6	F.C. Internazionale Mila Senior Revolver	B.	08/09/2018	BANK LOANS BARINGS		25,082,451	25,082,451	
W989A*-AA-2	WHITE RABBIT Fac B1 Ln	B.	09/28/2018	BANK LOANS BARINGS		3,662,089	3,755,989	
W989A*-AB-0	WHITE RABBIT HOLDCO Fac B2 Ln	B.	09/28/2018	BANK LOANS BARINGS		4,723,049	4,844,153	

1331

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends
X0263*-AA-4	Autostrada Wielkopolska Senior Secured	B	03/22/2018	BANK LOANS BARINGS		26,135,331	26,200,830	
X0263*-AA-4	Autostrada Wielkopolska Senior Secured	B	03/22/2018	BANK LOANS BARINGS		35,225,881	35,314,162	
17309M-AF-0	Citigroup Mortgage Loan Trust Inc		12/31/2018	VARIOUS		101,026		
59024W-AF-4	Merrill Lynch Mortgage Investors Trust Series MLCC 2007-2		09/20/2018	VARIOUS		70,595		
8299999. Subtotal - Bonds - Bank Loans						3,683,853,374	3,707,823,878	302,843
8399997. Total - Bonds - Part 3						23,151,002,988	23,216,561,360	66,804,312
8399998. Total - Bonds - Part 5						4,736,967,386	4,742,110,303	2,840,726
8399999. Total - Bonds						27,887,970,374	27,958,671,663	69,645,038
001176-12-4	AFC-Dell Holding Corp. Perpetual Pref St		11/15/2018	DIRECT	151,000	15,090	0.00	
67101*-12-3	QAO Acquisitions, Inc. Preferred Stock S		07/06/2018	DIRECT	10,000,000	10,000,000	0.00	
67101*-13-1	QAO Acquisitions, Inc. Preferred Stock S		07/06/2018	DIRECT	669,000	669,179	0.00	
726503-2F-1	PLAINS ALL AMER PIPELINE LP - Convertibl		02/14/2018	PIK	14,821,000	460,873	0.00	
74939Z-1M-2	r4 Technologies, Inc Preferred Equity -		09/13/2018	DIRECT	992,427,000	6,300,001	0.00	
8499999. Subtotal - Preferred Stocks - Industrial and Miscellaneous (Unaffiliated)						17,445,143	XXX	
8999997. Total - Preferred Stocks - Part 3						17,445,143	XXX	
8999998. Total - Preferred Stocks - Part 5							XXX	
8999999. Total - Preferred Stocks						17,445,143	XXX	
001084-10-2	AGCO CORP-COMMON STOCK		12/21/2018	WEEDEN & CO	7,000,000	382,223		
001176-10-8	AFC-Dell Holding Corp. Common Stock		11/15/2018	DIRECT		47,000		
008492-10-0	AGREE REALTY CORP-COMMON STOCK REIT		12/18/2018	VARIOUS	711,000	38,861		
02215L-10-0	ALTUS MIDSTREAM CO-COMMON STOCK		11/09/2018	DIRECT	500,000,000	5,000,000		
023135-10-6	AMAZON.COM INC-COMMON STOCK		12/17/2018	WEEDEN & CO	320,000	483,481		
03350F-10-6	Andeavor Logistics LP		08/31/2018	DTCYID	11,303,000	548,413		
03673L-10-3	ANTERO MIDSTREAM PARTNERS LP LTD PARTNER		12/19/2018	JONES TRADING INST	4,100,000	99,606		
03835B-11-8	APPVION HL-COMMON STOCK		08/24/2018	VARIOUS	6,153,000			
03835B-12-6	APPVION HL-COMMON STOCK		08/25/2018	VARIOUS	6,153,000			
053484-10-1	AVALONBAY COMMUNITIES IN-COMMON STOCK RE		08/02/2018	VARIOUS	1,201,000	208,951		
06761A-10-3	BARINGS PARTICIPATION IN-COMMON STOCK		05/18/2018	REINVEST	2,959,000	42,002		
075887-10-9	BECTON DICKINSON & CO-COMMON STOCK		01/01/2018	MERGER	700,000	115,022		
09259E-10-8	BLACKROCK TOP CAPITAL CO-COMMON STOCK		08/14/2018	EXCHANGE OFFER	1,603,372,000	24,050,580		
101121-10-1	Boston Properties Inc-COMMON STOCK REIT		06/25/2018	JONES TRADING INST	224,000	27,814		
118230-10-1	BUCKEYE PARTNERS LP-PARTNERSHIP INTEREST		11/05/2018	CONVERSION	253,395,000	10,621,329		
163851-10-8	CHEMOURS CO-COMMON STOCK		12/18/2018	WEEDEN & CO	31,000,000	853,756		
164110-10-1	CHENIERE ENERGY PARTNERS-COMMON STOCK		12/19/2018	JONES TRADING INST	12,000,000	455,632		
16411R-20-8	CHENIERE ENERGY INC-COMMON STOCK		12/20/2018	DTCYID	8,487,000	499,815		
222795-10-6	COUSINS PROPERTIES INC-COMMON STOCK REIT		09/20/2018	VARIOUS	4,320,000	37,803		
23311P-10-0	DCP MIDSTREAM PARTNERS LP COMMON UNIT		10/12/2018	DTCYID	19,913,000	829,078		
23331A-10-9	DR Horton Inc-COMMON STOCK		12/04/2018	VARIOUS	2,044,000	74,309		
247916-20-8	Denbury Resources Inc-COMMON STOCK		06/21/2018	EXCHANGE OFFER	1,340,779,000	3,483,403		
253868-10-3	DIGITAL REALTY TRUST INC-COMMON STOCK RE		10/04/2018	VARIOUS	1,666,000	181,910		
254687-10-6	Walt Disney Co/The-COMMON STOCK		12/17/2018	WEEDEN & CO	8,450,000	933,218		
26885B-10-0	EQT MIDSTREAM PARTNERS L P LTD PARTNERSH		12/19/2018	VARIOUS	65,850,000	3,681,401		
29278N-10-3	Energy Transfer Partners LP COMMON UNIT		06/04/2018	VARIOUS	40,157,000	729,240		
29330#-10-6	Engs Holdings, Inc. Common Stock		05/18/2018	DIRECT	80,433,000	5,874,021		
29336U-10-7	ENLINK MIDSTREAM PARTNER-ENLINK MIDSTREA		10/18/2018	DTCYID	160,494,000	2,909,597		
293792-10-7	ENTERPRISE PRODS PARTNERS L P COMMON UNI		12/19/2018	JONES TRADING INST	39,000,000	984,812		
29438Z-1M-2	Electric Power Systems (Cash Equity		12/28/2018	DIRECT	159,000	158,800		
29444U-70-0	EQUINIX INC-COMMON STOCK		03/09/2018	WEEDEN & CO	30,000	11,753		
29476L-10-7	Equity Residential-COMMON STOCK REIT		12/20/2018	VARIOUS	4,479,000	307,222		
30219G-10-8	EXPRESS SCRIPTS HOLDING -COMMON STOCK		12/17/2018	WEEDEN & CO	7,600,000	733,687		
30225T-10-2	Extra Space Storage Inc-COMMON STOCK REI		08/06/2018	VARIOUS	2,481,000	234,746		
31660T-10-2	Fieldwood Energy Inc		04/11/2018	CORPORATE ACTION	11,996,000	258,706		
31660T-20-1	Fieldwood Energy Inc Restricted Common		04/11/2018	CORPORATE ACTION	2,944,000	103,040		
32054K-10-3	FIRST INDUSTRIAL REALTY -COMMON STOCK RE		01/18/2018	WEEDEN & CO	5,408,000	162,122		
35671D-85-7	FREEMONT-MCMORAN INC-COMMON STOCK		12/21/2018	WEEDEN & CO	23,600,000	244,373		
387328-10-7	GRANITE CONSTRUCTION INC-COMMON STOCK		08/20/2018	EXCHANGE OFFER	138,783,000	13,014,389		
42824C-10-9	HEWLETT PACKARD ENTERPRI-COMMON STOCK		12/18/2018	WEEDEN & CO	71,500,000	989,467		
436106-10-8	HOLLYFRONTIER CORP-COMMON STOCK		12/17/2018	WEEDEN & CO	8,500,000	448,065		
44107P-10-4	Host Hotels & Resorts In-COMMON STOCK RE		10/11/2018	JONES TRADING INST	6,093,000	124,487		
452327-10-9	JLLUMINA INC-COMMON STOCK		12/17/2018	WEEDEN & CO	1,530,000	473,711		
460146-10-3	International Paper Co-COMMON STOCK		12/21/2018	WEEDEN & CO	9,900,000	395,753		
48203R-10-4	JUNIPER NETWORKS INC-COMMON STOCK		12/17/2018	WEEDEN & CO	27,000,000	740,308		
49427F-10-8	KILROY REALTY CORP-COMMON STOCK REIT		12/20/2018	VARIOUS	1,576,000	106,519		

E13.32

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1	2	3	4	5	6	7	8	9	
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Number of Shares of Stock	Actual Cost	Par Value	Paid for Accrued Interest and Dividends	
49456B-10-1	Kinder Morgan Inc/DE-KINDER MORGAN INC		12/28/2018	VARIOUS	72,126.000	1,118,307			
526057-10-4	Lennar Corp-COMMON STOCK CLASS A		12/04/2018	VARIOUS	1,781.000	76,782			
55336V-10-0	MPLX LP COMMON UNIT		12/19/2018	VARIOUS	28,654.000	994,800			
559080-10-6	MAGELLAN MIDSTREAM PARTNERS LP COMMON UN		12/21/2018	DTCYID	8,271.000	466,798			
58463J-30-4	Medical Properties Trust-COMMON STOCK RE		07/11/2018	WEEDEN & CO	1,761.000	25,411			
58047E-10-9	MES Partners, Inc. Common Stock Cl		02/28/2018	DIRECT	297,106.000	297,106			
595112-10-3	Micron Technology Inc-Common Stock		12/17/2018	WEEDEN & CO	11,000.000	372,075			
63633D-10-4	National Health Investor-COMMON STOCK RE		12/18/2018	WEEDEN & CO	189.000	14,896			
637417-10-6	NATL RETAIL PROPERTIES-COMMON STOCK REIT		12/18/2018	VARIOUS	3,772.000	174,616			
64828T-20-1	NEW RESIDENTIAL INVESTME-COMMON STOCK RE		10/10/2018	VARIOUS	3,609.000	61,996			
682680-10-3	ONEOK INC COMMON STK		12/31/2018	VARIOUS	17,942.000	1,024,514			
700517-10-5	PARK HOTELS & RESORTS IN-COMMON STOCK RE		10/11/2018	VARIOUS	2,056.000	56,799			
718549-20-7	PHILLIPS 66 PARTNERS LP COMMON UNIT		12/19/2018	VARIOUS	19,410.000	971,754			
71943U-10-4	PHYSICIANS REALTY TRUST-COMMON STOCK REI		12/18/2018	WEEDEN & CO	597.000	9,991			
72201P-61-3	PIMCO FDS SHORT TERM FLTG NAV PORT II		12/26/2018	DIRECT	730,234.000	7,306,970			
72346Q-10-4	PINNACLE FINANCIAL PARTN-COMMON STOCK		01/01/2018	VARIOUS		(49)			
726503-10-5	PLAINS ALL AMERICAN PIPELINE L.P. LTD PA		12/19/2018	VARIOUS	133,078.000	2,953,131			
758849-10-3	REGENCY CENTERS CORP-COMMON STOCK REIT		12/20/2018	VARIOUS	951.000	56,802			
759509-10-2	Reliance Steel & Aluminu-COMMON STOCK		12/21/2018	WEEDEN & CO	6,500.000	471,565			
845467-10-9	SOUTHWESTERN ENERGY CO-COMMON STOCK		01/15/2018	VARIOUS	476,632.000	3,037,298			
862121-10-0	STORE CAPITAL CORP-COMMON STOCK		10/24/2018	VARIOUS	2,374.000	66,785			
866674-10-4	SUN COMMUNITIES INC COMMON STK		01/18/2018	WEEDEN & CO	1,529.000	133,597			
874696-10-7	TALLGRASS ENERGY GP LP-COMMON STOCK		07/02/2018	DTCYID	124,572.000	2,760,516			
87612G-10-1	TARGA RES CORP COMMON STK		10/01/2018	DTCYID	13,324.000	767,537			
902653-10-4	UDR INC-COMMON STOCK REIT		03/15/2018	VARIOUS	7,475.000	265,483			
92532W-10-3	VERSUM MATERIALS INC-COMMON STOCK		12/18/2018	WEEDEN & CO	35,800.000	991,452			
925652-10-9	VICI PROPERTIES INC-COMMON STOCK REIT		12/18/2018	VARIOUS	5,329.000	111,818			
948741-10-3	Weingarten Realty Invest-COMMON STOCK RE		12/21/2018	WEEDEN & CO	2,556.000	64,632			
95040Q-10-4	Welltower Inc-COMMON STOCK REIT		12/18/2018	VARIOUS	996.000	69,780			
958254-10-4	WESTERN GAS PARTNERS LP COMMON UNIT		08/31/2018	DTCYID	33,633.000	1,625,889			
95825R-10-3	WESTERN GAS EQUITY PARTNERS LP COMMON UN		10/10/2018	VARIOUS	118,478.000	4,156,310			
969457-10-0	WILLIAMS COS INC COMMON STK		08/13/2018	DTCYID	207,802.000	6,606,024			
96949L-10-5	WILLIAMS PARTNERS L P COMMON STK		01/01/2018	DTCYID	40,320.000	1,562,389			
98717F-10-4	York Wall Holding Compan Common Stock		02/07/2018	DIRECT	533.000	42,735			
35905B-10-7	Frontera Energy Corp -Common Stock		01/01/2018	DIRECT	60,000.000	(517,635)			
000000-00-0	Telford Offshore Ltd Private Equity	D	02/12/2018	EXCHANGE OFFER	78,717.000	85,650			
629183-10-3	EATON CORP PLC-COMMON STOCK	C	12/17/2018	WEEDEN & CO	11,600.000	901,251			
69001E-10-2	LIBERTY LATIN AMERICA LT-COMMON STOCK	C	12/18/2018	WEEDEN & CO	64,200.000	1,040,509			
9099999. Subtotal - Common Stocks - Industrial and Miscellaneous (Unaffiliated)							121,779,756	XXX	
57543F-11-8	MASSMUTUAL HLDG CO CL D		08/31/2018	VARIOUS	4,349.130	334,794,338			
57633*-10-5	MassMutual International LLC		11/13/2018	VARIOUS	1,036.000	214,267,226			
9199999. Subtotal - Common Stocks - Parent, Subsidiaries and Affiliates							549,061,564	XXX	
55312G-63-0	MML SER INVT FD II SPECIAL SITUATIONS FD		12/18/2018	VARIOUS	413.000	4,425			
55312G-64-8	MML SER INVT FD II SPECIAL SITUATIONS FD		12/18/2018	VARIOUS	89,547.000	964,640			
55312G-65-5	MML SER INVT FD II EQUITY ROTATION FD SV		12/18/2018	VARIOUS	2,281.000	28,410			
55312G-66-3	MML SER INVT FD II EQUITY ROTATION FD CL		12/18/2018	VARIOUS	462,314.000	5,776,283			
55312G-71-3	MML SER INVT FD II ASSET MOMENTUM FD CL		12/18/2018	VARIOUS	424,580.000	4,761,611			
57629H-42-6	MASSMUTUAL PREMIER STRAT-MPSMX		04/27/2018	DIRECT	7,278.000	100,000			
57629H-85-5	MASSMUTUAL PREMIER MAIN -MASSMUT-P MAI-S		04/27/2018	DIRECT	8,803.000	100,000			
57629U-34-4	MASSMUTUAL SELECT MID CA-MASSMUT-M/C VL-		04/27/2018	DIRECT	7,210.000	100,000			
57629U-35-1	MASSMUTUAL SELECT MID CA-MASSMUT-M/C VL-		01/29/2018	DIRECT	6,916.000	100,000			
57630E-22-2	MASSMUTUAL RETIRESMARTSM-CLASS R5		04/27/2018	DIRECT	8,636.000	100,000			
57630E-29-7	MASSMUTUAL RETIRESMART 2-CLASS R5		04/27/2018	DIRECT	7,205.000	100,000			
57630E-36-2	MASSMUTUAL RETIRESMART 2-CLASS R5		04/27/2018	DIRECT	7,315.000	100,000			
57630E-49-5	MASSMUTUAL RETIRESMART 2-CLASS R5		04/27/2018	DIRECT	8,403.000	100,000			
57630E-69-3	MASSMUTUAL SELECT MID CA-CLASS R4		04/27/2018	DIRECT	7,386.000	100,000			
57630E-81-8	MASSMUTUAL SELECT DIVERS-CLASS R4		01/29/2018	MERGER	7,719.000	116,454			
57630G-59-9	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	6,667.000	100,000			
57630G-83-9	MASSMUTUAL SELECT FDS RETIRESMART 2060 F		04/30/2018	DIRECT	8,757.000	100,000			
57630G-85-4	MASSMUTUAL SELECT FDS RETIRESMART 2060 F		04/30/2018	DIRECT	8,741.000	100,000			
57630G-86-2	MASSMUTUAL SELECT FDS RETIRESMART 2060 F		04/30/2018	DIRECT	8,741.000	100,000			
68385C-50-1	OPPENHEIMER GLOBAL REAL -CLASS L		01/01/2018	REINVEST	139,115.000	806,193			
60819U-55-2	BARINGS UMBRELLA FUND PLC - BARINGS EME		10/17/2018	VARIOUS	400,000.000	40,000.000			
667585-68-0	OPPENHEIMERFUNDS ICAV - MUTUAL FUND	D	11/28/2018	REINVEST	1,686.000	214,816			

E13.33

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 3

Showing All Long-Term Bonds and Stocks ACQUIRED During Current Year

1 CUSIP Identification	2 Description	3 Foreign	4 Date Acquired	5 Name of Vendor	6 Number of Shares of Stock	7 Actual Cost	8 Par Value	9 Paid for Accrued Interest and Dividends
9299999. Subtotal - Common Stocks - Mutual Funds						53,972,832	XXX	
9799997. Total - Common Stocks - Part 3						724,814,152	XXX	
9799998. Total - Common Stocks - Part 5						302,960,479	XXX	
9799999. Total - Common Stocks						1,027,774,631	XXX	
9899999. Total - Preferred and Common Stocks						1,045,219,774	XXX	
9999999 - Totals						28,933,190,148	XXX	69,645,038

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
26818L-AA-8	DY9 Leasing - Ex Im Bk Gtd Secd Nt		12/30/2018	SINKING PAYMENT		43,750	43,750	43,750	43,750						43,750				858	06/30/2027
31342*-AA-0	FHA Project Loan Pool #1984-A		11/01/2018	VARIOUS		15,261	15,261	15,261	15,261						15,261				503	01/01/2024
31342*-KF-8	FHA Project Loan Merrill Lynch #		04/01/2018	PAYDOWN		251,942	251,942	247,440	251,148		1,527		1,527		251,942				3,416	06/01/2021
31342*-QC-9	FHA Project Loan Usgi #91		12/01/2018	PAYDOWN		8,646	8,646	8,236	8,539		107		107		8,646				991	01/25/2023
31342*-QE-5	FHA Project Loan MI/usgi #129		12/01/2018	PAYDOWN		31,117	31,117	29,004	30,531		586		586		31,117				2,614	09/01/2023
31342*-SA-1	FHA Project Loan Gmac 94-1 Sec		08/01/2018	PAYDOWN		162,278	162,278	142,801	161,625		653		653		162,278				3,294	06/01/2019
31342*-SS-2	FHA Project Loan Reilly #128		12/01/2018	PAYDOWN		102,857	102,857	98,518	102,301		(643)		(643)		102,857				7,795	07/01/2020
31342*-ST-0	FHA Project Loan Reilly #130		12/01/2018	PAYDOWN		32,651	32,651	32,248	32,525		126		126		32,651				1,531	08/01/2021
36176W-XE-6	GOVERNMENT NATIONAL MORT-POOL # 778577		12/01/2018	PAYDOWN		20,684	20,684	21,796	21,560		(876)		(876)		20,684				383	01/01/2037
36180S-RP-1	GOVERNMENT NATIONAL MORT-GNMA II POOL #A		06/01/2018	PAYDOWN		8,855	8,855	9,792	9,712		(841)		(841)		8,855				33	07/01/2064
36182M-DB-8	GOVERNMENT NATIONAL MORT-GNMA II POOL #A		09/01/2018	PAYDOWN		4,466	4,466	4,976	4,925		(445)		(445)		4,466				36	04/01/2064
36200A-BR-9	GOVERNMENT NATIONAL MORT-POOL #595048		12/01/2018	PAYDOWN		261	261	270	268		(7)		(7)		261				8	10/01/2032
36200A-BU-2	GOVERNMENT NATIONAL MORT-POOL #595051		12/01/2018	PAYDOWN		2,096	2,096	2,099	2,100		(5)		(5)		2,096				63	10/01/2032
36200A-CF-4	GOVERNMENT NATIONAL MORT-POOL # 595070		12/01/2018	PAYDOWN		2,081	2,081	2,154	2,143		(62)		(62)		2,081				80	10/01/2032
36200A-CN-7	GOVERNMENT NATIONAL MORT-POOL #595077		12/01/2018	PAYDOWN		158	158	163	162		(5)		(5)		158				5	10/01/2032
36200A-F7-9	GOVERNMENT NATIONAL MORT-POOL #595190		12/01/2018	PAYDOWN		16,328	16,328	16,379	16,371		(43)		(43)		16,328				512	11/01/2032
36200A-JE-0	GOVERNMENT NATIONAL MORT-POOL #595261		12/01/2018	PAYDOWN		1,021	1,021	1,056	1,049		(28)		(28)		1,021				26	12/01/2032
36200A-P3-7	GOVERNMENT NATIONAL MORT-POOL # 595442		12/01/2018	PAYDOWN		53	53	55	55		(2)		(2)		53				2	11/01/2032
36200A-RS-0	GOVERNMENT NATIONAL MORT-POOL #595497		12/01/2018	PAYDOWN		2,229	2,229	2,287	2,274		(45)		(45)		2,229				56	12/01/2032
36200B-2M-8	GOVERNMENT NATIONAL MORT-POOL #596680		12/01/2018	PAYDOWN		22	22	23	23		(1)		(1)		22				1	10/01/2032
36200B-2X-4	GOVERNMENT NATIONAL MORT-POOL #596690		12/01/2018	PAYDOWN		515	515	516	516		(1)		(1)		515				16	11/01/2032
36200B-3S-4	GOVERNMENT NATIONAL MORT-POOL #596709		12/01/2018	PAYDOWN		8,642	8,642	8,945	8,880		(238)		(238)		8,642				315	11/01/2032
36200B-5G-8	GOVERNMENT NATIONAL MORT-POOL #596747		12/01/2018	PAYDOWN		393	393	407	404		(11)		(11)		393				13	12/01/2032
36200B-5M-5	GOVERNMENT NATIONAL MORT-POOL #596752		12/01/2018	PAYDOWN		2,374	2,374	2,456	2,432		(59)		(59)		2,374				119	11/01/2032
36200B-5Y-9	GOVERNMENT NATIONAL MORT-POOL #596763		12/01/2018	PAYDOWN		244	244	252	250		(6)		(6)		244				8	12/01/2032
36200B-6T-9	GOVERNMENT NATIONAL MORT-POOL # 596782		12/01/2018	PAYDOWN		17	17	18	18						17				1	12/01/2032
36200B-ZX-8	GOVERNMENT NATIONAL MORT-POOL #596658		12/01/2018	PAYDOWN		98	98	101	100		(2)		(2)		98				3	10/01/2032
36200C-AT-2	GOVERNMENT NATIONAL MORT-POOL # 596818		12/01/2018	PAYDOWN		998	998	1,033	1,023		(25)		(25)		998				31	12/01/2032
36200C-BF-1	GOVERNMENT NATIONAL MORT-POOL #596838		12/01/2018	PAYDOWN		37,151	37,151	37,267	37,245		(94)		(94)		37,151				555	01/01/2033
36200C-CJ-7	GOVERNMENT NATIONAL MORT-POOL #596883		12/01/2018	PAYDOWN		391	391	392	392		(1)		(1)		391				10	01/01/2033
36200C-IT-0	GOVERNMENT NATIONAL MORT-POOL #597374		12/01/2018	PAYDOWN		3,390	3,390	3,397	3,394		(4)		(4)		3,390				102	01/01/2033
36200D-2U-6	GOVERNMENT NATIONAL MORT-POOL #598487		12/01/2018	PAYDOWN		537	537	556	554		(16)		(16)		537				19	12/01/2032
36200D-6X-6	GOVERNMENT NATIONAL MORT-POOL #598586		12/01/2018	PAYDOWN		1,604	1,604	1,607	1,606		(2)		(2)		1,604				48	01/01/2033
36200D-AE-3	GOVERNMENT NATIONAL MORT-POOL #597705		12/01/2018	PAYDOWN		1,327	1,327	1,374	1,360		(33)		(33)		1,327				44	10/01/2032
36200D-LN-1	GOVERNMENT NATIONAL MORT-POOL #598033		12/01/2018	PAYDOWN		47	47	49	49		(1)		(1)		47				2	12/01/2032
36200D-ZJ-5	GOVERNMENT NATIONAL MORT-POOL # 599339		12/01/2018	PAYDOWN		6,035	6,035	6,046	6,044		(9)		(9)		6,035				166	12/01/2032
36200E-ZC-8	GOVERNMENT NATIONAL MORT-POOL # 599339		12/01/2018	PAYDOWN		2,824	2,824	2,830	2,828		(3)		(3)		2,824				65	11/01/2032
36200F-HS-0	GOVERNMENT NATIONAL MORT-POOL #599741		12/01/2018	PAYDOWN		119	119	124	122		(3)		(3)		119				4	10/01/2032
36200F-KC-1	GOVERNMENT NATIONAL MORT-POOL # 599791		12/01/2018	PAYDOWN		22	22	22	22		(1)		(1)		22				1	11/01/2032
36200F-KJ-6	GOVERNMENT NATIONAL MORT-POOL #599797		12/01/2018	PAYDOWN		2,262	2,262	2,341	2,332		(70)		(70)		2,262				74	11/01/2032
36200F-VP-0	GOVERNMENT NATIONAL MORT-POOL #600122		12/01/2018	PAYDOWN		14,754	14,754	15,270	15,570		(816)		(816)		14,754				152	01/01/2033
36200H-AU-8	GOVERNMENT NATIONAL MORT-POOL # 601319		12/01/2018	PAYDOWN		2,902	2,902	3,003	2,975		(72)		(72)		2,902				95	02/01/2033
36200J-PV-6	GOVERNMENT NATIONAL MORT-POOL #602836		12/01/2018	PAYDOWN		278	278	278	278		(1)		(1)		278				8	01/01/2033
36200J-RY-8	GOVERNMENT NATIONAL MORT-POOL #602703		12/01/2018	PAYDOWN		2,470	2,470	2,531	2,515		(45)		(45)		2,470				74	01/01/2034
36200J-TG-5	GOVERNMENT NATIONAL MORT-POOL #602751		12/01/2018	PAYDOWN		50,435	50,435	50,593	50,574		(138)		(138)		50,435				2,268	01/01/2033
36200K-O6-2	GOVERNMENT NATIONAL MORT-POOL #603193		12/01/2018	PAYDOWN		10,372	10,372	10,628	10,561		(189)		(189)		10,372				80	01/01/2034
36200K-HD-2	GOVERNMENT NATIONAL MORT-POOL #603328		12/01/2018	PAYDOWN		1,399	1,399	1,402	1,401		(2)		(2)		1,399				56	12/01/2032
36200K-JQ-1	GOVERNMENT NATIONAL MORT-POOL #603371		12/01/2018	PAYDOWN		128	128	128	128						128				4	01/01/2033
36200K-KB-2	GOVERNMENT NATIONAL MORT-POOL #603390		12/01/2018	PAYDOWN		1,713	1,713	1,717	1,716		(3)		(3)		1,713				49	01/01/2033
36200K-KC-0	GOVERNMENT NATIONAL MORT-POOL #603391		12/01/2018	PAYDOWN		146	146	147	146						146				4	01/01/2033
36200K-KD-8	GOVERNMENT NATIONAL MORT-POOL #603392		12/01/2018	PAYDOWN		242	242	250	248		(6)		(6)		242				5	01/01/2033
36200K-KU-0	GOVERNMENT NATIONAL MORT-POOL # 603407		12/01/2018	PAYDOWN		2,356	2,356	2,438	2,416		(61)		(61)		2,356				71	01/01/2033
36200K-LP-0	GOVERNMENT NATIONAL MORT-POOL #603434		12/01/2018	PAYDOWN		1,643	1,643	1,646	1,645		(3)		(3)		1,643				39	11/01/2032
36200K-RH-2	GOVERNMENT NATIONAL MORT-POOL #603588		12/01/2018	PAYDOWN		2,156	2,156	2,210	2,201		(44)		(44)		2,156				72	04/01/2033
36200K-T6-4	GOVERNMENT NATIONAL MORT-POOL #603673		12/01/2018	PAYDOWN		1,325	1,325	1,360	1,356		(30)		(30)		1,325				43	05/01/2033
36200K-LP-0	GOVERNMENT NATIONAL MORT-POOL #603690		12/01/2018	PAYDOWN		6,027	6,027	6,176	6,148		(121)		(121)		6,027				161	05/01/2033
36200K-W5-2	GOVERNMENT NATIONAL MORT-POOL #603768		12/01/2018	PAYDOWN		19,191	19,191	19,695	19,610		(419)		(419)		19,191				401	06/01/2033
36200K-XP-7	GOVERNMENT NATIONAL MORT-POOL #603786		12/01/2018	PAYDOWN		3,101	3,101	3,236	3,201		(100)		(100)		3,101				98	06/01/2033

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36200K-YY-7	GOVERNMENT NATIONAL MORT-POOL #603827		12/01/2018	PAYDOWN		198	198	199	199						198				.6	12/01/2032
36200K-YZ-4	GOVERNMENT NATIONAL MORT-POOL #603828		12/01/2018	PAYDOWN		239	239	248	247		(8)		(8)		239				.8	12/01/2032
36200K-Z9-1	GOVERNMENT NATIONAL MORT-POOL #603868		12/01/2018	PAYDOWN		17,417	17,417	17,471	17,461		(44)		(44)		17,417				481	01/01/2033
36200M-FW-8	GOVERNMENT NATIONAL MORT-POOL #604181		12/01/2018	PAYDOWN		2,875	2,875	2,946	2,936		(60)		(60)		2,875				103	04/01/2033
36200M-QH-9	GOVERNMENT NATIONAL MORT-POOL #604456		12/01/2018	PAYDOWN		7,174	7,174	7,351	7,339		(165)		(165)		7,174				264	07/01/2033
36200N-AA-9	GOVERNMENT NATIONAL MORT-POOL #604901		12/01/2018	PAYDOWN		6,314	6,314	6,470	6,444		(130)		(130)		6,314				159	01/01/2034
36200N-CL-3	GOVERNMENT NATIONAL MORT-POOL #604975		12/01/2018	PAYDOWN		4,537	4,537	4,649	4,637		(101)		(101)		4,537				139	02/01/2034
36200Q-2R-4	GOVERNMENT NATIONAL MORT-POOL #569684		12/01/2018	PAYDOWN		2,096	2,096	2,169	2,161		(64)		(64)		2,096				74	02/01/2032
36200Q-3M-4	GOVERNMENT NATIONAL MORT-POOL #569704		12/01/2018	PAYDOWN		2,540	2,540	2,628	2,611		(72)		(72)		2,540				67	02/01/2032
36200Q-3S-1	GOVERNMENT NATIONAL MORT-POOL #569709		12/01/2018	PAYDOWN		144	144	149	148		(4)		(4)		144				5	02/01/2032
36200Q-3T-9	GOVERNMENT NATIONAL MORT-POOL #569710		12/01/2018	PAYDOWN		255	255	256	255						255				8	02/01/2032
36200Q-HL-5	GOVERNMENT NATIONAL MORT-POOL #569263		12/01/2018	PAYDOWN		17,391	17,391	17,415	17,405		(14)		(14)		17,391				618	04/01/2032
36200Q-QN-7	GOVERNMENT NATIONAL MORT-POOL #569361		12/01/2018	PAYDOWN		46,618	46,618	46,684	46,653		(35)		(35)		46,618				1,716	04/01/2032
36200R-2G-6	GOVERNMENT NATIONAL MORT-POOL #570575		12/01/2018	PAYDOWN		14,415	14,415	14,771	14,677		(262)		(262)		14,415				519	01/01/2034
36200R-3V-2	GOVERNMENT NATIONAL MORT-POOL #570612		12/01/2018	PAYDOWN		200	200	205	204		(3)		(3)		200				7	09/01/2031
36200R-AA-0	GOVERNMENT NATIONAL MORT-POOL #569801		12/01/2018	PAYDOWN		18,190	18,190	17,991	18,031		159		159		18,190				656	05/01/2032
36200R-BF-8	GOVERNMENT NATIONAL MORT-POOL #569838		12/01/2018	PAYDOWN		245	245	254	252		(7)		(7)		245				8	06/01/2032
36200R-LN-0	GOVERNMENT NATIONAL MORT-POOL #570133		12/01/2018	PAYDOWN		2,222	2,222	2,299	2,282		(60)		(60)		2,222				98	12/01/2031
36200R-LW-0	GOVERNMENT NATIONAL MORT-POOL #570141		12/01/2018	PAYDOWN		416	416	426	424		(8)		(8)		416				11	12/01/2031
36200R-LX-8	GOVERNMENT NATIONAL MORT-POOL #570142		12/01/2018	PAYDOWN		147	147	152	151		(4)		(4)		147				5	12/01/2031
36200R-PB-0	GOVERNMENT NATIONAL MORT-POOL #570282		12/01/2018	PAYDOWN		551	551	570	564		(13)		(13)		551				18	01/01/2032
36200R-VJ-8	GOVERNMENT NATIONAL MORT-POOL #570417		12/01/2018	PAYDOWN		396	396	405	404		(8)		(8)		396				15	10/01/2031
36200R-YB-2	GOVERNMENT NATIONAL MORT-POOL #570506		12/01/2018	PAYDOWN		2,579	2,579	2,640	2,622		(43)		(43)		2,579				88	12/01/2031
36200S-UY-4	GOVERNMENT NATIONAL MORT-POOL #571299		12/01/2018	PAYDOWN		5,029	5,029	5,149	5,141		(112)		(112)		5,029				183	11/01/2031
36200S-VJ-6	GOVERNMENT NATIONAL MORT-POOL #571317		12/01/2018	PAYDOWN		13,122	13,122	13,436	13,343		(221)		(221)		13,122				366	11/01/2031
36200S-WT-3	GOVERNMENT NATIONAL MORT-POOL #571358		12/01/2018	PAYDOWN		38,301	38,301	39,217	38,938		(637)		(637)		38,301				1,608	12/01/2031
36200S-XG-0	GOVERNMENT NATIONAL MORT-POOL # 571379		12/01/2018	PAYDOWN		1,572	1,572	1,626	1,611		(39)		(39)		1,572				52	12/01/2031
36200T-3K-2	GOVERNMENT NATIONAL MORT-POOL #572402		12/01/2018	PAYDOWN		6,619	6,619	6,777	6,728		(109)		(109)		6,619				214	11/01/2031
36200T-6Y-9	GOVERNMENT NATIONAL MORT-POOL #572487		12/01/2018	PAYDOWN		687	687	704	699		(12)		(12)		687				21	01/01/2032
36200T-K9-8	GOVERNMENT NATIONAL MORT-POOL #571920		12/01/2018	PAYDOWN		219	219	224	222		(4)		(4)		219				8	11/01/2031
36200U-6C-4	GOVERNMENT NATIONAL MORT-POOL #573367		12/01/2018	PAYDOWN		155	155	159	158		(3)		(3)		155				6	11/01/2031
36200U-L8-6	GOVERNMENT NATIONAL MORT-POOL # 572851		12/01/2018	PAYDOWN		502	502	519	514		(12)		(12)		502				16	01/01/2032
36200U-PE-9	GOVERNMENT NATIONAL MORT-POOL #572821		12/01/2018	PAYDOWN		249	249	254	253		(4)		(4)		249				9	11/01/2031
36200V-5K-5	GOVERNMENT NATIONAL MORT-POOL #574250		12/01/2018	PAYDOWN		1,563	1,563	1,618	1,620		(57)		(57)		1,563				52	01/01/2032
36200V-XH-1	GOVERNMENT NATIONAL MORT-POOL #574080		08/01/2018	PAYDOWN		626	626	648	641		(15)		(15)		626				22	12/01/2031
36200V-YK-4	GOVERNMENT NATIONAL MORT-POOL #574082		12/01/2018	PAYDOWN		49,980	49,980	51,175	50,804		(824)		(824)		49,980				1,376	12/01/2031
36200W-BU-4	GOVERNMENT NATIONAL MORT-POOL #574351		12/01/2018	PAYDOWN		128	128	132	131		(3)		(3)		128				3	01/01/2032
36200W-SS-1	GOVERNMENT NATIONAL MORT-POOL #574840		12/01/2018	PAYDOWN		1,781	1,781	1,823	1,816		(35)		(35)		1,781				51	11/01/2031
36200W-T7-6	GOVERNMENT NATIONAL MORT-POOL #574874		12/01/2018	PAYDOWN		592	592	606	604		(12)		(12)		592				21	12/01/2031
36200W-UU-1	GOVERNMENT NATIONAL MORT-POOL # 574959		12/01/2018	PAYDOWN		225	225	233	231		(6)		(6)		225				7	01/01/2032
36200W-ZE-4	GOVERNMENT NATIONAL MORT-POOL #575041		12/01/2018	PAYDOWN		1,272	1,272	1,316	1,303		(31)		(31)		1,272				43	11/01/2031
36200W-ZF-1	GOVERNMENT NATIONAL MORT-POOL #575042		12/01/2018	PAYDOWN		782	782	801	795		(13)		(13)		782				28	11/01/2031
36200X-2K-4	GOVERNMENT NATIONAL MORT-POOL #575978		12/01/2018	PAYDOWN		159	159	159	159						159				5	02/01/2032
36200X-F5-3	GOVERNMENT NATIONAL MORT-POOL #575388		12/01/2018	PAYDOWN		177	177	181	180		(3)		(3)		177				6	11/01/2031
36200X-FA-2	GOVERNMENT NATIONAL MORT-POOL #575361		12/01/2018	PAYDOWN		10,169	10,169	10,481	10,392		(223)		(223)		10,169				389	11/01/2031
36200X-H7-7	GOVERNMENT NATIONAL MORT-POOL #575454		12/01/2018	PAYDOWN		1,005	1,005	1,040	1,030		(25)		(25)		1,005				34	12/01/2031
36200X-YK-9	GOVERNMENT NATIONAL MORT-POOL #575914		12/01/2018	PAYDOWN		205	205	212	210		(5)		(5)		205				7	01/01/2032
36200Y-P8-4	GOVERNMENT NATIONAL MORT-POOL #576547		12/01/2018	PAYDOWN		11,768	11,768	12,049	11,964		(196)		(196)		11,768				334	12/01/2031
36201A-2A-5	GOVERNMENT NATIONAL MORT-POOL #577769		12/01/2018	PAYDOWN		2,047	2,047	2,118	2,113		(66)		(66)		2,047				48	11/01/2032
36201A-2D-9	GOVERNMENT NATIONAL MORT-POOL #577772		12/01/2018	PAYDOWN		5,951	5,951	6,039	6,026		(74)		(74)		5,951				125	12/01/2031
36201A-3D-8	GOVERNMENT NATIONAL MORT-POOL #577796		12/01/2018	PAYDOWN		161	161	166	165		(4)		(4)		161				6	01/01/2032
36201A-3V-8	GOVERNMENT NATIONAL MORT-POOL #577812		12/01/2018	PAYDOWN		9,244	9,244	9,527	9,444		(201)		(201)		9,244				411	01/01/2032
36201A-NH-4	GOVERNMENT NATIONAL MORT-POOL #577405		12/01/2018	PAYDOWN		482	482	494	492		(10)		(10)		482				19	12/01/2031
36201A-RA-8	GOVERNMENT NATIONAL MORT-POOL #577481		12/01/2018	PAYDOWN		39,075	39,075	40,431	40,039		(963)		(963)		39,075				1,507	12/01/2031
36201A-TP-3	GOVERNMENT NATIONAL MORT-POOL #577558		12/01/2018	PAYDOWN		959	959	992	983		(24)		(24)		959				18	02/01/2032
36201A-XT-0	GOVERNMENT NATIONAL MORT-POOL #577690		12/01/2018	PAYDOWN		3,713	3,713	3,843	3,815		(103)		(103)		3,713				125	09/01/2032
36201A-Y5-1	GOVERNMENT NATIONAL MORT-POOL #577732		12/01/2018	PAYDOWN		131	131	136	135		(3)		(3)		131				4	10/01/2032
36201A-Z3-5	GOVERNMENT NATIONAL MORT-POOL #577762		12/01/2018	PAYDOWN		1,545	1,545	1,599	1,589		(44)		(44)		1,545				73	10/01/2032

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/Adjusted Carrying Value	Unrealized Valuation Increase/Decrease	Current Year's (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Book/Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/Stock Dividends Received During Year	Stated Contractual Maturity Date
36201B-FY-7	GOVERNMENT NATIONAL MORT-POOL #578083		01/01/2018	PAYDOWN		15,316	15,316	15,852	15,703		(388)		(388)		15,316					01/01/2033
36201B-MD-5	GOVERNMENT NATIONAL MORT-POOL #578256		12/01/2018	PAYDOWN		182	182	183	183						182					12/01/2032
36201B-MH-6	GOVERNMENT NATIONAL MORT-POOL #578260		12/01/2018	PAYDOWN		526	526	527	527		(1)		(1)		526					01/01/2033
36201B-P6-7	GOVERNMENT NATIONAL MORT-POOL # 578345		12/01/2018	PAYDOWN		74	74	77	76		(2)		(2)		74					08/01/2032
36201B-RQ-1	GOVERNMENT NATIONAL MORT-POOL #578395		12/01/2018	PAYDOWN		24	24	25	25		(1)		(1)		24					10/01/2032
36201C-40-4	GOVERNMENT NATIONAL MORT-POOL #579631		12/01/2018	PAYDOWN		335	335	346	343		(8)		(8)		335					02/01/2032
36201C-4S-0	GOVERNMENT NATIONAL MORT-POOL #579633		12/01/2018	PAYDOWN		57	57	59	59		(2)		(2)		57					02/01/2032
36201C-J5-4	GOVERNMENT NATIONAL MORT-POOL #579084		12/01/2018	PAYDOWN		1,180	1,180	1,182	1,182		(2)		(2)		1,180					12/01/2031
36201C-J9-6	GOVERNMENT NATIONAL MORT-POOL #579088		12/01/2018	PAYDOWN		25	25	26	26						25					12/01/2031
36201C-JII-5	GOVERNMENT NATIONAL MORT-POOL # 579077		12/01/2018	PAYDOWN		650	650	672	667		(18)		(18)		650					12/01/2031
36201C-JX-3	GOVERNMENT NATIONAL MORT-POOL #579078		12/01/2018	PAYDOWN		57	57	59	58		(1)		(1)		57					12/01/2031
36201C-JY-1	GOVERNMENT NATIONAL MORT-POOL #579079		12/01/2018	PAYDOWN		6,075	6,075	6,261	6,212		(137)		(137)		6,075					12/01/2031
36201C-KC-7	GOVERNMENT NATIONAL MORT-POOL #579091		12/01/2018	PAYDOWN		1,103	1,103	1,129	1,127		(24)		(24)		1,103					12/01/2031
36201C-KG-8	GOVERNMENT NATIONAL MORT-POOL #579095		12/01/2018	PAYDOWN		49	49	50	50		(1)		(1)		49					12/01/2031
36201C-LV-4	GOVERNMENT NATIONAL MORT-POOL #579140		12/01/2018	PAYDOWN		9	9	9	9						9					01/01/2032
36201C-NE-0	GOVERNMENT NATIONAL MORT-POOL #579189		12/01/2018	PAYDOWN		1,018	1,018	1,053	1,047		(29)		(29)		1,018					02/01/2032
36201C-ZB-3	GOVERNMENT NATIONAL MORT-POOL #579538		12/01/2018	PAYDOWN		3,092	3,092	3,200	3,186		(94)		(94)		3,092					03/01/2032
36201D-FH-0	GOVERNMENT NATIONAL MORT-POOL # 579868		12/01/2018	PAYDOWN		164	164	170	168		(4)		(4)		164					12/01/2031
36201E-4A-5	GOVERNMENT NATIONAL MORT-POOL #581417		12/01/2018	PAYDOWN		13	13	13	13						13					07/01/2032
36201E-NH-9	GOVERNMENT NATIONAL MORT-POOL #580992		12/01/2018	PAYDOWN		7,889	7,889	8,163	8,081		(192)		(192)		7,889					02/01/2032
36201E-P8-7	GOVERNMENT NATIONAL MORT-POOL #581047		12/01/2018	PAYDOWN		101	101	105	104		(3)		(3)		101					02/01/2032
36201F-4L-8	GOVERNMENT NATIONAL MORT-POOL #582327		12/01/2018	PAYDOWN		354	354	366	364		(10)		(10)		354					09/01/2032
36201F-5N-3	GOVERNMENT NATIONAL MORT-POOL # 58353		12/01/2018	PAYDOWN		2,319	2,319	2,400	2,377		(58)		(58)		2,319					09/01/2032
36201F-6X-0	GOVERNMENT NATIONAL MORT-POOL #582386		12/01/2018	PAYDOWN		1,325	1,325	1,371	1,364		(39)		(39)		1,325					10/01/2032
36201F-T2-3	GOVERNMENT NATIONAL MORT-POOL #582069		12/01/2018	PAYDOWN		3,994	3,994	3,999	3,997		(4)		(4)		3,994					03/01/2032
36201F-TX-5	GOVERNMENT NATIONAL MORT-POOL #582066		12/01/2018	PAYDOWN		71,328	71,328	71,428	71,381		(53)		(53)		71,328					03/01/2032
36201F-V6-1	GOVERNMENT NATIONAL MORT-POOL #582137		12/01/2018	PAYDOWN		217	217	224	223		(6)		(6)		217					05/01/2032
36201F-X7-7	GOVERNMENT NATIONAL MORT-POOL #582202		12/01/2018	PAYDOWN		39	39	40	40		(1)		(1)		39					01/01/2032
36201F-XS-1	GOVERNMENT NATIONAL MORT-POOL #582189		12/01/2018	PAYDOWN		69	69	71	71		(2)		(2)		69					01/01/2032
36201G-AH-8	GOVERNMENT NATIONAL MORT-POOL #582408		12/01/2018	PAYDOWN		459	459	475	472		(13)		(13)		459					10/01/2032
36201G-AQ-8	GOVERNMENT NATIONAL MORT-POOL #582415		12/01/2018	PAYDOWN		1,908	1,908	1,975	1,958		(50)		(50)		1,908					11/01/2032
36201H-2I-2	GOVERNMENT NATIONAL MORT-POOL # 584089		12/01/2018	PAYDOWN		35	35	36	36		(1)		(1)		35					10/01/2032
36201H-4C-4	GOVERNMENT NATIONAL MORT-POOL #584119		12/01/2018	PAYDOWN		1,217	1,217	1,220	1,219		(2)		(2)		1,217					11/01/2032
36201H-5G-4	GOVERNMENT NATIONAL MORT-POOL #584147		12/01/2018	PAYDOWN		1,310	1,310	1,356	1,351		(41)		(41)		1,310					12/01/2032
36201H-C7-6	GOVERNMENT NATIONAL MORT-POOL #583394		12/01/2018	PAYDOWN		2,163	2,163	2,167	2,168		(5)		(5)		2,163					01/01/2033
36201H-L5-0	GOVERNMENT NATIONAL MORT-POOL #583648		05/01/2018	PAYDOWN		343	343	344	344		(1)		(1)		343					10/01/2032
36201H-L7-6	GOVERNMENT NATIONAL MORT-POOL #583650		12/01/2018	PAYDOWN		245	245	245	245		(1)		(1)		245					11/01/2032
36201J-5J-4	GOVERNMENT NATIONAL MORT-POOL # 585049		12/01/2018	PAYDOWN		19	19	19	19						19					12/01/2032
36201J-5U-9	GOVERNMENT NATIONAL MORT-POOL #585059		12/01/2018	PAYDOWN		9	9	9	9						9					12/01/2032
36201J-6J-3	GOVERNMENT NATIONAL MORT-POOL #585073		12/01/2018	PAYDOWN		265	265	274	271		(7)		(7)		265					01/01/2033
36201J-7J-2	GOVERNMENT NATIONAL MORT-POOL #585097		12/01/2018	PAYDOWN		2,967	2,967	3,071	3,041		(74)		(74)		2,967					01/01/2033
36201J-7M-5	GOVERNMENT NATIONAL MORT-POOL #585100		12/01/2018	PAYDOWN		404	404	418	414		(10)		(10)		404					01/01/2033
36201J-EI-5	GOVERNMENT NATIONAL MORT-POOL #584349		12/01/2018	PAYDOWN		5,971	5,971	7,102	6,813		(842)		(842)		5,971					04/01/2032
36201K-AR-7	GOVERNMENT NATIONAL MORT-POOL #585116		12/01/2018	PAYDOWN		2,779	2,779	2,875	2,848		(69)		(69)		2,779					01/01/2033
36201K-AY-2	GOVERNMENT NATIONAL MORT-POOL #585123		12/01/2018	PAYDOWN		7,815	7,815	8,086	8,010		(195)		(195)		7,815					12/01/2032
36201K-GV-2	GOVERNMENT NATIONAL MORT-POOL #585312		11/01/2018	PAYDOWN		210	210	217	215		(5)		(5)		210					10/01/2032
36201L-7G-3	GOVERNMENT NATIONAL MORT-POOL #586895		12/01/2018	PAYDOWN		564	564	583	578		(14)		(14)		564					08/01/2032
36201L-SY-1	GOVERNMENT NATIONAL MORT-POOL #586535		12/01/2018	PAYDOWN		1,990	1,990	2,059	2,040		(50)		(50)		1,990					03/01/2032
36201M-6N-7	GOVERNMENT NATIONAL MORT-POOL #587777		12/01/2018	PAYDOWN		19	19	19	19						19					12/01/2032
36201M-GU-0	GOVERNMENT NATIONAL MORT-POOL #587111		12/01/2018	PAYDOWN		4,462	4,462	4,406	4,409		53		53		4,462					06/01/2032
36201M-LG-5	GOVERNMENT NATIONAL MORT-POOL #587227		12/01/2018	PAYDOWN		125	125	129	128		(3)		(3)		125					08/01/2032
36201M-M5-8	GOVERNMENT NATIONAL MORT-POOL #587280		12/01/2018	PAYDOWN		10	10	10	10						10					09/01/2032
36201M-NT-5	GOVERNMENT NATIONAL MORT-POOL #587302		12/01/2018	PAYDOWN		81	81	84	84		(2)		(2)		81					09/01/2032
36201M-OX-3	GOVERNMENT NATIONAL MORT-POOL #587370		12/01/2018	PAYDOWN		201	201	208	206		(5)		(5)		201					10/01/2032
36201M-SM-5	GOVERNMENT NATIONAL MORT-POOL #587424		12/01/2018	PAYDOWN		1,628	1,628	1,684	1,671		(43)		(43)		1,628					11/01/2032
36201M-SX-1	GOVERNMENT NATIONAL MORT-POOL #587434		12/01/2018	PAYDOWN		249	249	250	250						249					12/01/2032
36201M-T4-4	GOVERNMENT NATIONAL MORT-POOL #587471		12/01/2018	PAYDOWN		59	59	61	61		(1)		(1)		59					04/01/2032
36201M-YX-4	GOVERNMENT NATIONAL MORT-POOL #587626		12/01/2018	PAYDOWN		31,797	31,797	37,819	36,351		(4,554)		(4,554)		31,797					03/01/2032

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36201N-LA-6	GOVERNMENT NATIONAL MORT-POOL #588121		12/01/2018	PAYDOWN		.6	.6	.6	.6						.6					11/01/2032
36201N-LV-0	GOVERNMENT NATIONAL MORT-POOL #588140		12/01/2018	PAYDOWN		964	964	966	966		(2)		(2)		964					12/01/2032
36201N-NC-0	GOVERNMENT NATIONAL MORT-POOL #588187		07/01/2018	PAYDOWN		706	706	708	708		(1)		(1)		706					01/01/2033
36201P-3U-7	GOVERNMENT NATIONAL MORT-POOL # 589511		12/01/2018	PAYDOWN		23	23	23	23		(1)		(1)		23					10/01/2032
36201P-YR-0	GOVERNMENT NATIONAL MORT-POOL #589420		12/01/2018	PAYDOWN		435	435	450	445		(11)		(11)		435					06/01/2032
36201Q-4J-9	GOVERNMENT NATIONAL MORT-POOL #590425		12/01/2018	PAYDOWN		114	114	118	118		(4)		(4)		114					09/01/2032
36201Q-6N-8	GOVERNMENT NATIONAL MORT-POOL #590477		12/01/2018	PAYDOWN		1,553	1,553	1,607	1,596		(44)		(44)		1,553					09/01/2032
36201Q-7B-3	GOVERNMENT NATIONAL MORT-POOL #590490		12/01/2018	PAYDOWN		119	119	123	122		(3)		(3)		119					09/01/2032
36201Q-RZ-8	GOVERNMENT NATIONAL MORT-POOL #590104		12/01/2018	PAYDOWN		863	863	884	878		(16)		(16)		863					02/01/2034
36201Q-VR-1	GOVERNMENT NATIONAL MORT-POOL # 590224		12/01/2018	PAYDOWN		35	35	36	35		(1)		(1)		35					08/01/2032
36201R-3M-1	GOVERNMENT NATIONAL MORT-POOL #591304		12/01/2018	PAYDOWN		1,543	1,543	1,597	1,588		(45)		(45)		1,543					09/01/2032
36201S-5Z-8	GOVERNMENT NATIONAL MORT-POOL #592264		12/01/2018	PAYDOWN		16,867	16,867	16,898	16,893		(26)		(26)		16,867					01/01/2033
36201S-6P-9	GOVERNMENT NATIONAL MORT-POOL #592278		12/01/2018	PAYDOWN		771	771	790	787		(16)		(16)		771					02/01/2033
36201S-J7-5	GOVERNMENT NATIONAL MORT-POOL #591686		12/01/2018	PAYDOWN		347	347	359	355		(9)		(9)		347					10/01/2032
36201S-LJ-6	GOVERNMENT NATIONAL MORT-POOL #591729		12/01/2018	PAYDOWN		1,077	1,077	1,115	1,111		(34)		(34)		1,077					11/01/2032
36201S-M9-7	GOVERNMENT NATIONAL MORT-POOL #591784		12/01/2018	PAYDOWN		60	60	62	62		(1)		(1)		60					11/01/2032
36201S-ME-6	GOVERNMENT NATIONAL MORT-POOL #591757		12/01/2018	PAYDOWN		2,267	2,267	2,346	2,323		(56)		(56)		2,267					11/01/2032
36201S-MG-1	GOVERNMENT NATIONAL MORT-POOL #591759		12/01/2018	PAYDOWN		1,137	1,137	1,139	1,138		(1)		(1)		1,137					11/01/2032
36201S-NA-3	GOVERNMENT NATIONAL MORT-POOL #591785		12/01/2018	PAYDOWN		713	713	738	737		(24)		(24)		713					11/01/2032
36201S-NH-5	GOVERNMENT NATIONAL MORT-POOL #591805		12/01/2018	PAYDOWN		3,759	3,759	3,770	3,768		(8)		(8)		3,759					12/01/2032
36201S-PS-2	GOVERNMENT NATIONAL MORT-POOL #591833		12/01/2018	PAYDOWN		15,226	15,226	15,759	15,685		(458)		(458)		15,226					12/01/2032
36201S-YW-3	GOVERNMENT NATIONAL MORT-POOL # 592125		12/01/2018	PAYDOWN		915	915	947	938		(23)		(23)		915					11/01/2032
36201T-6Z-5	GOVERNMENT NATIONAL MORT-POOL #593188		12/01/2018	PAYDOWN		26,955	26,955	32,060	30,768		(3,813)		(3,813)		26,955				1,007	07/01/2032
36201T-AW-7	GOVERNMENT NATIONAL MORT-POOL #592321		12/01/2018	PAYDOWN		35	35	36	36		(1)		(1)		35					09/01/2032
36201T-BE-6	GOVERNMENT NATIONAL MORT-POOL #592337		09/01/2018	PAYDOWN		1,690	1,690	1,732	1,721		(31)		(31)		1,690					01/01/2034
36201T-JZ-1	GOVERNMENT NATIONAL MORT-POOL # 592580		12/01/2018	PAYDOWN		1,382	1,382	1,430	1,417		(35)		(35)		1,382					11/01/2032
36201U-A2-0	GOVERNMENT NATIONAL MORT-POOL #593225		12/01/2018	PAYDOWN		1,139	1,139	1,179	1,174		(34)		(34)		1,139					09/01/2032
36201U-A7-9	GOVERNMENT NATIONAL MORT-POOL #593330		12/01/2018	PAYDOWN		733	733	758	751		(18)		(18)		733					10/01/2032
36201U-WF-7	GOVERNMENT NATIONAL MORT-POOL # 593846		12/01/2018	PAYDOWN		1,668	1,668	1,726	1,710		(42)		(42)		1,668					11/01/2032
36201V-LR-1	GOVERNMENT NATIONAL MORT-POOL #594436		12/01/2018	PAYDOWN		25	25	26	27		(1)		(1)		25					10/01/2032
36201V-QM-7	GOVERNMENT NATIONAL MORT-POOL #594560		12/01/2018	PAYDOWN		2,803	2,803	2,873	2,878		(74)		(74)		2,803					01/01/2034
36201X-7J-1	GOVERNMENT NATIONAL MORT-POOL #606697		12/01/2018	PAYDOWN		59,262	59,262	60,725	60,343		(1,081)		(1,081)		59,262					01/01/2034
36201Y-HD-5	GOVERNMENT NATIONAL MORT-POOL #607056		12/01/2018	PAYDOWN		108	108	110	110		(2)		(2)		108					02/01/2034
36201Y-RX-6	GOVERNMENT NATIONAL MORT-POOL #607202		12/01/2018	PAYDOWN		8,552	8,552	8,763	8,720		(168)		(168)		8,552					01/01/2034
36202C-BZ-5	GOVERNMENT NATIONAL MORT-POOL #1856		12/01/2018	PAYDOWN		2,160	2,160	2,231	2,210		(51)		(51)		2,160					08/01/2024
36202C-CG-6	GOVERNMENT NATIONAL MORT-POOL #1871		12/01/2018	PAYDOWN		933	933	964	949		(16)		(16)		933					09/01/2024
36202C-TA-1	GOVERNMENT NATIONAL MORT-POOL #2345		12/01/2018	PAYDOWN		4,543	4,543	4,676	4,622		(79)		(79)		4,543					12/01/2026
36202D-4Q-1	GOVERNMENT NATIONAL MORT-POOL #3531		12/01/2018	PAYDOWN		163,713	163,713	184,345	182,517		(18,804)		(18,804)		163,713				4,930	03/01/2034
36202D-RD-5	GOVERNMENT NATIONAL MORT-POOL #3184		12/01/2018	PAYDOWN		11,825	11,825	11,082	10,830		995		995		11,825					01/01/2032
36202D-RT-0	GOVERNMENT NATIONAL MORT-POOL #3198		12/01/2018	PAYDOWN		507	507	475	483		23		23		507					02/01/2032
36202E-3E-7	GOVERNMENT NATIONAL MORT-POOL #4397		12/01/2018	PAYDOWN		369,863	369,863	405,759	406,470		(36,607)		(36,607)		369,863					03/01/2039
36202E-AL-3	GOVERNMENT NATIONAL MORT-POOL #3611		12/01/2018	PAYDOWN		104,778	104,778	117,663	116,129		(11,351)		(11,351)		104,778					09/01/2034
36202E-GN-3	GOVERNMENT NATIONAL MORT-POOL #3805		12/01/2018	PAYDOWN		211,251	211,251	205,375	205,839		5,411		5,411		211,251					01/01/2036
36202F-QN-4	GOVERNMENT NATIONAL MORT-POOL #4577		12/01/2018	PAYDOWN		53,285	53,285	58,749	58,816		(5,531)		(5,531)		53,285					11/01/2039
36202F-DB-9	GOVERNMENT NATIONAL MORT-POOL #4598		12/01/2018	PAYDOWN		53,673	53,673	59,177	59,271		(5,598)		(5,598)		53,673					12/01/2039
36202F-E6-9	GOVERNMENT NATIONAL MORT-POOL #4657		12/01/2018	PAYDOWN		270,241	270,241	298,815	299,761		(29,520)		(29,520)		270,241					03/01/2040
36202F-EH-5	GOVERNMENT NATIONAL MORT-POOL #4636		12/01/2018	PAYDOWN		332,143	332,143	367,262	367,700		(35,557)		(35,557)		332,143					02/01/2040
36202F-GD-2	GOVERNMENT NATIONAL MORT-POOL #4696		12/01/2018	PAYDOWN		300,628	300,628	331,455	332,565		(31,937)		(31,937)		300,628					05/01/2040
36202F-GH-0	GOVERNMENT NATIONAL MORT-POOL #4713		12/01/2018	PAYDOWN		1,113,986	1,113,986	1,231,770	1,234,942		(120,956)		(120,956)		1,113,986					06/01/2040
36202F-GY-6	GOVERNMENT NATIONAL MORT-POOL #4715		12/01/2018	PAYDOWN		334,994	334,994	369,976	370,216		(35,223)		(35,223)		334,994					06/01/2040
36202F-HY-5	GOVERNMENT NATIONAL MORT-POOL #4747		12/01/2018	PAYDOWN		189,485	189,485	209,975	210,558		(21,073)		(21,073)		189,485					07/01/2040
36202F-JR-8	GOVERNMENT NATIONAL MORT-POOL #4772		12/01/2018	PAYDOWN		238,987	238,987	264,462	264,569		(25,582)		(25,582)		238,987					08/01/2040
36202F-KM-7	GOVERNMENT NATIONAL MORT-POOL #4800		12/01/2018	PAYDOWN		215,159	215,159	236,021	236,082		(20,924)		(20,924)		215,159					09/01/2040
36202F-KN-5	GOVERNMENT NATIONAL MORT-POOL #4801		12/01/2018	PAYDOWN		2,767,519	2,767,519	3,060,164	3,063,316		(295,797)		(295,797)		2,767,519					09/01/2040
36202F-LN-4	GOVERNMENT NATIONAL MORT-POOL #4833		12/01/2018	PAYDOWN		1,601,359	1,601,359	1,758,633	1,758,738		(157,379)		(157,379)		1,601,359					10/01/2040
36202F-LP-9	GOVERNMENT NATIONAL MORT-POOL #4834		12/01/2018	PAYDOWN		379,076	379,076	419,157	419,442		(40,366)		(40,366)		379,076					10/01/2040
36202K-7A-7	GOVERNMENT NATIONAL MORT-POOL #8989 ARMS		12/01/2018	PAYDOWN		657	657	660	629		27		27		657					10/01/2026
36202K-LC-7	GOVERNMENT NATIONAL MORT-POOL #8423 ARMS		12/01/2018	PAYDOWN		38,603	38,603	38,459	38,799		1,805		1,805		38,603					05/01/2024

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36202K-H5-1	GOVERNMENT NATIONAL MORT-POOL #8480 ARMS		12/01/2018	PAYDOWN		12,960	12,960	12,774	12,385		575		575		12,960				183	08/01/2024
36202K-QL-2	GOVERNMENT NATIONAL MORT-POOL #8559 ARMS		12/01/2018	PAYDOWN		17,253	17,253	17,038	16,500		754		754		17,253				283	12/01/2024
36202K-SG-1	Government National Mort-POOL #8619 ARMS		12/01/2018	PAYDOWN		9,817	9,817	9,948	9,402		416		416		9,817				145	04/01/2025
36202K-VJ-1	GOVERNMENT NATIONAL MORT-POOL #8717 ARMS		12/01/2018	PAYDOWN		11,139	11,139	11,182	10,707		432		432		11,139				172	10/01/2025
36202K-WF-8	GOVERNMENT NATIONAL MORT-POOL #8746 ARMS		12/01/2018	PAYDOWN		21,577	21,577	21,553	20,674		903		903		21,577				345	11/01/2025
36202S-A5-7	GOVERNMENT NATIONAL MORT-POOL #607628		12/01/2018	PAYDOWN		1,198	1,198	1,240	1,236		(38)		(38)		1,198				44	01/01/2033
36202S-AX-6	GOVERNMENT NATIONAL MORT-POOL #607622		12/01/2018	PAYDOWN		4,417	4,417	4,425	4,424		(7)		(7)		4,417				149	01/01/2033
36202S-BE-7	GOVERNMENT NATIONAL MORT-POOL #607637		12/01/2018	PAYDOWN		639	639	640	640		(1)		(1)		639				19	01/01/2033
36202S-CH-9	GOVERNMENT NATIONAL MORT-POOL #607672		12/01/2018	PAYDOWN		874	874	904	917		(44)		(44)		874				29	10/01/2032
36202U-D6-7	GOVERNMENT NATIONAL MORT-POOL #609525		12/01/2018	PAYDOWN		36,150	36,150	37,099	36,853		(703)		(703)		36,150			1,021	12/01/2033	
36202V-H5-3	GOVERNMENT NATIONAL MORT-POOL #610552		12/01/2018	PAYDOWN		265	265	271	270		(5)		(5)		265				8	11/01/2033
36202V-H9-5	GOVERNMENT NATIONAL MORT-POOL #610556		12/01/2018	PAYDOWN		2,425	2,425	2,485	2,470		(44)		(44)		2,425				74	11/01/2033
36202V-H9-9	GOVERNMENT NATIONAL MORT-POOL #610531		12/01/2018	PAYDOWN		334	334	342	340		(6)		(6)		334				10	11/01/2033
36202V-HH-7	GOVERNMENT NATIONAL MORT-POOL #610532		12/01/2018	PAYDOWN		14,530	14,530	14,889	14,796		(266)		(266)		14,530				572	11/01/2033
36202V-K6-7	GOVERNMENT NATIONAL MORT-POOL #610617		12/01/2018	PAYDOWN		3,522	3,522	3,609	3,586		(64)		(64)		3,522				106	01/01/2034
36202V-KT-7	GOVERNMENT NATIONAL MORT-POOL #610606		12/01/2018	PAYDOWN		8,444	8,444	8,652	8,618		(174)		(174)		8,444				254	01/01/2034
36202V-KX-8	GOVERNMENT NATIONAL MORT-POOL #610610		12/01/2018	PAYDOWN		7,004	7,004	7,177	7,132		(128)		(128)		7,004				211	01/01/2034
36202W-JN-0	GOVERNMENT NATIONAL MORT-POOL #611469		12/01/2018	PAYDOWN		145	145	149	148		(3)		(3)		145				4	04/01/2033
36202X-5X-1	GOVERNMENT NATIONAL MORT-POOL #612962		12/01/2018	PAYDOWN		2,538	2,538	2,604	2,587		(49)		(49)		2,538				99	07/01/2033
36202X-MC-8	GOVERNMENT NATIONAL MORT-POOL # 612455		12/01/2018	PAYDOWN		1,719	1,719	1,793	1,774		(55)		(55)		1,719				52	06/01/2033
36203A-7J-9	GOVERNMENT NATIONAL MORT-POOL #343897		12/01/2018	PAYDOWN		6,244	6,244	6,333	6,295		(51)		(51)		6,244				300	06/01/2023
36203A-DX-1	GOVERNMENT NATIONAL MORT-POOL #343118		12/01/2018	PAYDOWN		1,915	1,915	1,933	1,924		(9)		(9)		1,915				44	03/01/2024
36203A-EN-2	GOVERNMENT NATIONAL MORT-POOL #343141		12/01/2018	PAYDOWN		697	697	814	759		(62)		(62)		697				35	01/01/2023
36203A-MB-9	GOVERNMENT NATIONAL MORT-POOL #343354		12/01/2018	PAYDOWN		196	196	200	197		(1)		(1)		196				8	03/01/2023
36203A-IU-2	GOVERNMENT NATIONAL MORT-POOL #343361		12/01/2018	PAYDOWN		1,713	1,713	1,814	1,770		(58)		(58)		1,713				18	05/01/2023
36203A-IU-7	GOVERNMENT NATIONAL MORT-POOL #343371		04/01/2018	PAYDOWN		406	406	413	409		(3)		(3)		406				7	07/01/2023
36203A-TL-0	GOVERNMENT NATIONAL MORT-POOL #343555		12/01/2018	PAYDOWN		1,093	1,093	1,109	1,099		(6)		(6)		1,093				45	04/01/2023
36203A-VJ-2	GOVERNMENT NATIONAL MORT-POOL #343617		12/01/2018	PAYDOWN		1,011	1,011	1,020	1,015		(4)		(4)		1,011				36	06/01/2023
36203B-KQ-6	GOVERNMENT NATIONAL MORT-POOL #344203		12/01/2018	PAYDOWN		4,023	4,023	4,083	4,050		(27)		(27)		4,023				138	01/01/2023
36203B-IA-9	GOVERNMENT NATIONAL MORT-POOL #344253		12/01/2018	PAYDOWN		46	46	47	46						46				2	03/01/2023
36203B-VU-5	GOVERNMENT NATIONAL MORT-POOL #344527		12/01/2018	PAYDOWN		857	857	984	930		(73)		(73)		857				31	10/01/2023
36203B-WT-7	GOVERNMENT NATIONAL MORT-POOL #344558		12/01/2018	PAYDOWN		12,379	12,379	12,493	12,428		(49)		(49)		12,379				274	12/01/2023
36203C-2A-9	GOVERNMENT NATIONAL MORT-POOL #345569		12/01/2018	PAYDOWN		2,219	2,219	2,526	2,402		(184)		(184)		2,219				63	02/01/2024
36203C-EF-5	GOVERNMENT NATIONAL MORT-POOL #344934		12/01/2018	PAYDOWN		187	187	188	187						187				7	07/01/2023
36203C-KB-7	GOVERNMENT NATIONAL MORT-POOL #345090		12/01/2018	PAYDOWN		103	103	103	103						103				4	11/01/2023
36203C-KM-3	GOVERNMENT NATIONAL MORT-POOL #345100		12/01/2018	PAYDOWN		818	818	826	823		(4)		(4)		818				29	11/01/2023
36203C-MG-4	GOVERNMENT NATIONAL MORT-POOL #345159		12/01/2018	PAYDOWN		225	225	227	226		(1)		(1)		225				8	01/01/2024
36203C-RF-1	GOVERNMENT NATIONAL MORT-POOL #345286		12/01/2018	PAYDOWN		266	266	268	268		(1)		(1)		266				10	06/01/2023
36203C-T4-4	GOVERNMENT NATIONAL MORT-POOL #345371		12/01/2018	PAYDOWN		432	432	482	470		(39)		(39)		432				12	01/01/2023
36203C-TY-8	GOVERNMENT NATIONAL MORT-POOL #345367		12/01/2018	PAYDOWN		2,479	2,479	2,523	2,503		(23)		(23)		2,479				156	01/01/2023
36203C-VJ-8	GOVERNMENT NATIONAL MORT-POOL #345417		12/01/2018	PAYDOWN		1,152	1,152	1,312	1,262		(111)		(111)		1,152				40	11/01/2023
36203C-ZK-1	GOVERNMENT NATIONAL MORT-POOL #345546		12/01/2018	PAYDOWN		393	393	401	396		(3)		(3)		393				16	02/01/2024
36203D-5N-6	GOVERNMENT NATIONAL MORT-POOL #346553		12/01/2018	PAYDOWN		234	234	273	260		(26)		(26)		234				10	05/01/2023
36203D-6Y-1	GOVERNMENT NATIONAL MORT-POOL #346587		12/01/2018	PAYDOWN		88,109	88,109	88,645	88,302		(193)		(193)		88,109			2,619	06/01/2023	
36203D-HB-9	GOVERNMENT NATIONAL MORT-POOL #345926		12/01/2018	PAYDOWN		1,485	1,485	1,499	1,491		(6)		(6)		1,485				68	01/01/2024
36203D-J4-3	GOVERNMENT NATIONAL MORT-POOL #345983		12/01/2018	PAYDOWN		3,117	3,117	3,107	3,110		8		8		3,117				111	12/01/2023
36203D-JE-1	GOVERNMENT NATIONAL MORT-POOL #345961		12/01/2018	PAYDOWN		1,058	1,058	1,068	1,062		(5)		(5)		1,058				40	11/01/2023
36203D-XG-8	GOVERNMENT NATIONAL MORT-POOL #346387		12/01/2018	PAYDOWN		192	192	196	194		(1)		(1)		192				8	01/01/2023
36203E-E6-1	GOVERNMENT NATIONAL MORT-POOL #346757		12/01/2018	PAYDOWN		398	398	403	400		(3)		(3)		398				14	09/01/2023
36203E-FE-3	GOVERNMENT NATIONAL MORT-POOL #346765		12/01/2018	PAYDOWN		91	91	92	91		(1)		(1)		91				4	09/01/2023
36203E-G7-7	GOVERNMENT NATIONAL MORT-POOL #346822		12/01/2018	PAYDOWN		78	78	79	79		(1)		(1)		78				3	10/01/2023
36203E-LM-8	GOVERNMENT NATIONAL MORT-POOL #346932		12/01/2018	PAYDOWN		4,357	4,357	4,343	4,347		10		10		4,357				155	12/01/2023
36203E-LV-8	GOVERNMENT NATIONAL MORT-POOL #346940		12/01/2018	PAYDOWN		404	404	408	406		(2)		(2)		404				14	12/01/2023
36203E-N9-5	GOVERNMENT NATIONAL MORT-POOL #347016		12/01/2018	PAYDOWN		41	41	42	42						41					01/01/2024
36203F-2R-5	GOVERNMENT NATIONAL MORT-POOL #348284		12/01/2018	PAYDOWN		40	40	41	41						40				2	10/01/2023
36203F-FU-4	GOVERNMENT NATIONAL MORT-POOL #347679		12/01/2018	PAYDOWN		727	727	741	735		(7)		(7)		727				29	06/01/2024
36203F-GC-3	GOVERNMENT NATIONAL MORT-POOL #347695		12/01/2018	PAYDOWN		335	335	338	336		(1)		(1)		335				11	10/01/2023
36203F-GQ-2	GOVERNMENT NATIONAL MORT-POOL #347707		12/01/2018	PAYDOWN		4,347	4,347	4,387	4,365		(18)		(18)		4,347				155	01/01/2024

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36203F-GV-1	GOVERNMENT NATIONAL MORT-POOL #347712		12/01/2018	PAYDOWN		.78	.78	.79	.79						.78				.3	01/01/2024
36203F-GW-9	GOVERNMENT NATIONAL MORT-POOL #347713		12/01/2018	PAYDOWN		3,142	3,142	3,171	3,157		(15)		(15)		3,142				114	01/01/2024
36203F-LD-5	GOVERNMENT NATIONAL MORT-POOL #348080		12/01/2018	PAYDOWN		.21	.21	.21	.21						.21					05/01/2023
36203F-VJ-1	GOVERNMENT NATIONAL MORT-POOL #348117		12/01/2018	PAYDOWN		1,589	1,589	1,617	1,601		(12)		(12)		1,589				65	06/01/2023
36203F-XX-8	GOVERNMENT NATIONAL MORT-POOL #348194		12/01/2018	PAYDOWN		.20	.20	.20	.20						.20					08/01/2023
36203G-QX-4	GOVERNMENT NATIONAL MORT-POOL #348870		12/01/2018	PAYDOWN		2,769	2,769	2,787	2,777		(8)		(8)		2,769				81	07/01/2023
36203H-O4-6	GOVERNMENT NATIONAL MORT-POOL #349775		12/01/2018	PAYDOWN		952	952	1,007	982		(30)		(30)		952				39	05/01/2023
36203J-4J-3	GOVERNMENT NATIONAL MORT-POOL #351025		12/01/2018	PAYDOWN		1,090	1,090	1,019	1,055		36		36		1,090				39	04/01/2023
36203K-HM-9	GOVERNMENT NATIONAL MORT-POOL #351336		12/01/2018	PAYDOWN		109	109	110	110						109				4	12/01/2023
36203K-JV-7	GOVERNMENT NATIONAL MORT-POOL #351376		12/01/2018	PAYDOWN		8,128	8,128	8,101	8,109		18		18		8,128				291	12/01/2023
36203K-KS-2	GOVERNMENT NATIONAL MORT-POOL #351405		12/01/2018	PAYDOWN		21,373	21,373	19,245	20,141		1,233		1,233		21,373				864	01/01/2024
36203K-KV-5	GOVERNMENT NATIONAL MORT-POOL #351408		12/01/2018	PAYDOWN		3,352	3,352	3,383	3,368		(16)		(16)		3,352				115	01/01/2024
36203K-KX-1	GOVERNMENT NATIONAL MORT-POOL #351410		12/01/2018	PAYDOWN		3,013	3,013	3,040	3,026		(14)		(14)		3,013				105	01/01/2024
36203K-LD-4	GOVERNMENT NATIONAL MORT-POOL #351424		12/01/2018	PAYDOWN		1,314	1,314	1,327	1,320		(6)		(6)		1,314				38	02/01/2024
36203K-PE-8	GOVERNMENT NATIONAL MORT-POOL #351521		12/01/2018	PAYDOWN		1,220	1,220	1,224	1,222		(2)		(2)		1,220				50	06/01/2023
36203L-3Z-3	GOVERNMENT NATIONAL MORT-POOL #352816		12/01/2018	PAYDOWN		2,283	2,283	2,196	2,238		45		45		2,283				81	02/01/2024
36203L-4C-3	GOVERNMENT NATIONAL MORT-POOL #352819		12/01/2018	PAYDOWN		.119	.119	.120	.119		(1)		(1)		.119				4	03/01/2024
36203L-4H-2	GOVERNMENT NATIONAL MORT-POOL #352824		12/01/2018	PAYDOWN		1,705	1,705	1,721	1,712		(7)		(7)		1,705				74	04/01/2024
36203L-4U-3	GOVERNMENT NATIONAL MORT-POOL #352835		12/01/2018	PAYDOWN		.11	.11	.11	.11						.11				.7	02/01/2024
36203L-A2-8	GOVERNMENT NATIONAL MORT-POOL #352025		07/01/2018	PAYDOWN		1,660	1,660	1,680	1,668		(8)		(8)		1,660				60	11/01/2023
36203L-A3-6	GOVERNMENT NATIONAL MORT-POOL #352026		12/01/2018	PAYDOWN		974	974	987	980		(7)		(7)		974				29	11/01/2023
36203L-A4-4	GOVERNMENT NATIONAL MORT-POOL #352027		12/01/2018	PAYDOWN		.95	.95	.96	.95		(1)		(1)		.95				4	11/01/2023
36203L-A5-1	GOVERNMENT NATIONAL MORT-POOL #352028		12/01/2018	PAYDOWN		2,631	2,631	2,622	2,624		7		7		2,631				98	11/01/2023
36203L-BV-3	GOVERNMENT NATIONAL MORT-POOL #352052		12/01/2018	PAYDOWN		913	913	930	921		(8)		(8)		913				35	10/01/2023
36203L-E7-3	GOVERNMENT NATIONAL MORT-POOL #352158		12/01/2018	PAYDOWN		.59	.59	.60	.59						.59				2	05/01/2023
36203L-FE-7	GOVERNMENT NATIONAL MORT-POOL #352165		12/01/2018	PAYDOWN		.24	.24	.29	.29		(5)		(5)		.24				.2	06/01/2023
36203M-2C-3	GOVERNMENT NATIONAL MORT-POOL #353671		12/01/2018	PAYDOWN		1,082	1,082	1,092	1,087		(6)		(6)		1,082				73	05/01/2023
36203M-B5-8	GOVERNMENT NATIONAL MORT-POOL #352960		12/01/2018	PAYDOWN		2,042	2,042	1,965	1,955		87		87		2,042				73	05/01/2024
36203M-BR-0	GOVERNMENT NATIONAL MORT-POOL #352948		12/01/2018	PAYDOWN		1,249	1,249	1,444	1,366		(117)		(117)		1,249				44	04/01/2024
36203M-J7-6	GOVERNMENT NATIONAL MORT-POOL #353186		12/01/2018	PAYDOWN		222	222	224	223		(1)		(1)		222				8	08/01/2023
36203M-JQ-4	GOVERNMENT NATIONAL MORT-POOL #353171		12/01/2018	PAYDOWN		296	296	305	301		(5)		(5)		296				12	05/01/2023
36203M-H9-8	GOVERNMENT NATIONAL MORT-POOL #353284		05/01/2018	PAYDOWN		477	477	484	482		(5)		(5)		477				6	05/01/2023
36203M-T7-5	GOVERNMENT NATIONAL MORT-POOL #353474		12/01/2018	PAYDOWN		.91	.91	.92	.92		(1)		(1)		.91				4	10/01/2027
36203M-TD-2	GOVERNMENT NATIONAL MORT-POOL #353448		02/01/2018	PAYDOWN		955	955	984	1,034		(80)		(80)		955				5	04/01/2027
36203N-SN-4	GOVERNMENT NATIONAL MORT-POOL #354653		12/01/2018	PAYDOWN		666	666	675	670		(4)		(4)		666				20	09/01/2023
36203N-KY-3	GOVERNMENT NATIONAL MORT-POOL #354111		12/01/2018	PAYDOWN		.38	.38	.39	.39						.38				2	05/01/2023
36203P-4K-6	GOVERNMENT NATIONAL MORT-POOL #355526		12/01/2018	PAYDOWN		481	481	484	482		(1)		(1)		481				23	11/01/2023
36203P-BA-0	GOVERNMENT NATIONAL MORT-POOL #354733		12/01/2018	PAYDOWN		1,282	1,282	1,293	1,287		(5)		(5)		1,282				56	01/01/2024
36203P-C3-5	GOVERNMENT NATIONAL MORT-POOL #354790		12/01/2018	PAYDOWN		.74	.74	.72	.73		2		2		.74				3	04/01/2024
36203P-CQ-4	GOVERNMENT NATIONAL MORT-POOL #354779		12/01/2018	PAYDOWN		761	761	768	764		(4)		(4)		761				27	03/01/2024
36203P-MQ-3	GOVERNMENT NATIONAL MORT-POOL #355067		12/01/2018	PAYDOWN		1,476	1,476	1,490	1,482		(6)		(6)		1,476				53	01/01/2024
36203Q-6N-6	GOVERNMENT NATIONAL MORT-POOL #356477		12/01/2018	PAYDOWN		3,377	3,377	3,408	3,391		(14)		(14)		3,377				93	11/01/2023
36203Q-CT-6	GOVERNMENT NATIONAL MORT-POOL #355682		12/01/2018	PAYDOWN		1,159	1,159	1,182	1,172		(13)		(13)		1,159				48	05/01/2023
36203Q-DE-8	GOVERNMENT NATIONAL MORT-POOL #355701		02/01/2018	PAYDOWN		1,392	1,392	1,454	1,440		(48)		(48)		1,392				8	06/01/2023
36203Q-FM-8	GOVERNMENT NATIONAL MORT-POOL #355772		12/01/2018	PAYDOWN		291	291	294	292		(1)		(1)		291				12	08/01/2023
36203Q-JH-5	GOVERNMENT NATIONAL MORT-POOL #355864		12/01/2018	PAYDOWN		1,731	1,731	1,747	1,738		(7)		(7)		1,731				56	04/01/2024
36203Q-JR-3	GOVERNMENT NATIONAL MORT-POOL #355872		12/01/2018	PAYDOWN		1,583	1,583	1,523	1,545		38		38		1,583				56	05/01/2024
36203Q-PW-5	GOVERNMENT NATIONAL MORT-POOL #356037		12/01/2018	PAYDOWN		1,570	1,570	1,592	1,582		(12)		(12)		1,570				65	06/01/2023
36203Q-S6-9	GOVERNMENT NATIONAL MORT-POOL #356141		12/01/2018	PAYDOWN		2,939	2,939	2,966	2,951		(12)		(12)		2,939				105	11/01/2023
36203R-3R-8	GOVERNMENT NATIONAL MORT-POOL #357308		12/01/2018	PAYDOWN		.78	.78	.79	.79		(1)		(1)		.78				3	08/01/2023
36203R-3S-6	GOVERNMENT NATIONAL MORT-POOL #357309		12/01/2018	PAYDOWN		561	561	564	562		(2)		(2)		561				19	08/01/2023
36203R-4F-3	GOVERNMENT NATIONAL MORT-POOL #357322		12/01/2018	PAYDOWN		156	156	157	156						156				8	09/01/2023
36203R-G4-5	GOVERNMENT NATIONAL MORT-POOL #356719		12/01/2018	PAYDOWN		1,135	1,135	1,145	1,139		(4)		(4)		1,135				40	09/01/2023
36203R-GH-6	GOVERNMENT NATIONAL MORT-POOL #356700		12/01/2018	PAYDOWN		.57	.57	.57	.57						.57				2	07/01/2023
36203R-Y8-6	GOVERNMENT NATIONAL MORT-POOL #357235		12/01/2018	PAYDOWN		.198	.198	.201	.199		(1)		(1)		.198				8	10/01/2023
36203S-4L-8	GOVERNMENT NATIONAL MORT-POOL #358227		12/01/2018	PAYDOWN		.22	.22	.22	.22						.22				.2	08/01/2023
36203S-6T-9	GOVERNMENT NATIONAL MORT-POOL #358282		12/01/2018	PAYDOWN		186	186	187	187		(1)		(1)		186				8	05/01/2023
36203S-LF-2	GOVERNMENT NATIONAL MORT-POOL #357726		12/01/2018	PAYDOWN		1,394	1,394	1,412	1,401		(8)		(8)		1,394				57	01/01/2024

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36203S-XL-6	GOVERNMENT NATIONAL MORT-POOL #358083		12/01/2018	PAYDOWN		530	530	535	532		(2)		(2)		530				.19	10/01/2023
36203T-3F-0	GOVERNMENT NATIONAL MORT-POOL #359098		12/01/2018	PAYDOWN		1,164	1,164	1,171	1,166		(3)		(3)		1,164				.52	07/01/2023
36203T-5A-9	GOVERNMENT NATIONAL MORT-POOL #359141		12/01/2018	PAYDOWN		189	189	190	190		(1)		(1)		189				.7	01/01/2024
36203T-BR-5	GOVERNMENT NATIONAL MORT-POOL #358348		05/01/2018	PAYDOWN		342	342	401	471		(129)		(129)		342				.3	06/01/2023
36203T-DR-3	GOVERNMENT NATIONAL MORT-POOL #358412		12/01/2018	PAYDOWN		120	120	121	120						120				.4	09/01/2023
36203T-EF-8	GOVERNMENT NATIONAL MORT-POOL #358434		12/01/2018	PAYDOWN		463	463	467	464		(2)		(2)		463				.16	10/01/2023
36203T-TD-7	GOVERNMENT NATIONAL MORT-POOL #358848		12/01/2018	PAYDOWN		425	425	484	461		(36)		(36)		425				.15	10/01/2023
36203T-XF-7	GOVERNMENT NATIONAL MORT-POOL #358978		12/01/2018	PAYDOWN		3,853	3,853	3,888	3,869		(16)		(16)		3,853				.128	12/01/2023
36203U-2N-1	GOVERNMENT NATIONAL MORT-POOL #359981		12/01/2018	PAYDOWN		4,590	4,590	4,416	4,499		91		91		4,590				.199	01/01/2024
36203U-A3-6	GOVERNMENT NATIONAL MORT-POOL #359226		08/01/2018	PAYDOWN		4,026	4,026	4,064	4,045		(19)		(19)		4,026				.146	12/01/2023
36203U-RR-5	GOVERNMENT NATIONAL MORT-POOL #359696		12/01/2018	PAYDOWN		147	147	142	143		4		4		147				.5	01/01/2024
36203U-WA-6	GOVERNMENT NATIONAL MORT-POOL #359841		12/01/2018	PAYDOWN		190	190	191	190		(1)		(1)		190				.7	09/01/2023
36203U-XV-9	GOVERNMENT NATIONAL MORT-POOL #359892		12/01/2018	PAYDOWN		876	876	881	879		(3)		(3)		876				.26	10/01/2023
36203U-YP-1	GOVERNMENT NATIONAL MORT-POOL #359918		12/01/2018	PAYDOWN		1,893	1,893	1,910	1,901		(8)		(8)		1,893				.67	11/01/2023
36203U-Z5-4	GOVERNMENT NATIONAL MORT-POOL #359964		12/01/2018	PAYDOWN		1,341	1,341	1,359	1,349		(8)		(8)		1,341				.74	12/01/2023
36203V-BV-1	GOVERNMENT NATIONAL MORT-POOL #360152		12/01/2018	PAYDOWN		159	159	162	160		(1)		(1)		159				.7	07/01/2023
36203V-EM-8	GOVERNMENT NATIONAL MORT-POOL #360240		12/01/2018	PAYDOWN		3,854	3,854	3,708	3,768		86		86		3,854				.120	04/01/2024
36203V-J6-8	GOVERNMENT NATIONAL MORT-POOL #360385		12/01/2018	PAYDOWN		1,430	1,430	1,456	1,441		(11)		(11)		1,430				.58	08/01/2023
36203V-TF-7	GOVERNMENT NATIONAL MORT-POOL #360650		12/01/2018	PAYDOWN		326	326	329	327		(1)		(1)		326				.12	01/01/2024
36203V-W2-2	GOVERNMENT NATIONAL MORT-POOL #360765		12/01/2018	PAYDOWN		452	452	455	454		(2)		(2)		452				.16	12/01/2028
36203V-XJ-4	GOVERNMENT NATIONAL MORT-POOL #360781		06/01/2018	PAYDOWN		158	158	161	162		(3)		(3)		158				.4	02/01/2024
36203V-Y2-0	GOVERNMENT NATIONAL MORT-POOL #360829		12/01/2018	PAYDOWN		416	416	420	418		(2)		(2)		416				.15	03/01/2024
36203W-PY-8	GOVERNMENT NATIONAL MORT-POOL #361439		12/01/2018	PAYDOWN		306	306	310	308		(1)		(1)		306				.5	06/01/2024
36203X-4G-8	GOVERNMENT NATIONAL MORT-POOL #362723		12/01/2018	PAYDOWN		155	155	156	155		(1)		(1)		155				.6	12/01/2023
36203X-06-1	GOVERNMENT NATIONAL MORT-POOL #361993		12/01/2018	PAYDOWN		269	269	271	270		(1)		(1)		269				.10	12/01/2023
36203X-D4-5	GOVERNMENT NATIONAL MORT-POOL #362023		12/01/2018	PAYDOWN		895	895	900	897		(2)		(2)		895				.34	09/01/2023
36203X-E5-1	GOVERNMENT NATIONAL MORT-POOL #362056		12/01/2018	PAYDOWN		724	724	824	811		(87)		(87)		724				.30	06/01/2023
36203X-H7-4	GOVERNMENT NATIONAL MORT-POOL #362154		12/01/2018	PAYDOWN		7,298	7,298	7,366	7,328		(30)		(30)		7,298				.203	12/01/2023
36203X-J8-0	GOVERNMENT NATIONAL MORT-POOL #362187		12/01/2018	PAYDOWN		1,575	1,575	1,590	1,581		(6)		(6)		1,575				.56	01/01/2024
36203X-LD-6	GOVERNMENT NATIONAL MORT-POOL #362224		12/01/2018	PAYDOWN		710	710	717	713		(3)		(3)		710				.25	03/01/2024
36203Y-2N-3	GOVERNMENT NATIONAL MORT-POOL #363589		12/01/2018	PAYDOWN		791	791	798	796		(5)		(5)		791				.16	02/01/2024
36203Y-6R-0	GOVERNMENT NATIONAL MORT-POOL #363680		12/01/2018	PAYDOWN		2,569	2,569	2,593	2,580		(10)		(10)		2,569				.91	11/01/2023
36203Y-HZ-0	GOVERNMENT NATIONAL MORT-POOL #363048		12/01/2018	PAYDOWN		52	52	53	52						52				.2	10/01/2023
36203Y-TW-4	GOVERNMENT NATIONAL MORT-POOL #363365		12/01/2018	PAYDOWN		513	513	520	517		(4)		(4)		513				.19	11/01/2023
36204A-6U-4	GOVERNMENT NATIONAL MORT-POOL #364583		12/01/2018	PAYDOWN		116	116	117	116						116				.4	08/01/2023
36204A-F2-6	GOVERNMENT NATIONAL MORT-POOL #363885		12/01/2018	PAYDOWN		5,387	5,387	5,183	5,219		168		168		5,387				.193	01/01/2024
36204A-PN-9	GOVERNMENT NATIONAL MORT-POOL #364129		12/01/2018	PAYDOWN		1,251	1,251	1,262	1,255		(5)		(5)		1,251				.45	08/01/2023
36204A-SY-2	GOVERNMENT NATIONAL MORT-POOL #364235		12/01/2018	PAYDOWN		557	557	562	559		(2)		(2)		557				.20	04/01/2024
36204A-T2-1	GOVERNMENT NATIONAL MORT-POOL #364269		12/01/2018	PAYDOWN		1,114	1,114	1,124	1,118		(4)		(4)		1,114				.40	01/01/2024
36204A-WC-5	GOVERNMENT NATIONAL MORT-POOL #364343		12/01/2018	PAYDOWN		110	110	111	110		(1)		(1)		110				.4	09/01/2023
36204B-BA-0	GOVERNMENT NATIONAL MORT-POOL #364633		12/01/2018	PAYDOWN		285	285	290	287		(2)		(2)		285				.12	09/01/2023
36204C-5D-9	GOVERNMENT NATIONAL MORT-POOL #366344		12/01/2018	PAYDOWN		1,701	1,701	1,938	1,890		(189)		(189)		1,701				.15	10/01/2023
36204C-5Y-3	GOVERNMENT NATIONAL MORT-POOL #366363		12/01/2018	PAYDOWN		136	136	137	137		(1)		(1)		136				.5	11/01/2023
36204C-7J-4	GOVERNMENT NATIONAL MORT-POOL #366397		12/01/2018	PAYDOWN		10,457	10,457	10,060	10,215		242		242		10,457				.375	01/01/2024
36204C-LR-0	GOVERNMENT NATIONAL MORT-POOL #365836		12/01/2018	PAYDOWN		1,976	1,976	2,003	1,987		(11)		(11)		1,976				.81	09/01/2023
36204C-N6-4	GOVERNMENT NATIONAL MORT-POOL #365913		12/01/2018	PAYDOWN		23,125	23,125	23,328	23,223		(98)		(98)		23,125				.1	01/01/2024
36204C-OB-0	GOVERNMENT NATIONAL MORT-POOL #365950		12/01/2018	PAYDOWN		494	494	498	496		(2)		(2)		494				.18	11/01/2023
36204C-TP-6	GOVERNMENT NATIONAL MORT-POOL #366058		12/01/2018	PAYDOWN		178	178	179	179						178				.5	12/01/2023
36204C-W6-4	GOVERNMENT NATIONAL MORT-POOL #366169		12/01/2018	PAYDOWN		37	37	38	37						37				.2	01/01/2024
36204C-Y5-4	GOVERNMENT NATIONAL MORT-POOL #366232		12/01/2018	PAYDOWN		4,027	4,027	4,064	4,044		(16)		(16)		4,027				.171	01/01/2024
36204D-D4-8	GOVERNMENT NATIONAL MORT-POOL #366523		12/01/2018	PAYDOWN		995	995	1,004	999		(4)		(4)		995				.35	10/01/2023
36204D-EW-5	GOVERNMENT NATIONAL MORT-POOL #366549		12/01/2018	PAYDOWN		1,900	1,900	1,918	1,908		(8)		(8)		1,900				.68	01/01/2024
36204D-FU-8	GOVERNMENT NATIONAL MORT-POOL #366579		12/01/2018	PAYDOWN		368	368	372	370		(2)		(2)		368				.15	01/01/2024
36204D-JX-8	GOVERNMENT NATIONAL MORT-POOL #366678		12/01/2018	PAYDOWN		692	692	699	695		(3)		(3)		692				.25	01/01/2024
36204D-KG-3	GOVERNMENT NATIONAL MORT-POOL #366695		12/01/2018	PAYDOWN		1,277	1,277	1,452	1,389		(112)		(112)		1,277				.32	01/01/2024
36204D-LC-1	GOVERNMENT NATIONAL MORT-POOL #366723		12/01/2018	PAYDOWN		74	74	71	72		1		1		74				.3	02/01/2024
36204D-MP-1	GOVERNMENT NATIONAL MORT-POOL #366766		12/01/2018	PAYDOWN		310	310	352	349		(39)		(39)		310				.11	04/01/2024
36204D-SU-4	GOVERNMENT NATIONAL MORT-POOL #366931		12/01/2018	PAYDOWN		152	152	154	153		(1)		(1)		152				.6	10/01/2024

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36204E-2U-0	GOVERNMENT NATIONAL MORT-POOL #368087		12/01/2018	PAYDOWN		1,678	1,678	1,693	1,684		(7)		(7)		1,678				.60	12/01/2023
36204F-2G-8	GOVERNMENT NATIONAL MORT-POOL #368975		12/01/2018	PAYDOWN		13,259	13,259	11,938	12,550		708		708		13,259				.599	02/01/2024
36204F-4D-3	GOVERNMENT NATIONAL MORT-POOL #369020		12/01/2018	PAYDOWN		1,191	1,191	1,202	1,196		(5)		(5)		1,191				.42	12/01/2023
36204F-E3-4	GOVERNMENT NATIONAL MORT-POOL #368354		12/01/2018	PAYDOWN		3,208	3,208	3,238	3,221		(13)		(13)		3,208				.114	01/01/2024
36204F-EN-0	GOVERNMENT NATIONAL MORT-POOL #368341		12/01/2018	PAYDOWN		440	440	448	445		(5)		(5)		440				.118	01/01/2024
36204F-LB-8	GOVERNMENT NATIONAL MORT-POOL #368522		12/01/2018	PAYDOWN		6,041	6,041	5,811	5,901		140		140		6,041				.167	03/01/2024
36204F-NS-9	GOVERNMENT NATIONAL MORT-POOL #368601		12/01/2018	PAYDOWN		20	20	20	20						20					03/01/2024
36204F-UE-2	GOVERNMENT NATIONAL MORT-POOL #368781		12/01/2018	PAYDOWN		41	41	41	41						41					10/01/2023
36204F-UV-4	GOVERNMENT NATIONAL MORT-POOL #368796		12/01/2018	PAYDOWN		1,441	1,441	1,454	1,447		(6)		(6)		1,441				.51	01/01/2024
36204F-WN-0	GOVERNMENT NATIONAL MORT-POOL #368853		12/01/2018	PAYDOWN		65	65	65	65						65					11/01/2023
36204F-XY-5	GOVERNMENT NATIONAL MORT-POOL #368895		12/01/2018	PAYDOWN		1,753	1,753	1,769	1,760		(8)		(8)		1,753				.62	01/01/2024
36204G-5Y-4	GOVERNMENT NATIONAL MORT-POOL #369963		12/01/2018	PAYDOWN		285	285	289	287		(2)		(2)		285				.12	09/01/2023
36204G-FZ-0	GOVERNMENT NATIONAL MORT-POOL #369284		12/01/2018	PAYDOWN		18	18	18	18						18					02/01/2024
36204G-KN-1	GOVERNMENT NATIONAL MORT-POOL #369401		12/01/2018	PAYDOWN		323	323	326	324		(1)		(1)		323				.11	01/01/2024
36204G-XR-8	GOVERNMENT NATIONAL MORT-POOL #369788		12/01/2018	PAYDOWN		776	776	783	779		(3)		(3)		776				.28	11/01/2023
36204G-Y3-0	GOVERNMENT NATIONAL MORT-POOL #369830		12/01/2018	PAYDOWN		748	748	755	751		(3)		(3)		748				.36	12/01/2023
36204H-5N-6	GOVERNMENT NATIONAL MORT-POOL #370853		12/01/2018	PAYDOWN		2,161	2,161	2,181	2,170		(9)		(9)		2,161				.77	10/01/2023
36204H-BU-3	GOVERNMENT NATIONAL MORT-POOL #370051		12/01/2018	PAYDOWN		819	819	827	823		(4)		(4)		819				.29	11/01/2023
36204H-CD-0	GOVERNMENT NATIONAL MORT-POOL #370068		07/01/2018	PAYDOWN		2,675	2,675	2,700	2,692		(17)		(17)		2,675				.82	11/01/2023
36204H-DY-3	GOVERNMENT NATIONAL MORT-POOL #370119		12/01/2018	PAYDOWN		1,295	1,295	1,312	1,301		(7)		(7)		1,295				.53	11/01/2023
36204H-E9-7	GOVERNMENT NATIONAL MORT-POOL #370160		12/01/2018	PAYDOWN		30	30	30	30						30					12/01/2023
36204H-KC-3	GOVERNMENT NATIONAL MORT-POOL #370291		12/01/2018	PAYDOWN		1,158	1,158	1,169	1,163		(5)		(5)		1,158				.41	12/01/2023
36204H-KQ-2	GOVERNMENT NATIONAL MORT-POOL #370303		12/01/2018	PAYDOWN		1,331	1,331	1,343	1,336		(5)		(5)		1,331				.32	01/01/2024
36204H-LJ-7	GOVERNMENT NATIONAL MORT-POOL #370329		12/01/2018	PAYDOWN		215	215	247	234		(18)		(18)		215				.8	11/01/2023
36204H-XB-1	GOVERNMENT NATIONAL MORT-POOL #370674		12/01/2018	PAYDOWN		20,249	20,249	20,183	20,200		49		49		20,249				.598	11/01/2023
36204H-ZP-8	GOVERNMENT NATIONAL MORT-POOL #370750		12/01/2018	PAYDOWN		326	326	375	354		(28)		(28)		326				.12	09/01/2023
36204J-6J-0	GOVERNMENT NATIONAL MORT-POOL #371773		12/01/2018	PAYDOWN		2,675	2,675	2,699	2,690		(15)		(15)		2,675				.106	05/01/2024
36204J-C5-3	GOVERNMENT NATIONAL MORT-POOL #370992		12/01/2018	PAYDOWN		1,463	1,463	1,476	1,469		(6)		(6)		1,463				.52	12/01/2023
36204J-DC-7	GOVERNMENT NATIONAL MORT-POOL #370999		12/01/2018	PAYDOWN		1,677	1,677	1,614	1,638		40		40		1,677				.36	01/01/2024
36204J-EW-2	GOVERNMENT NATIONAL MORT-POOL #371049		12/01/2018	PAYDOWN		1,143	1,143	1,159	1,150		(7)		(7)		1,143				.47	03/01/2024
36204J-JF-4	GOVERNMENT NATIONAL MORT-POOL #371162		12/01/2018	PAYDOWN		259	259	261	260		(1)		(1)		259				.10	10/01/2023
36204J-JX-5	GOVERNMENT NATIONAL MORT-POOL #371178		12/01/2018	PAYDOWN		761	761	759	760		2		2		761				.27	11/01/2023
36204J-MD-5	GOVERNMENT NATIONAL MORT-POOL #371256		12/01/2018	PAYDOWN		578	578	584	581		(2)		(2)		578				.21	01/01/2024
36204K-AB-9	GOVERNMENT NATIONAL MORT-POOL #371802		12/01/2018	PAYDOWN		483	483	492	488		(5)		(5)		483				.28	05/01/2024
36204K-DA-2	GOVERNMENT NATIONAL MORT-POOL #371923		12/01/2018	PAYDOWN		839	839	807	819		20		20		839				.30	03/01/2024
36204K-HJ-5	GOVERNMENT NATIONAL MORT-POOL #372033		12/01/2018	PAYDOWN		884	884	893	889		(4)		(4)		884				.31	01/01/2024
36204K-KC-2	GOVERNMENT NATIONAL MORT-POOL #372475		12/01/2018	PAYDOWN		27	27	27	27						27					01/01/2028
36204L-CQ-2	GOVERNMENT NATIONAL MORT-POOL #372779		12/01/2018	PAYDOWN		48	48	49	49		(1)		(1)		48				.2	01/01/2024
36204L-DP-3	GOVERNMENT NATIONAL MORT-POOL #372810		12/01/2018	PAYDOWN		21	21	21	21						21					10/01/2023
36204L-KM-2	GOVERNMENT NATIONAL MORT-POOL #373000		12/01/2018	PAYDOWN		3,890	3,890	3,742	3,796		94		94		3,890				.138	04/01/2024
36204L-YF-2	GOVERNMENT NATIONAL MORT-POOL #373410		12/01/2018	PAYDOWN		5,362	5,362	6,161	5,823		(460)		(460)		5,362				.191	11/01/2023
36204N-FV-4	GOVERNMENT NATIONAL MORT-POOL #374680		12/01/2018	PAYDOWN		977	977	986	981		(4)		(4)		977				.44	03/01/2024
36204N-L6-2	GOVERNMENT NATIONAL MORT-POOL #374849		12/01/2018	PAYDOWN		107	107	108	107		(1)		(1)		107				.4	12/01/2023
36204N-HD-5	GOVERNMENT NATIONAL MORT-POOL #374888		12/01/2018	PAYDOWN		1,651	1,651	1,666	1,658		(7)		(7)		1,651				.36	01/01/2024
36204N-XH-5	GOVERNMENT NATIONAL MORT-POOL #375180		12/01/2018	PAYDOWN		977	977	995	986		(8)		(8)		977				.36	01/01/2024
36204P-QL-9	GOVERNMENT NATIONAL MORT-POOL #375859		12/01/2018	PAYDOWN		1,429	1,429	1,442	1,435		(6)		(6)		1,429				.50	02/01/2024
36204P-TE-2	GOVERNMENT NATIONAL MORT-POOL #375849		12/01/2018	PAYDOWN		213	213	215	215		(3)		(3)		213				.7	02/01/2024
36204Q-2U-3	GOVERNMENT NATIONAL MORT-POOL #377087		12/01/2018	PAYDOWN		8,814	8,814	8,895	8,851		(37)		(37)		8,814				.196	12/01/2023
36204Q-3B-4	GOVERNMENT NATIONAL MORT-POOL #377094		06/01/2018	PAYDOWN		510	510	515	513		(3)		(3)		510				.11	12/01/2023
36204Q-AS-9	GOVERNMENT NATIONAL MORT-POOL #376317		12/01/2018	PAYDOWN		158	158	160	159		(2)		(2)		158				.6	01/01/2024
36204Q-BN-9	GOVERNMENT NATIONAL MORT-POOL #376345		12/01/2018	PAYDOWN		18,008	18,008	17,949	17,966		42		42		18,008				.608	12/01/2023
36204Q-DC-1	GOVERNMENT NATIONAL MORT-POOL #376399		12/01/2018	PAYDOWN		13,353	13,353	13,477	13,422		(69)		(69)		13,353				.475	02/01/2024
36204Q-ES-5	GOVERNMENT NATIONAL MORT-POOL #376445		12/01/2018	PAYDOWN		10,972	10,972	11,073	11,019		(47)		(47)		10,972				.404	04/01/2024
36204Q-FE-5	GOVERNMENT NATIONAL MORT-POOL #376465		02/01/2018	PAYDOWN		15,983	15,983	15,376	15,657		327		327		15,983				.86	04/01/2024
36204Q-GP-9	GOVERNMENT NATIONAL MORT-POOL #376506		12/01/2018	PAYDOWN		819	819	788	800		19		19		819				.29	05/01/2024
36204Q-RE-2	GOVERNMENT NATIONAL MORT-POOL #376785		12/01/2018	PAYDOWN		19	19	20	20						19					12/01/2023
36204Q-RL-6	GOVERNMENT NATIONAL MORT-POOL #376791		12/01/2018	PAYDOWN		118	118	120	120		(1)		(1)		118				.4	02/01/2024
36204Q-RR-3	GOVERNMENT NATIONAL MORT-POOL #376796		12/01/2018	PAYDOWN		68	68	69	69						68				.2	03/01/2024

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36204R-6J-2	GOVERNMENT NATIONAL MORT-POOL #378073		12/01/2018	PAYDOWN		1,280	1,280	1,292	1,286		(5)		(5)		1,280				.44	02/01/2024
36204R-AY-4	GOVERNMENT NATIONAL MORT-POOL #377223		12/01/2018	PAYDOWN		4,357	4,357	4,436	4,403		(46)		(46)		4,357				.160	07/01/2024
36204R-CA-4	GOVERNMENT NATIONAL MORT-POOL #377265		12/01/2018	PAYDOWN		6,688	6,688	6,936	6,824		(137)		(137)		6,688				.312	09/01/2026
36204R-V7-7	GOVERNMENT NATIONAL MORT-POOL #377934		12/01/2018	PAYDOWN		14	14	14	14						14					02/01/2024
36204R-YN-2	GOVERNMENT NATIONAL MORT-POOL #377917		12/01/2018	PAYDOWN		3,085	3,085	3,113	3,100		(16)		(16)		3,085				.110	01/01/2024
36204S-EY-8	GOVERNMENT NATIONAL MORT-POOL #378251		12/01/2018	PAYDOWN		7,471	7,471	7,540	7,502		(30)		(30)		7,471				.240	01/01/2024
36204S-M6-0	GOVERNMENT NATIONAL MORT-POOL #378481		07/01/2018	PAYDOWN		6,240	6,240	6,003	6,116		124		124		6,240				.195	02/01/2024
36204T-HD-9	GOVERNMENT NATIONAL MORT-POOL #379228		12/01/2018	PAYDOWN		.61	.61	.61	.61						.61				.2	03/01/2024
36204T-PQ-1	GOVERNMENT NATIONAL MORT-POOL #379431		12/01/2018	PAYDOWN		.362	.362	.366	.364		(2)		(2)		.362				.13	04/01/2024
36204U-RQ-6	GOVERNMENT NATIONAL MORT-POOL #380395		12/01/2018	PAYDOWN		1,648	1,648	1,874	1,786		(138)		(138)		1,648				.59	12/01/2023
36204V-2E-8	GOVERNMENT NATIONAL MORT-POOL #381573		12/01/2018	PAYDOWN		901	901	910	905		(4)		(4)		901				.32	01/01/2024
36204V-AP-4	GOVERNMENT NATIONAL MORT-POOL #380814		12/01/2018	PAYDOWN		314	314	317	315		(1)		(1)		314				.12	02/01/2024
36204V-WQ-8	GOVERNMENT NATIONAL MORT-POOL #381455		11/01/2018	PAYDOWN		11,117	11,117	11,219	11,160		(43)		(43)		11,117				.548	12/01/2023
36204W-P9-2	GOVERNMENT NATIONAL MORT-POOL #382148		12/01/2018	PAYDOWN		383	383	387	385		(2)		(2)		383				.14	12/01/2023
36204W-PL-5	GOVERNMENT NATIONAL MORT-POOL #382127		12/01/2018	PAYDOWN		1,933	1,933	1,951	1,941		(8)		(8)		1,933				.69	01/01/2024
36204W-QP-5	GOVERNMENT NATIONAL MORT-POOL #382162		12/01/2018	PAYDOWN		225	225	230	227		(2)		(2)		225				.3	01/01/2024
36204X-NB-7	GOVERNMENT NATIONAL MORT-POOL #382986		12/01/2018	PAYDOWN		.86	.86	.86	.86						.86				.9	01/01/2024
36204Y-AD-5	GOVERNMENT NATIONAL MORT-POOL #383504		12/01/2018	PAYDOWN		979	979	988	983		(4)		(4)		979				.35	03/01/2024
36204Y-CX-9	GOVERNMENT NATIONAL MORT-POOL #383586		04/01/2018	PAYDOWN		.87	.87	.88	.88		(1)		(1)		.87				.2	04/01/2024
36204Y-FX-6	GOVERNMENT NATIONAL MORT-POOL #383682		12/01/2018	PAYDOWN		2,248	2,248	2,268	2,257		(10)		(10)		2,248				.72	02/01/2024
36204Y-MY-6	GOVERNMENT NATIONAL MORT-POOL #383875		06/01/2018	PAYDOWN		820	820	948	897		(77)		(77)		820				.21	04/01/2024
36205A-5C-4	GOVERNMENT NATIONAL MORT-POOL #385243		12/01/2018	PAYDOWN		119	119	120	120						119				.4	04/01/2024
36205A-5Z-3	GOVERNMENT NATIONAL MORT-POOL #385264		12/01/2018	PAYDOWN		137	137	139	138		(1)		(1)		137				.6	06/01/2024
36205B-EF-5	GOVERNMENT NATIONAL MORT-POOL #385434		12/01/2018	PAYDOWN		174	174	176	175		(1)		(1)		174				.6	02/01/2024
36205B-EG-3	GOVERNMENT NATIONAL MORT-POOL #385435		12/01/2018	PAYDOWN		881	881	889	884		(4)		(4)		881				.34	02/01/2024
36205B-LA-8	GOVERNMENT NATIONAL MORT-POOL #385621		12/01/2018	PAYDOWN		368	368	371	369		(1)		(1)		368				.13	04/01/2024
36205B-TE-2	GOVERNMENT NATIONAL MORT-POOL #385849		12/01/2018	PAYDOWN		.77	.77	.79	.78		(1)		(1)		.77				.3	08/01/2024
36205B-WH-1	GOVERNMENT NATIONAL MORT-POOL #385948		12/01/2018	PAYDOWN		1,283	1,283	1,322	1,301		(19)		(19)		1,283				.60	10/01/2024
36205B-YP-1	GOVERNMENT NATIONAL MORT-POOL #386018		12/01/2018	PAYDOWN		234	234	240	237		(3)		(3)		234				.9	08/01/2025
36205C-G2-0	GOVERNMENT NATIONAL MORT-POOL #386417		12/01/2018	PAYDOWN		.34	.34	.34	.34						.34					03/01/2024
36205C-V5-6	GOVERNMENT NATIONAL MORT-POOL #386836		12/01/2018	PAYDOWN		8,487	8,487	8,165	8,296		191		191		8,487				.429	04/01/2024
36205D-CX-4	GOVERNMENT NATIONAL MORT-POOL #387186		02/01/2018	PAYDOWN		31	31	31	31						31					02/01/2024
36205D-DD-7	GOVERNMENT NATIONAL MORT-POOL #387200		12/01/2018	PAYDOWN		114	114	132	124		(11)		(11)		114				.4	03/01/2024
36205E-EF-9	GOVERNMENT NATIONAL MORT-POOL #388134		02/01/2018	PAYDOWN		463	463	468	465		(2)		(2)		463				.2	02/01/2024
36205E-FC-5	GOVERNMENT NATIONAL MORT-POOL #388163		12/01/2018	PAYDOWN		1,002	1,002	964	981		21		21		1,002				.36	03/01/2024
36205E-K3-9	GOVERNMENT NATIONAL MORT-POOL #388314		12/01/2018	PAYDOWN		1,106	1,106	1,116	1,111		(5)		(5)		1,106				.43	02/01/2024
36205F-5Z-2	GOVERNMENT NATIONAL MORT-POOL #389764		12/01/2018	PAYDOWN		163	163	169	168		(5)		(5)		163				.4	11/01/2032
36205F-7A-5	GOVERNMENT NATIONAL MORT-POOL #389789		12/01/2018	PAYDOWN		732	732	757	750		(18)		(18)		732				.24	12/01/2032
36205F-HE-6	GOVERNMENT NATIONAL MORT-POOL #389129		12/01/2018	PAYDOWN		3,177	3,177	3,229	3,209		(32)		(32)		3,177				.123	05/01/2028
36205G-EP-2	GOVERNMENT NATIONAL MORT-POOL #389942		12/01/2018	PAYDOWN		93	93	94	93						93				.3	03/01/2024
36205G-UX-7	GOVERNMENT NATIONAL MORT-POOL #390398		06/01/2018	PAYDOWN		397	397	407	402		(5)		(5)		397				.11	03/01/2024
36205G-VF-5	GOVERNMENT NATIONAL MORT-POOL #390414		12/01/2018	PAYDOWN		630	630	638	633		(3)		(3)		630				.26	04/01/2024
36205H-SR-1	GOVERNMENT NATIONAL MORT-POOL #391228		12/01/2018	PAYDOWN		140	140	142	141		(1)		(1)		140				.6	04/01/2024
36205J-RL-1	GOVERNMENT NATIONAL MORT-POOL #392091		12/01/2018	PAYDOWN		1,363	1,363	1,375	1,372		(9)		(9)		1,363				.51	04/01/2024
36205J-U9-4	GOVERNMENT NATIONAL MORT-POOL #392208		12/01/2018	PAYDOWN		690	690	798	757		(67)		(67)		690				.25	05/01/2024
36205J-YD-1	GOVERNMENT NATIONAL MORT-POOL #392308		12/01/2018	PAYDOWN		514	514	523	518		(4)		(4)		514				.26	06/01/2024
36205K-4Y-5	GOVERNMENT NATIONAL MORT-POOL #393339		12/01/2018	PAYDOWN		4,551	4,551	4,619	4,601		(49)		(49)		4,551				.175	02/01/2027
36205K-Y8-9	GOVERNMENT NATIONAL MORT-POOL #393235		12/01/2018	PAYDOWN		2,795	2,795	2,882	2,847		(53)		(53)		2,795				.130	01/01/2027
36205L-F3-9	GOVERNMENT NATIONAL MORT-POOL #393586		12/01/2018	PAYDOWN		962	962	971	966		(4)		(4)		962				.34	04/01/2024
36205L-QM-5	GOVERNMENT NATIONAL MORT-POOL #393860		12/01/2018	PAYDOWN		452	452	435	443		9		9		452				.16	04/01/2024
36205M-2R-8	GOVERNMENT NATIONAL MORT-POOL #395084		12/01/2018	PAYDOWN		1,728	1,728	1,751	1,738		(11)		(11)		1,728				.80	06/01/2024
36205N-3R-5	GOVERNMENT NATIONAL MORT-POOL #396008		12/01/2018	PAYDOWN		55	55	56	55						55				.2	05/01/2024
36205R-SA-6	GOVERNMENT NATIONAL MORT-POOL #398413		12/01/2018	PAYDOWN		2,233	2,233	2,245	2,240		(8)		(8)		2,233				.61	06/01/2029
36205S-JD-8	GOVERNMENT NATIONAL MORT-POOL #399060		12/01/2018	PAYDOWN		466	466	460	462		4		4		466				.17	06/01/2029
36205S-NQ-4	GOVERNMENT NATIONAL MORT-POOL #399199		05/01/2018	PAYDOWN		19	19	20	20		(1)		(1)		19					06/01/2029
36205W-Z9-0	GOVERNMENT NATIONAL MORT-POOL #403168		12/01/2018	PAYDOWN		208	208	211	211		(3)		(3)		208				.8	04/01/2028
36205X-YA-6	GOVERNMENT NATIONAL MORT-POOL #404005		12/01/2018	PAYDOWN		4,935	4,935	5,224	5,118		(183)		(183)		4,935				.98	11/01/2024
36206A-W3-3	GOVERNMENT NATIONAL MORT-POOL #405766		12/01/2018	PAYDOWN		2,537	2,537	2,625	2,600		(63)		(63)		2,537				.104	10/01/2032

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/Adjusted Carrying Value	Unrealized Valuation Increase/Decrease	Current Year's (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Book/Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/Stock Dividends Received During Year	Stated Contractual Maturity Date
36206F-5F-5	GOVERNMENT NATIONAL MORT-POOL #410446		12/01/2018	PAYDOWN		206	206	210	208		(2)		(2)		206				.8	02/01/2028
36206F-5Q-1	GOVERNMENT NATIONAL MORT-POOL #410455		12/01/2018	PAYDOWN		10	10	10	10						10					03/01/2028
36206L-6R-5	GOVERNMENT NATIONAL MORT-POOL #414980		12/01/2018	PAYDOWN		9,293	9,293	9,133	9,155		138		138		9,293				486	01/01/2026
36206N-TQ-8	GOVERNMENT NATIONAL MORT-POOL #416459		12/01/2018	PAYDOWN		2,485	2,485	2,501	2,494		(9)		(9)		2,485				.88	12/01/2028
36206P-SZ-7	GOVERNMENT NATIONAL MORT-POOL #417337		12/01/2018	PAYDOWN		.62	.62	.59	.60		.2		.2		.62				.2	03/01/2026
36206Q-LB-2	GOVERNMENT NATIONAL MORT-POOL #418278		12/01/2018	PAYDOWN		1,725	1,725	1,638	1,671		54		54		1,725				.61	04/01/2026
36206R-GY-6	GOVERNMENT NATIONAL MORT-POOL #418815		12/01/2018	PAYDOWN		2,502	2,502	2,566	2,536		(34)		(34)		2,502				.96	11/01/2025
36206W-5E-1	GOVERNMENT NATIONAL MORT-POOL #423945		12/01/2018	PAYDOWN		24,319	24,319	25,224	24,964		(645)		(645)		24,319				1,424	10/01/2026
36206W-7A-7	GOVERNMENT NATIONAL MORT-POOL #423989		12/01/2018	PAYDOWN		1,204	1,204	1,249	1,247		(43)		(43)		1,204				.56	08/01/2026
36206W-C3-7	GOVERNMENT NATIONAL MORT-POOL #423190		12/01/2018	PAYDOWN		5,202	5,202	5,364	5,298		(96)		(96)		5,202				246	12/01/2027
36206W-Y9-0	GOVERNMENT NATIONAL MORT-POOL #423836		12/01/2018	PAYDOWN		.31	.31	.34	.33		(1)		(1)		.31				.2	08/01/2026
36206W-YX-7	GOVERNMENT NATIONAL MORT-POOL #423826		12/01/2018	PAYDOWN		2,778	2,778	2,881	2,836		(58)		(58)		2,778				130	06/01/2026
36206Y-RM-5	GOVERNMENT NATIONAL MORT-POOL #425392		12/01/2018	PAYDOWN		.173	.173	.200	.190		(18)		(18)		.173				.7	06/01/2026
36207A-7M-8	GOVERNMENT NATIONAL MORT-POOL #426700		12/01/2018	PAYDOWN		1,123	1,123	1,141	1,134		(11)		(11)		1,123				.43	06/01/2028
36207A-A3-6	GOVERNMENT NATIONAL MORT-POOL #425826		12/01/2018	PAYDOWN		1,283	1,283	1,276	1,278		.5		.5		1,283				.53	01/01/2028
36207A-DH-2	GOVERNMENT NATIONAL MORT-POOL #425904		12/01/2018	PAYDOWN		5,872	5,872	6,090	5,995		(123)		(123)		5,872				279	10/01/2026
36207A-HK-1	GOVERNMENT NATIONAL MORT-POOL #426034		12/01/2018	PAYDOWN		.170	.170	.171	.172		(2)		(2)		.170				.6	04/01/2026
36207A-LG-5	GOVERNMENT NATIONAL MORT-POOL #426127		12/01/2018	PAYDOWN		1,873	1,873	2,214	2,102		(229)		(229)		1,873				.60	07/01/2026
36207A-LW-0	GOVERNMENT NATIONAL MORT-POOL #426141		12/01/2018	PAYDOWN		262	262	264	264		(2)		(2)		262				9	05/01/2026
36207B-5F-3	GOVERNMENT NATIONAL MORT-POOL #427546		12/01/2018	PAYDOWN		4,778	4,778	4,846	4,835		(58)		(58)		4,778				170	12/01/2031
36207D-YR-1	GOVERNMENT NATIONAL MORT-POOL #429220		12/01/2018	PAYDOWN		.807	.807	.812	.809		(3)		(3)		.807				.28	04/01/2026
36207E-M7-6	GOVERNMENT NATIONAL MORT-POOL #429782		12/01/2018	PAYDOWN		2,154	2,154	2,207	2,193		(39)		(39)		2,154				.39	12/01/2033
36207F-KA-8	GOVERNMENT NATIONAL MORT-POOL #430589		12/01/2018	PAYDOWN		629	629	651	642		(14)		(14)		629				.21	02/01/2028
36207J-SZ-2	GOVERNMENT NATIONAL MORT-POOL #433864		12/01/2018	PAYDOWN		1,519	1,519	1,476	1,489		30		30		1,519				.55	07/01/2028
36207J-6J-7	GOVERNMENT NATIONAL MORT-POOL #433873		12/01/2018	PAYDOWN		.171	.171	.173	.174		(3)		(3)		.171				.6	07/01/2028
36207J-6T-5	GOVERNMENT NATIONAL MORT-POOL #433882		12/01/2018	PAYDOWN		1,343	1,343	1,304	1,318		25		25		1,343				.52	07/01/2028
36207J-G3-1	GOVERNMENT NATIONAL MORT-POOL #433218		12/01/2018	PAYDOWN		33,032	33,032	34,260	33,716		(684)		(684)		33,032				1,368	09/01/2026
36207J-KU-6	GOVERNMENT NATIONAL MORT-POOL #433307		12/01/2018	PAYDOWN		2,449	2,449	2,540	2,501		(52)		(52)		2,449				.114	11/01/2026
36207J-N9-0	GOVERNMENT NATIONAL MORT-POOL #433416		12/01/2018	PAYDOWN		.116	.116	.119	.118		(2)		(2)		.116				.5	02/01/2027
36207J-U7-6	GOVERNMENT NATIONAL MORT-POOL #433606		12/01/2018	PAYDOWN		1,798	1,798	1,843	1,825		(27)		(27)		1,798				.88	02/01/2028
36207J-UA-9	GOVERNMENT NATIONAL MORT-POOL #433577		12/01/2018	PAYDOWN		368	368	376	373		(5)		(5)		368				.14	02/01/2028
36207J-VT-7	GOVERNMENT NATIONAL MORT-POOL #433626		12/01/2018	PAYDOWN		774	774	798	796		(22)		(22)		774				.30	02/01/2028
36207J-YX-5	GOVERNMENT NATIONAL MORT-POOL #433726		12/01/2018	PAYDOWN		.5	.5	.5	.5						.5					04/01/2028
36207J-ZR-7	GOVERNMENT NATIONAL MORT-POOL #433752		12/01/2018	PAYDOWN		6,236	6,236	6,376	6,325		(89)		(89)		6,236				210	05/01/2028
36207K-AH-3	GOVERNMENT NATIONAL MORT-POOL #433908		12/01/2018	PAYDOWN		.11	.11	.11	.11						.11					08/01/2028
36207K-AQ-3	GOVERNMENT NATIONAL MORT-POOL #433915		12/01/2018	PAYDOWN		8,939	8,939	9,014	8,985		(46)		(46)		8,939				.298	11/01/2028
36207K-AU-4	GOVERNMENT NATIONAL MORT-POOL #433919		12/01/2018	PAYDOWN		1,031	1,031	1,002	1,005		26		26		1,031				.40	08/01/2028
36207K-B6-6	GOVERNMENT NATIONAL MORT-POOL #433961		12/01/2018	PAYDOWN		1,667	1,667	1,707	1,695		(28)		(28)		1,667				.64	08/01/2028
36207K-J2-7	GOVERNMENT NATIONAL MORT-POOL #434181		12/01/2018	PAYDOWN		240	240	242	241		(1)		(1)		240				.7	02/01/2029
36207K-LS-7	GOVERNMENT NATIONAL MORT-POOL # 434237		12/01/2018	PAYDOWN		3,738	3,738	3,867	3,824		(87)		(87)		3,738				.89	03/01/2029
36207K-WC-0	GOVERNMENT NATIONAL MORT-POOL #434543		12/01/2018	PAYDOWN		184	184	185	185						184				.10	09/01/2029
36207L-LU-0	GOVERNMENT NATIONAL MORT-POOL #435387		12/01/2018	PAYDOWN		1,250	1,250	1,289	1,273		(22)		(22)		1,250				.58	03/01/2027
36207M-4N-3	GOVERNMENT NATIONAL MORT-POOL #436529		12/01/2018	PAYDOWN		1,536	1,536	1,594	1,598		(61)		(61)		1,536				.72	11/01/2026
36207M-QC-3	GOVERNMENT NATIONAL MORT-POOL #436151		11/01/2018	PAYDOWN		7,596	7,596	7,821	7,728		(130)		(130)		7,596				522	01/01/2028
36207M-UM-6	GOVERNMENT NATIONAL MORT-POOL #436288		12/01/2018	PAYDOWN		148	148	151	150		(2)		(2)		148				.6	03/01/2028
36207N-6R-0	GOVERNMENT NATIONAL MORT-POOL # 437480		12/01/2018	PAYDOWN		4,067	4,067	4,208	4,179		(112)		(112)		4,067				.131	03/01/2029
36207Q-JY-4	GOVERNMENT NATIONAL MORT-POOL #438679		12/01/2018	PAYDOWN		210	210	217	215		(5)		(5)		210				.9	03/01/2027
36207R-F2-6	GOVERNMENT NATIONAL MORT-POOL #439485		12/01/2018	PAYDOWN		31,837	31,837	32,300	32,099		(261)		(261)		31,837				1,107	01/01/2027
36207R-GE-9	GOVERNMENT NATIONAL MORT-POOL #439497		12/01/2018	PAYDOWN		.53	.53	.64	.63		(10)		(10)		.53				.2	02/01/2027
36207T-X3-0	GOVERNMENT NATIONAL MORT-POOL #441798		12/01/2018	PAYDOWN		627	627	670	658		(31)		(31)		627				.26	03/01/2027
36207T-XM-8	GOVERNMENT NATIONAL MORT-POOL #441784		12/01/2018	PAYDOWN		2,389	2,389	2,463	2,432		(43)		(43)		2,389				.111	01/01/2027
36207U-AK-4	GOVERNMENT NATIONAL MORT-POOL #442010		12/01/2018	PAYDOWN		6,716	6,716	6,966	6,877		(161)		(161)		6,716				.287	03/01/2027
36207U-D2-1	GOVERNMENT NATIONAL MORT-POOL #442121		12/01/2018	PAYDOWN		12,125	12,125	12,576	12,383		(258)		(258)		12,125				.727	11/01/2026
36207U-ED-6	GOVERNMENT NATIONAL MORT-POOL #442132		12/01/2018	PAYDOWN		19,918	19,918	20,659	20,345		(427)		(427)		19,918				.360	11/01/2026
36207U-FT-0	GOVERNMENT NATIONAL MORT-POOL #442178		12/01/2018	PAYDOWN		2,022	2,022	2,097	2,067		(45)		(45)		2,022				.88	12/01/2026
36207U-GE-1	GOVERNMENT NATIONAL MORT-POOL #442453		12/01/2018	PAYDOWN		4,147	4,147	4,214	4,188		(42)		(42)		4,147				.159	05/01/2028
36207U-TB-4	GOVERNMENT NATIONAL MORT-POOL #442546		12/01/2018	PAYDOWN		1,574	1,574	1,622	1,604		(30)		(30)		1,574				.69	05/01/2027
36207V-2M-7	GOVERNMENT NATIONAL MORT-POOL #443680		12/01/2018	PAYDOWN		310	310	310	309		1		1		310				.18	06/01/2028

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
36207V-4M-5	GOVERNMENT NATIONAL MORT-POOL #443728		12/01/2018	PAYDOWN		867	867	898	889		(22)		(22)		867				.29	07/01/2028	
36207V-4A-0	GOVERNMENT NATIONAL MORT-POOL #443541		12/01/2018	PAYDOWN		.74	.74	.75	.75		(1)		(1)		.74				.3	01/01/2028	
36207V-X9-2	GOVERNMENT NATIONAL MORT-POOL #443604		12/01/2018	PAYDOWN		5,916	5,916	5,722	5,770		147		147		5,916				.178	01/01/2029	
36207W-4C-5	GOVERNMENT NATIONAL MORT-POOL #444619		12/01/2018	PAYDOWN		.102	.102	.110	.107		(5)		(5)		.102				.4	03/01/2027	
36207X-PM-8	GOVERNMENT NATIONAL MORT-POOL #445128		02/01/2018	PAYDOWN		.319	.319	.329	.338		(19)		(19)		.319				.1	02/01/2027	
36208C-F6-9	GOVERNMENT NATIONAL MORT-POOL #446689		12/01/2018	PAYDOWN		952	952	961	957		(6)		(6)		952				.34	09/01/2028	
36208C-F2-5	GOVERNMENT NATIONAL MORT-POOL #446684		12/01/2018	PAYDOWN		6,710	6,710	6,519	6,581		129		129		6,710				.250	08/01/2028	
36208C-JQ-1	GOVERNMENT NATIONAL MORT-POOL #446771		12/01/2018	PAYDOWN		.274	.274	.282	.279		(5)		(5)		.274				.10	10/01/2028	
36208C-N8-6	GOVERNMENT NATIONAL MORT-POOL #446915		12/01/2018	PAYDOWN		642	642	662	655		(13)		(13)		642				.30	05/01/2027	
36208C-RL-3	GOVERNMENT NATIONAL MORT-POOL #446991		12/01/2018	PAYDOWN		2,147	2,147	2,213	2,186		(39)		(39)		2,147				.100	05/01/2027	
36208C-UV-7	GOVERNMENT NATIONAL MORT-POOL #447096		12/01/2018	PAYDOWN		771	771	795	785		(14)		(14)		771				.36	05/01/2027	
36208C-WF-0	GOVERNMENT NATIONAL MORT-POOL #447146		12/01/2018	PAYDOWN		7,885	7,885	8,130	8,031		(146)		(146)		7,885				.289	05/01/2027	
36208D-DM-4	GOVERNMENT NATIONAL MORT-POOL #447508		12/01/2018	PAYDOWN		3,321	3,321	3,425	3,384		(62)		(62)		3,321				.155	04/01/2027	
36208D-F0-3	GOVERNMENT NATIONAL MORT-POOL #447575		12/01/2018	PAYDOWN		1,664	1,664	1,726	1,704		(40)		(40)		1,664				.78	05/01/2027	
36208D-HB-4	GOVERNMENT NATIONAL MORT-POOL #447626		12/01/2018	PAYDOWN		1,700	1,700	1,753	1,731		(31)		(31)		1,700				.80	06/01/2027	
36208D-RJ-6	GOVERNMENT NATIONAL MORT-POOL #447889		12/01/2018	PAYDOWN		2,460	2,460	2,536	2,506		(46)		(46)		2,460				.115	11/01/2027	
36208D-UF-0	GOVERNMENT NATIONAL MORT-POOL #447982		12/01/2018	PAYDOWN		.12	.12	.13	.13						.12					.06	01/2028
36208D-LK-9	GOVERNMENT NATIONAL MORT-POOL #447986		12/01/2018	PAYDOWN		.100	.100	.101	.101		(1)		(1)		.100				.2	06/01/2028	
36208D-UQ-6	GOVERNMENT NATIONAL MORT-POOL #447991		12/01/2018	PAYDOWN		2,006	2,006	2,064	2,043		(36)		(36)		2,006				.82	06/01/2028	
36208D-VN-2	GOVERNMENT NATIONAL MORT-POOL #448021		12/01/2018	PAYDOWN		2,032	2,032	2,094	2,069		(37)		(37)		2,032				.89	04/01/2027	
36208E-6V-0	GOVERNMENT NATIONAL MORT-POOL #449184		12/01/2018	PAYDOWN		.701	.701	.703	.702		(1)		(1)		.701				.27	10/01/2027	
36208E-7D-9	GOVERNMENT NATIONAL MORT-POOL #449192		11/01/2018	PAYDOWN		.402	.402	.415	.415		(13)		(13)		.402				.14	10/01/2027	
36208E-U5-0	GOVERNMENT NATIONAL MORT-POOL #449804		12/01/2018	PAYDOWN		911	911	939	928		(17)		(17)		911				.47	07/01/2027	
36208E-XT-5	GOVERNMENT NATIONAL MORT-POOL #449890		12/01/2018	PAYDOWN		4,314	4,314	4,472	4,426		(111)		(111)		4,314				.164	08/01/2027	
36208E-ZF-3	GOVERNMENT NATIONAL MORT-POOL #449042		12/01/2018	PAYDOWN		2,792	2,792	2,875	2,841		(49)		(49)		2,792				.111	06/01/2028	
36208F-4R-8	GOVERNMENT NATIONAL MORT-POOL #450032		12/01/2018	PAYDOWN		1,513	1,513	1,505	1,507		.6		.6		1,513				.62	07/01/2028	
36208F-OP-3	GOVERNMENT NATIONAL MORT-POOL #449278		12/01/2018	PAYDOWN		.187	.187	.191	.189		(3)		(3)		.187				.7	02/01/2028	
36208F-J7-6	GOVERNMENT NATIONAL MORT-POOL #449486		12/01/2018	PAYDOWN		19,122	19,122	19,406	19,360		(237)		(237)		19,122				.407	11/01/2027	
36208F-KM-1	GOVERNMENT NATIONAL MORT-POOL #449500		12/01/2018	PAYDOWN		1,576	1,576	1,567	1,569		.6		.6		1,576				.65	01/01/2028	
36208F-L5-7	GOVERNMENT NATIONAL MORT-POOL #449548		12/01/2018	PAYDOWN		.109	.109	.112	.111		(2)		(2)		.109				.4	06/01/2028	
36208F-IM-9	GOVERNMENT NATIONAL MORT-POOL #449564		12/01/2018	PAYDOWN		4,088	4,088	4,154	4,134		(46)		(46)		4,088				.158	06/01/2028	
36208F-ZG-8	GOVERNMENT NATIONAL MORT-POOL #449943		12/01/2018	PAYDOWN		.305	.305	.308	.307		(2)		(2)		.305				.11	07/01/2028	
36208G-L2-2	GOVERNMENT NATIONAL MORT-POOL #450445		12/01/2018	PAYDOWN		1,503	1,503	1,740	1,666		(163)		(163)		1,503				.62	12/01/2027	
36208H-LC-8	GOVERNMENT NATIONAL MORT-POOL #451323		12/01/2018	PAYDOWN		.258	.258	.266	.263		(5)		(5)		.258				.13	07/01/2027	
36208H-IM-5	GOVERNMENT NATIONAL MORT-POOL #451364		12/01/2018	PAYDOWN		1,584	1,584	1,633	1,613		(29)		(29)		1,584				.100	08/01/2027	
36208H-NC-6	GOVERNMENT NATIONAL MORT-POOL #451387		12/01/2018	PAYDOWN		1,464	1,464	1,502	1,487		(23)		(23)		1,464				.60	08/01/2027	
36208H-P2-6	GOVERNMENT NATIONAL MORT-POOL #451441		12/01/2018	PAYDOWN		.277	.277	.285	.285		(8)		(8)		.277				.13	09/01/2027	
36208K-A2-5	GOVERNMENT NATIONAL MORT-POOL #452825		12/01/2018	PAYDOWN		1,306	1,306	1,344	1,337		(32)		(32)		1,306				.61	01/01/2028	
36208K-V3-0	GOVERNMENT NATIONAL MORT-POOL #453434		12/01/2018	PAYDOWN		1,083	1,083	1,110	1,100		(17)		(17)		1,083				.42	11/01/2028	
36208L-AE-7	GOVERNMENT NATIONAL MORT-POOL #453705		12/01/2018	PAYDOWN		.520	.520	.536	.531		(10)		(10)		.520				.20	10/01/2027	
36208L-LZ-8	GOVERNMENT NATIONAL MORT-POOL #454044		12/01/2018	PAYDOWN		.160	.160	.162	.161		(1)		(1)		.160				.6	04/01/2028	
36208L-RF-6	GOVERNMENT NATIONAL MORT-POOL #454186		11/01/2018	PAYDOWN		11,193	11,193	10,872	10,979		214		214		11,193				.628	07/01/2028	
36208L-YP-7	GOVERNMENT NATIONAL MORT-POOL #454386		12/01/2018	PAYDOWN		.433	.433	.440	.438		(4)		(4)		.433				.14	04/01/2028	
36208M-BF-1	GOVERNMENT NATIONAL MORT-POOL #454638		12/01/2018	PAYDOWN		1,378	1,378	1,426	1,408		(31)		(31)		1,378				.45	08/01/2028	
36208M-PX-7	GOVERNMENT NATIONAL MORT-POOL #455038		12/01/2018	PAYDOWN		.269	.269	.271	.271		(2)		(2)		.269				.10	12/01/2027	
36208P-KS-6	GOVERNMENT NATIONAL MORT-POOL #456705		03/01/2018	PAYDOWN		.11	.11	.11	.11						.11					.03	01/2028
36208P-N4-6	GOVERNMENT NATIONAL MORT-POOL #456811		02/01/2018	PAYDOWN		.144	.144	.145	.145		(1)		(1)		.144				.1	04/01/2028	
36208P-NB-0	GOVERNMENT NATIONAL MORT-POOL #456786		12/01/2018	PAYDOWN		.33	.33	.33	.33		(1)		(1)		.33					.04	01/2028
36208P-RE-0	GOVERNMENT NATIONAL MORT-POOL #456885		12/01/2018	PAYDOWN		1,209	1,209	1,228	1,221		(12)		(12)		1,209				.46	05/01/2028	
36208P-YK-8	GOVERNMENT NATIONAL MORT-POOL #457114		12/01/2018	PAYDOWN		2,568	2,568	2,584	2,578		(10)		(10)		2,568				.134	12/01/2028	
36208P-YX-0	GOVERNMENT NATIONAL MORT-POOL #457126		12/01/2018	PAYDOWN		.25	.25	.26	.26		(1)		(1)		.25					.02	01/2029
36208Q-3F-1	GOVERNMENT NATIONAL MORT-POOL #458098		12/01/2018	PAYDOWN		.442	.442	.444	.443		(2)		(2)		.442				.16	03/01/2029	
36208Q-3L-8	GOVERNMENT NATIONAL MORT-POOL #458103		07/01/2018	PAYDOWN		5,810	5,810	5,983	5,966		(156)		(156)		5,810				.155	01/01/2028	
36208Q-PC-4	GOVERNMENT NATIONAL MORT-POOL #457719		12/01/2018	PAYDOWN		1,817	1,817	1,872	1,852		(35)		(35)		1,817				.68	01/01/2028	
36208Q-Z7-4	GOVERNMENT NATIONAL MORT-POOL #458066		12/01/2018	PAYDOWN		.716	.716	.720	.718		(3)		(3)		.716				.25	03/01/2029	
36208R-30-5	GOVERNMENT NATIONAL MORT-POOL # 459007		12/01/2018	PAYDOWN		1,821	1,821	1,885	1,863		(42)		(42)		1,821				.60	02/01/2029	
36208R-E0-3	GOVERNMENT NATIONAL MORT-POOL #458343		12/01/2018	PAYDOWN		3,977	3,977	4,036	4,012		(35)		(35)		3,977				.154	11/01/2027	
36208R-F2-5	GOVERNMENT NATIONAL MORT-POOL #458385		12/01/2018	PAYDOWN		1,799	1,799	1,790	1,789		10		10		1,799				.74	02/01/2028	

E14.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36208R-FK-5	GOVERNMENT NATIONAL MORT-POOL #458370		12/01/2018	PAYDOWN		190	190	196	194		(4)		(4)		190				7	01/01/2028
36208R-N3-4	GOVERNMENT NATIONAL MORT-POOL #458610		06/01/2018	PAYDOWN		1,401	1,401	1,423	1,415		(14)		(14)		1,401				40	05/01/2028
36208R-TU-8	GOVERNMENT NATIONAL MORT-POOL #458763		12/01/2018	PAYDOWN		99	99	102	101		(2)		(2)		99				4	01/01/2028
36208R-UY-8	GOVERNMENT NATIONAL MORT-POOL #458799		12/01/2018	PAYDOWN		4,441	4,441	4,491	4,476		(35)		(35)		4,441				289	02/01/2028
36208R-VA-9	GOVERNMENT NATIONAL MORT-POOL #458809		12/01/2018	PAYDOWN		555	555	572	565		(10)		(10)		555				22	02/01/2028
36208R-WU-4	GOVERNMENT NATIONAL MORT-POOL #458859		12/01/2018	PAYDOWN		1,748	1,748	1,788	1,772		(24)		(24)		1,748				77	02/01/2028
36208R-WY-6	GOVERNMENT NATIONAL MORT-POOL #458863		12/01/2018	PAYDOWN		348	348	358	354		(6)		(6)		348				13	02/01/2028
36208R-XV-1	GOVERNMENT NATIONAL MORT-POOL #458892		08/01/2018	PAYDOWN		233	233	240	238		(6)		(6)		233				7	05/01/2028
36208R-YE-8	GOVERNMENT NATIONAL MORT-POOL #458909		12/01/2018	PAYDOWN		1,426	1,426	1,450	1,441		(14)		(14)		1,426				55	07/01/2028
36208R-YF-5	GOVERNMENT NATIONAL MORT-POOL #458910		12/01/2018	PAYDOWN		698	698	695	696		3		3		698				29	07/01/2028
36208T-CI-8	GOVERNMENT NATIONAL MORT-POOL #460085		12/01/2018	PAYDOWN		10,338	10,338	10,507	10,445		(107)		(107)		10,338				453	06/01/2028
36208T-PN-4	GOVERNMENT NATIONAL MORT-POOL #460429		12/01/2018	PAYDOWN		545	545	554	551		(6)		(6)		545				21	07/01/2028
36208T-W7-1	GOVERNMENT NATIONAL MORT-POOL #460670		12/01/2018	PAYDOWN		11	11	11	12						11					01/01/2028
36208T-YP-9	GOVERNMENT NATIONAL MORT-POOL #460718		12/01/2018	PAYDOWN		200	200	203	202		(2)		(2)		200				9	01/01/2028
36208U-HZ-3	GOVERNMENT NATIONAL MORT-POOL #461148		12/01/2018	PAYDOWN		2,760	2,760	2,801	2,792		(32)		(32)		2,760				106	12/01/2027
36208U-KA-4	GOVERNMENT NATIONAL MORT-POOL #461189		12/01/2018	PAYDOWN		156	156	160	158		(3)		(3)		156				6	01/01/2028
36208U-RU-3	GOVERNMENT NATIONAL MORT-POOL #461399		12/01/2018	PAYDOWN		254	254	257	256		(2)		(2)		254				10	01/01/2028
36208V-2A-2	GOVERNMENT NATIONAL MORT-POOL #462569		12/01/2018	PAYDOWN		186	186	189	188		(2)		(2)		186				7	03/01/2028
36208V-6E-0	GOVERNMENT NATIONAL MORT-POOL #462669		12/01/2018	PAYDOWN		30	30	30	30						30					04/01/2028
36208V-6R-1	GOVERNMENT NATIONAL MORT-POOL #462680		12/01/2018	PAYDOWN		33	33	33	33						33					04/01/2028
36208V-OS-7	GOVERNMENT NATIONAL MORT-POOL #462265		12/01/2018	PAYDOWN		2,522	2,522	2,609	2,579		(57)		(57)		2,522				83	12/01/2028
36208V-UH-6	GOVERNMENT NATIONAL MORT-POOL #462384		12/01/2018	PAYDOWN		17	17	17	17						17					11/01/2027
36208V-VR-3	GOVERNMENT NATIONAL MORT-POOL #462424		12/01/2018	PAYDOWN		223	223	230	227		(4)		(4)		223				10	12/01/2027
36208V-XM-2	GOVERNMENT NATIONAL MORT-POOL #462484		12/01/2018	PAYDOWN		5,031	5,031	5,181	5,125		(94)		(94)		5,031				213	01/01/2028
36208V-ZT-5	GOVERNMENT NATIONAL MORT-POOL #462554		12/01/2018	PAYDOWN		500	500	505	504		(4)		(4)		500				18	02/01/2028
36208W-B5-1	GOVERNMENT NATIONAL MORT-POOL #462760		12/01/2018	PAYDOWN		2,053	2,053	2,089	2,085		(32)		(32)		2,053				115	05/01/2028
36208W-B6-9	GOVERNMENT NATIONAL MORT-POOL #462761		12/01/2018	PAYDOWN		291	291	293	292		(1)		(1)		291				8	05/01/2028
36208W-DF-7	GOVERNMENT NATIONAL MORT-POOL #462802		12/01/2018	PAYDOWN		94,157	94,157	96,514	95,598		(1,441)		(1,441)		94,157			3,311		06/01/2028
36208W-DH-0	GOVERNMENT NATIONAL MORT-POOL #462817		06/01/2018	PAYDOWN		502	502	510	509		(7)		(7)		502				14	06/01/2028
36208W-ED-1	GOVERNMENT NATIONAL MORT-POOL #462832		12/01/2018	PAYDOWN		1,408	1,408	1,400	1,402		6		6		1,408				56	07/01/2028
36208W-GH-7	GOVERNMENT NATIONAL MORT-POOL #462913		12/01/2018	PAYDOWN		289	289	294	292		(3)		(3)		289				5	04/01/2028
36208X-N4-9	GOVERNMENT NATIONAL MORT-POOL #464011		12/01/2018	PAYDOWN		5,886	5,886	5,889	5,886						5,886				215	07/01/2028
36208X-BH-8	GOVERNMENT NATIONAL MORT-POOL #464553		12/01/2018	PAYDOWN		723	723	730	727		(4)		(4)		723				26	02/01/2029
36208Y-GR-4	GOVERNMENT NATIONAL MORT-POOL #464708		12/01/2018	PAYDOWN		914	914	929	924		(10)		(10)		914				35	07/01/2028
36208Y-JD-2	GOVERNMENT NATIONAL MORT-POOL #464760		12/01/2018	PAYDOWN		2,457	2,457	2,387	2,411		46		46		2,457				94	08/01/2028
36208Y-KB-4	GOVERNMENT NATIONAL MORT-POOL #464790		12/01/2018	PAYDOWN		1,680	1,680	1,670	1,673		7		7		1,680				70	08/01/2028
36208Y-LY-3	GOVERNMENT NATIONAL MORT-POOL #464843		12/01/2018	PAYDOWN		1,049	1,049	1,043	1,045		4		4		1,049				42	09/01/2028
36208Y-NY-1	GOVERNMENT NATIONAL MORT-POOL #464907		12/01/2018	PAYDOWN		738	738	751	746		(8)		(8)		738				28	02/01/2028
36208Y-P7-8	GOVERNMENT NATIONAL MORT-POOL #464946		12/01/2018	PAYDOWN		649	649	645	646		3		3		649				27	05/01/2028
36208Y-T4-1	GOVERNMENT NATIONAL MORT-POOL #465071		12/01/2018	PAYDOWN		1,953	1,953	1,943	1,946		8		8		1,953				80	05/01/2028
36209A-D9-8	GOVERNMENT NATIONAL MORT-POOL #465528		12/01/2018	PAYDOWN		82	82	85	84		(2)		(2)		82				3	04/01/2028
36209A-N0-9	GOVERNMENT NATIONAL MORT-POOL #465799		12/01/2018	PAYDOWN		403	403	409	407		(4)		(4)		403				15	05/01/2028
36209A-NU-0	GOVERNMENT NATIONAL MORT-POOL #465803		12/01/2018	PAYDOWN		21,598	21,598	21,950	21,851		(254)		(254)		21,598				553	05/01/2028
36209A-R5-1	GOVERNMENT NATIONAL MORT-POOL #465908		12/01/2018	PAYDOWN		270	270	276	274		(4)		(4)		270				13	02/01/2028
36209A-S8-4	GOVERNMENT NATIONAL MORT-POOL #465943		12/01/2018	PAYDOWN		15	15	15	15						15					02/01/2028
36209A-SH-4	GOVERNMENT NATIONAL MORT-POOL #465920		12/01/2018	PAYDOWN		3,436	3,436	3,483	3,466		(30)		(30)		3,436				133	02/01/2028
36209A-WZ-9	GOVERNMENT NATIONAL MORT-POOL #466064		12/01/2018	PAYDOWN		38	38	39	39		(1)		(1)		38					07/01/2029
36209B-2Y-3	GOVERNMENT NATIONAL MORT-POOL #467091		12/01/2018	PAYDOWN		1,526	1,526	1,580	1,561		(35)		(35)		1,526				50	07/01/2028
36209B-A3-2	GOVERNMENT NATIONAL MORT-POOL #466326		12/01/2018	PAYDOWN		1,227	1,227	1,221	1,222		5		5		1,227				51	01/01/2028
36209B-E2-0	GOVERNMENT NATIONAL MORT-POOL #466453		12/01/2018	PAYDOWN		8,308	8,308	8,597	8,504		(196)		(196)		8,308				235	03/01/2029
36209B-H5-0	GOVERNMENT NATIONAL MORT-POOL #466552		12/01/2018	PAYDOWN		665	665	688	682		(16)		(16)		665				23	03/01/2029
36209B-HT-8	GOVERNMENT NATIONAL MORT-POOL #466542		12/01/2018	PAYDOWN		312	312	315	314		(2)		(2)		312				11	02/01/2029
36209B-R7-5	GOVERNMENT NATIONAL MORT-POOL #466810		12/01/2018	PAYDOWN		61	61	62	62		(1)		(1)		61				2	05/01/2028
36209C-5F-9	GOVERNMENT NATIONAL MORT-POOL #468046		12/01/2018	PAYDOWN		178	178	179	179		(1)		(1)		178				6	07/01/2028
36209C-K8-8	GOVERNMENT NATIONAL MORT-POOL #467519		12/01/2018	PAYDOWN		1,588	1,588	1,626	1,612		(24)		(24)		1,588				57	02/01/2029
36209C-OC-3	GOVERNMENT NATIONAL MORT-POOL #467651		12/01/2018	PAYDOWN		2,808	2,808	2,892	2,858		(50)		(50)		2,808				108	02/01/2028
36209D-BD-5	GOVERNMENT NATIONAL MORT-POOL #468136		12/01/2018	PAYDOWN		1,189	1,189	1,209	1,208		(19)		(19)		1,189				42	08/01/2028
36209D-BH-3	GOVERNMENT NATIONAL MORT-POOL #468153		12/01/2018	PAYDOWN		92	92	95	94		(2)		(2)		92				3	08/01/2028

E14.11

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36209D-JF-2	GOVERNMENT NATIONAL MORT-POOL #468362		12/01/2018	PAYDOWN		550	550	569	563		(13)		(13)		550				.18	04/01/2029
36209E-DZ-2	GOVERNMENT NATIONAL MORT-POOL #469120		12/01/2018	PAYDOWN		1,054	1,054	1,048	1,050		4		4		1,054				.43	02/01/2028
36209F-CS-6	GOVERNMENT NATIONAL MORT-POOL #469981		12/01/2018	PAYDOWN		3,117	3,117	3,014	3,047		70		70		3,117				.94	02/01/2029
36209F-CV-9	GOVERNMENT NATIONAL MORT-POOL #469984		12/01/2018	PAYDOWN		4,430	4,430	4,584	4,549		(119)		(119)		4,430				.148	02/01/2029
36209F-FC-8	GOVERNMENT NATIONAL MORT-POOL #470063		12/01/2018	PAYDOWN		11,849	11,849	12,264	12,175		(326)		(326)		11,849				.133	02/01/2029
36209F-ND-7	GOVERNMENT NATIONAL MORT-POOL #470288		12/01/2018	PAYDOWN		298	298	308	305		(7)		(7)		298				.10	05/01/2029
36209F-PZ-6	GOVERNMENT NATIONAL MORT-POOL #470340		12/01/2018	PAYDOWN		461	461	472	468		(7)		(7)		461				.17	05/01/2029
36209F-T6-6	GOVERNMENT NATIONAL MORT-POOL #470473		12/01/2018	PAYDOWN		197	197	202	201		(3)		(3)		197				.18	06/01/2029
36209F-TW-9	GOVERNMENT NATIONAL MORT-POOL #470465		12/01/2018	PAYDOWN		19	19	20	20						19				.06	01/2029
36209F-TX-7	GOVERNMENT NATIONAL MORT-POOL #470466		12/01/2018	PAYDOWN		3	3	3	3						3				.06	01/2029
36209G-6W-2	GOVERNMENT NATIONAL MORT-POOL #471685		12/01/2018	PAYDOWN		743	743	755	751		(8)		(8)		743				.26	05/01/2028
36209G-7M-3	GOVERNMENT NATIONAL MORT-POOL #471700		12/01/2018	PAYDOWN		314	314	317	316		(2)		(2)		314				.09	06/01/2028
36209G-MX-2	GOVERNMENT NATIONAL MORT-POOL #471174		12/01/2018	PAYDOWN		14	14	14	14						14				.04	01/2028
36209G-P8-4	GOVERNMENT NATIONAL MORT-POOL #471247		12/01/2018	PAYDOWN		60	60	61	60		(1)		(1)		60				.2	04/01/2028
36209G-YD-3	GOVERNMENT NATIONAL MORT-POOL #471508		12/01/2018	PAYDOWN		36	36	36	36		(1)		(1)		36				.05	01/2028
36209H-JJ-5	GOVERNMENT NATIONAL MORT-POOL #471965		12/01/2018	PAYDOWN		1,608	1,608	1,635	1,625		(16)		(16)		1,608				.61	07/01/2028
36209H-JM-8	GOVERNMENT NATIONAL MORT-POOL #471968		12/01/2018	PAYDOWN		4,609	4,609	4,684	4,655		(46)		(46)		4,609				.208	07/01/2028
36209H-ZM-0	GOVERNMENT NATIONAL MORT-POOL #472448		12/01/2018	PAYDOWN		735	735	760	751		(17)		(17)		735				.24	12/01/2028
36209J-LC-3	GOVERNMENT NATIONAL MORT-POOL #472923		12/01/2018	PAYDOWN		115	115	115	115						115				.5	11/01/2029
36209J-P6-2	GOVERNMENT NATIONAL MORT-POOL #473045		12/01/2018	PAYDOWN		602	602	616	611		(9)		(9)		602				.22	07/01/2029
36209J-R4-5	GOVERNMENT NATIONAL MORT-POOL #473107		12/01/2018	PAYDOWN		2,194	2,194	2,189	2,190		4		4		2,194				.79	05/01/2028
36209J-SZ-5	GOVERNMENT NATIONAL MORT-POOL #473136		12/01/2018	PAYDOWN		82	82	85	84		(2)		(2)		82				.3	09/01/2028
36209J-YE-5	GOVERNMENT NATIONAL MORT-POOL #473309		12/01/2018	PAYDOWN		1,424	1,424	1,466	1,450		(26)		(26)		1,424				.56	06/01/2028
36209J-ZM-6	GOVERNMENT NATIONAL MORT-POOL #473348		12/01/2018	PAYDOWN		5,276	5,276	5,124	5,177		99		99		5,276				.202	06/01/2028
36209K-2J-6	GOVERNMENT NATIONAL MORT-POOL #474277		12/01/2018	PAYDOWN		33	33	33	33						33				.05	01/2028
36209K-OH-4	GOVERNMENT NATIONAL MORT-POOL #473956		12/01/2018	PAYDOWN		1,284	1,284	1,260	1,268		16		16		1,284				.49	05/01/2028
36209K-TS-7	GOVERNMENT NATIONAL MORT-POOL #474072		12/01/2018	PAYDOWN		187	187	190	189		(2)		(2)		187				.7	04/01/2028
36209K-WR-5	GOVERNMENT NATIONAL MORT-POOL #474156		12/01/2018	PAYDOWN		4,505	4,505	4,579	4,551		(46)		(46)		4,505				.173	04/01/2028
36209K-YD-4	GOVERNMENT NATIONAL MORT-POOL #474208		12/01/2018	PAYDOWN		47	47	48	48		(1)		(1)		47				.2	05/01/2028
36209L-3Q-7	GOVERNMENT NATIONAL MORT-POOL #475207		12/01/2018	PAYDOWN		610	610	614	613		(3)		(3)		610				.22	08/01/2028
36209L-D3-7	GOVERNMENT NATIONAL MORT-POOL #474522		12/01/2018	PAYDOWN		1,426	1,426	1,419	1,421		6		6		1,426				.58	08/01/2028
36209L-FU-5	GOVERNMENT NATIONAL MORT-POOL #474579		12/01/2018	PAYDOWN		734	734	760	755		(20)		(20)		734				.18	12/01/2028
36209M-ZJ-6	GOVERNMENT NATIONAL MORT-POOL #476045		12/01/2018	PAYDOWN		1,498	1,498	1,522	1,513		(15)		(15)		1,498				.57	06/01/2028
36209N-2T-8	GOVERNMENT NATIONAL MORT-POOL #476986		12/01/2018	PAYDOWN		481	481	498	492		(11)		(11)		481				.16	03/01/2029
36209N-3N-0	GOVERNMENT NATIONAL MORT-POOL #477005		12/01/2018	PAYDOWN		53	53	54	54		(1)		(1)		53				.2	07/01/2029
36209N-3W-0	GOVERNMENT NATIONAL MORT-POOL #477013		12/01/2018	PAYDOWN		7	7	7	7						7				.10	01/2029
36209N-6K-3	GOVERNMENT NATIONAL MORT-POOL #477074		12/01/2018	PAYDOWN		187	187	189	189		(2)		(2)		187				.7	10/01/2028
36209N-AE-2	GOVERNMENT NATIONAL MORT-POOL #476205		12/01/2018	PAYDOWN		33	33	33	33						33				.10	01/2028
36209N-CJ-9	GOVERNMENT NATIONAL MORT-POOL #476273		12/01/2018	PAYDOWN		1,338	1,338	1,360	1,359		(21)		(21)		1,338				.42	05/01/2028
36209N-DK-5	GOVERNMENT NATIONAL MORT-POOL #476306		12/01/2018	PAYDOWN		1,846	1,846	1,901	1,881		(35)		(35)		1,846				.82	05/01/2028
36209N-E3-2	GOVERNMENT NATIONAL MORT-POOL #476354		12/01/2018	PAYDOWN		519	519	528	525		(6)		(6)		519				.20	06/01/2028
36209N-EH-1	GOVERNMENT NATIONAL MORT-POOL #476336		12/01/2018	PAYDOWN		457	457	464	461		(5)		(5)		457				.18	05/01/2028
36209N-FP-2	GOVERNMENT NATIONAL MORT-POOL #476374		12/01/2018	PAYDOWN		21	21	21	21						21				.06	01/2028
36209N-HM-9	GOVERNMENT NATIONAL MORT-POOL #476573		12/01/2018	PAYDOWN		1,379	1,379	1,401	1,394		(15)		(15)		1,379				.53	07/01/2028
36209N-NM-0	GOVERNMENT NATIONAL MORT-POOL #476596		12/01/2018	PAYDOWN		73	73	74	74		(1)		(1)		73				.3	07/01/2028
36209N-NZ-1	GOVERNMENT NATIONAL MORT-POOL #476608		12/01/2018	PAYDOWN		166	166	170	168		(3)		(3)		166				.6	08/01/2028
36209P-MZ-7	GOVERNMENT NATIONAL MORT-POOL #477476		12/01/2018	PAYDOWN		536	536	541	540		(4)		(4)		536				.19	10/01/2028
36209P-NP-8	GOVERNMENT NATIONAL MORT-POOL #477498		12/01/2018	PAYDOWN		1,544	1,544	1,544	1,544						1,544				.74	10/01/2028
36209P-PL-5	GOVERNMENT NATIONAL MORT-POOL #477527		12/01/2018	PAYDOWN		812	812	830	823		(11)		(11)		812				.31	11/01/2028
36209P-S6-5	GOVERNMENT NATIONAL MORT-POOL #477641		12/01/2018	PAYDOWN		11,263	11,263	11,447	11,432		(168)		(168)		11,263				.287	06/01/2028
36209P-SP-3	GOVERNMENT NATIONAL MORT-POOL #477626		12/01/2018	PAYDOWN		114	114	117	116		(2)		(2)		114				.4	07/01/2028
36209P-TT-4	GOVERNMENT NATIONAL MORT-POOL #477662		12/01/2018	PAYDOWN		91	91	93	92		(2)		(2)		91				.3	06/01/2028
36209Q-AB-1	GOVERNMENT NATIONAL MORT-POOL #478002		12/01/2018	PAYDOWN		38	38	38	38						38				.06	01/2028
36209Q-PW-9	GOVERNMENT NATIONAL MORT-POOL #478437		12/01/2018	PAYDOWN		2,075	2,075	2,087	2,082		(7)		(7)		2,075				.74	11/01/2028
36209S-G9-6	GOVERNMENT NATIONAL MORT-POOL #480024		12/01/2018	PAYDOWN		99	99	103	101		(2)		(2)		99				.3	12/01/2028
36209S-K2-6	GOVERNMENT NATIONAL MORT-POOL #480113		12/01/2018	PAYDOWN		108	108	106	106		2		2		108				.4	04/01/2029
36209S-LS-8	GOVERNMENT NATIONAL MORT-POOL #480137		12/01/2018	PAYDOWN		6,691	6,691	6,499	6,563		128		128		6,691				.261	09/01/2028
36209S-NG-2	GOVERNMENT NATIONAL MORT-POOL #480191		12/01/2018	PAYDOWN		1,410	1,410	1,459	1,442		(33)		(33)		1,410				.41	02/01/2029

E14.12

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36209S-T5-0	GOVERNMENT NATIONAL MORT-POOL #480372		12/01/2018	PAYDOWN		.115	.115	.116	.116		(.1)		(.1)		.115				.4	07/01/2028
36209S-T7-6	GOVERNMENT NATIONAL MORT-POOL #480374		12/01/2018	PAYDOWN		3,648	3,648	3,543	3,550		.97		.97		3,648				.145	07/01/2028
36209S-UM-1	GOVERNMENT NATIONAL MORT-POOL #480388		12/01/2018	PAYDOWN		863	863	858	859		.3		.3		863				.36	07/01/2028
36209S-VA-6	GOVERNMENT NATIONAL MORT-POOL #480409		12/01/2018	PAYDOWN		1,354	1,354	1,367	1,363		(.9)		(.9)		1,354				.48	07/01/2028
36209S-VL-2	GOVERNMENT NATIONAL MORT-POOL #480419		12/01/2018	PAYDOWN		1,113	1,113	1,131	1,125		(.12)		(.12)		1,113				.43	07/01/2028
36209S-W2-3	GOVERNMENT NATIONAL MORT-POOL #480465		12/01/2018	PAYDOWN		905	905	916	911		(.6)		(.6)		905				.35	07/01/2028
36209T-4H-9	GOVERNMENT NATIONAL MORT-POOL #481524		12/01/2018	PAYDOWN		.36	.36	.37	.37						.36				.09	09/01/2028
36209U-HG-4	GOVERNMENT NATIONAL MORT-POOL #481831		12/01/2018	PAYDOWN		3,841	3,841	3,767	3,769		.73		.73		3,841				.137	07/01/2028
36209U-JQ-0	GOVERNMENT NATIONAL MORT-POOL #481871		12/01/2018	PAYDOWN		6,768	6,768	6,878	6,843		(.75)		(.75)		6,768				.257	07/01/2028
36209V-FH-2	GOVERNMENT NATIONAL MORT-POOL #482668		12/01/2018	PAYDOWN		.15	.15	.16	.16						.15				.08	08/01/2028
36209V-P4-0	GOVERNMENT NATIONAL MORT-POOL #482943		12/01/2018	PAYDOWN		857	857	878	871		(.14)		(.14)		857				.30	01/01/2029
36209V-PM-0	GOVERNMENT NATIONAL MORT-POOL #482928		12/01/2018	PAYDOWN		168	168	172	170		(.3)		(.3)		168				.6	01/01/2029
36209W-5W-8	GOVERNMENT NATIONAL MORT-POOL #484261		12/01/2018	PAYDOWN		899	899	895	896		.3		.3		899				.37	09/01/2028
36209W-6R-8	GOVERNMENT NATIONAL MORT-POOL #484280		12/01/2018	PAYDOWN		2,318	2,318	2,305	2,298		.20		.20		2,318				.99	09/01/2028
36209W-UX-8	GOVERNMENT NATIONAL MORT-POOL #483998		12/01/2018	PAYDOWN		1,498	1,498	1,532	1,519		(.21)		(.21)		1,498				.58	09/01/2028
36209X-5R-7	GOVERNMENT NATIONAL MORT-POOL #485156		12/01/2018	PAYDOWN		617	617	632	628		(.11)		(.11)		617				.24	02/01/2029
36209X-6C-9	GOVERNMENT NATIONAL MORT-POOL #485167		12/01/2018	PAYDOWN		5,177	5,177	5,007	5,061		.116		.116		5,177				.156	02/01/2029
36209X-VA-5	GOVERNMENT NATIONAL MORT-POOL #484909		12/01/2018	PAYDOWN		.21	.21	.22	.22						.21				.09	09/01/2028
36209X-ZK-9	GOVERNMENT NATIONAL MORT-POOL #485046		12/01/2018	PAYDOWN		288	288	290	289		(.1)		(.1)		288				.10	11/01/2028
36209Y-FZ-6	GOVERNMENT NATIONAL MORT-POOL #485384		12/01/2018	PAYDOWN		.39	.39	.40	.40		(.1)		(.1)		.39				.04	01/01/2031
36209Y-TV-0	GOVERNMENT NATIONAL MORT-POOL #485764		12/01/2018	PAYDOWN		2,493	2,493	2,579	2,566		(.74)		(.74)		2,493				.81	09/01/2031
36209Y-US-5	GOVERNMENT NATIONAL MORT-POOL #485793		12/01/2018	PAYDOWN		1,390	1,390	1,423	1,415		(.25)		(.25)		1,390				.51	09/01/2031
3620A1-K7-8	GOVERNMENT NATIONAL MORT-POOL #716302		12/01/2018	PAYDOWN		27,991	27,991	31,097	31,420		(3,429)		(3,429)		27,991				.739	06/01/2039
3620A8-LU-5	GOVERNMENT NATIONAL MORT-POOL #722239		12/01/2018	PAYDOWN		39,377	39,377	43,747	43,721		(4,344)		(4,344)		39,377				.987	08/01/2039
3620A9-SH-5	GOVERNMENT NATIONAL MORT-POOL #723220		12/01/2018	PAYDOWN		67,708	67,708	75,222	74,943		(7,236)		(7,236)		67,708				2,020	09/01/2039
3620AA-SG-4	GOVERNMENT NATIONAL MORT-POOL #724219		12/01/2018	PAYDOWN		130,334	130,334	145,328	145,285		(14,952)		(14,952)		130,334				3,095	08/01/2039
3620AC-3Z-5	GOVERNMENT NATIONAL MORT-POOL #726316		12/01/2018	PAYDOWN		209,469	209,469	232,716	232,719		(23,250)		(23,250)		209,469				5,037	09/01/2039
3620AC-4G-6	GOVERNMENT NATIONAL MORT-POOL #726323		12/01/2018	PAYDOWN		33,762	33,762	37,509	37,864		(4,102)		(4,102)		33,762				.817	09/01/2039
3620AF-HV-2	GOVERNMENT NATIONAL MORT-POOL #728444		12/01/2018	PAYDOWN		286,857	286,857	319,768	318,249		(31,393)		(31,393)		286,857				8,102	12/01/2039
36210A-4S-3	GOVERNMENT NATIONAL MORT-POOL #486933		12/01/2018	PAYDOWN		1,206	1,206	1,248	1,237		(32)		(32)		1,206				.43	02/01/2029
36210A-5V-5	GOVERNMENT NATIONAL MORT-POOL #486960		12/01/2018	PAYDOWN		491	491	508	504		(13)		(13)		491				.16	02/01/2029
36210A-6Q-5	GOVERNMENT NATIONAL MORT-POOL #486979		12/01/2018	PAYDOWN		718	718	734	730		(12)		(12)		718				.30	03/01/2029
36210A-L5-4	GOVERNMENT NATIONAL MORT-POOL #486448		12/01/2018	PAYDOWN		36,913	36,913	37,642	37,390		(477)		(477)		36,913				863	08/01/2028
36210A-HM-6	GOVERNMENT NATIONAL MORT-POOL #486464		12/01/2018	PAYDOWN		16,899	16,899	16,807	16,833		.66		.66		16,899				455	08/01/2028
36210A-U4-7	GOVERNMENT NATIONAL MORT-POOL #486703		12/01/2018	PAYDOWN		3,062	3,062	3,169	3,139		(.77)		(.77)		3,062				.92	11/01/2028
36210A-VA-2	GOVERNMENT NATIONAL MORT-POOL #486709		12/01/2018	PAYDOWN		679	679	694	688		(10)		(10)		679				.26	11/01/2028
36210A-HX-1	GOVERNMENT NATIONAL MORT-POOL #486762		12/01/2018	PAYDOWN		3,281	3,281	3,263	3,267		.13		.13		3,281				.133	12/01/2028
36210A-XZ-5	GOVERNMENT NATIONAL MORT-POOL #486796		12/01/2018	PAYDOWN		.91	.91	.94	.94		(.3)		(.3)		.91				.2	12/01/2028
36210B-B5-3	GOVERNMENT NATIONAL MORT-POOL #487060		12/01/2018	PAYDOWN		982	982	1,016	1,011		(28)		(28)		982				.40	03/01/2029
36210B-VU-6	GOVERNMENT NATIONAL MORT-POOL #487627		12/01/2018	PAYDOWN		.97	.97	.97	.97						.97				.4	07/01/2029
36210B-VY-8	GOVERNMENT NATIONAL MORT-POOL #487631		12/01/2018	PAYDOWN		344	344	352	350		(.6)		(.6)		344				.12	07/01/2029
36210C-CD-3	GOVERNMENT NATIONAL MORT-POOL #487968		12/01/2018	PAYDOWN		.47	.47	.48	.48						.47				.2	09/01/2028
36210C-PH-0	GOVERNMENT NATIONAL MORT-POOL #488324		12/01/2018	PAYDOWN		1,238	1,238	1,241	1,240		(.2)		(.2)		1,238				.44	01/01/2029
36210E-3T-4	GOVERNMENT NATIONAL MORT-POOL #490510		12/01/2018	PAYDOWN		493	493	510	504		(11)		(11)		493				.16	01/01/2029
36210E-J8-3	GOVERNMENT NATIONAL MORT-POOL #489987		12/01/2018	PAYDOWN		3,614	3,614	3,739	3,708		(94)		(94)		3,614				.114	11/01/2028
36210E-NC-9	GOVERNMENT NATIONAL MORT-POOL #490087		12/01/2018	PAYDOWN		.93	.93	.96	.95		(.2)		(.2)		.93				.3	02/01/2029
36210F-4B-9	GOVERNMENT NATIONAL MORT-POOL #491418		12/01/2018	PAYDOWN		245	245	251	256		(11)		(11)		245				.9	04/01/2029
36210F-E8-5	GOVERNMENT NATIONAL MORT-POOL #490759		12/01/2018	PAYDOWN		316	316	324	321		(.5)		(.5)		316				.13	11/01/2028
36210F-R7-3	GOVERNMENT NATIONAL MORT-POOL #491110		12/01/2018	PAYDOWN		118	118	122	123		(.5)		(.5)		118				.4	03/01/2029
36210F-RG-3	GOVERNMENT NATIONAL MORT-POOL #491087		12/01/2018	PAYDOWN		184	184	191	189		(.5)		(.5)		184				.5	01/01/2029
36210F-Y3-4	GOVERNMENT NATIONAL MORT-POOL #491330		12/01/2018	PAYDOWN		403	403	417	414		(11)		(11)		403				.13	02/01/2029
36210F-YF-7	GOVERNMENT NATIONAL MORT-POOL #491310		12/01/2018	PAYDOWN		214	214	221	220		(.7)		(.7)		214				.7	12/01/2028
36210G-V4-3	GOVERNMENT NATIONAL MORT-POOL #492135		08/01/2018	PAYDOWN		3,371	3,371	3,488	3,546		(175)		(175)		3,371				.109	01/01/2029
36210G-V9-2	GOVERNMENT NATIONAL MORT-POOL #492140		12/01/2018	PAYDOWN		280	280	282	281		(.1)		(.1)		280				.14	01/01/2029
36210G-VA-9	GOVERNMENT NATIONAL MORT-POOL #492109		12/01/2018	PAYDOWN		4,088	4,088	4,113	4,103		(.15)		(.15)		4,088				.141	12/01/2028
36210G-VB-7	GOVERNMENT NATIONAL MORT-POOL #492110		12/01/2018	PAYDOWN		326	326	327	327		(.2)		(.2)		326				.4	12/01/2028
36210H-DD-1	GOVERNMENT NATIONAL MORT-POOL #492500		12/01/2018	PAYDOWN		1,134	1,134	1,140	1,138		(.4)		(.4)		1,134				.40	05/01/2029
36210H-LY-6	GOVERNMENT NATIONAL MORT-POOL #492743		12/01/2018	PAYDOWN		483	483	485	484		(.2)		(.2)		483				.17	06/01/2029

E14.13

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36210H-PZ-9	GOVERNMENT NATIONAL MORT-POOL #492840		12/01/2018	PAYDOWN		.45	.45	.45	.45						.45				.2	10/01/2028
36210J-GW-2	GOVERNMENT NATIONAL MORT-POOL #493513		12/01/2018	PAYDOWN		.749	.749	.767	.762		(12)		(12)		.749				.27	01/01/2030
36210J-J3-3	GOVERNMENT NATIONAL MORT-POOL # 493582		12/01/2018	PAYDOWN		.57	.57	.59	.59		(2)		(2)		.57				.2	08/01/2031
36210K-3I-3	GOVERNMENT NATIONAL MORT-POOL #495013		12/01/2018	PAYDOWN		3.578	3.578	3.702	3.668		(91)		(91)		3.578				.117	04/01/2029
36210K-4G-7	GOVERNMENT NATIONAL MORT-POOL # 495023		12/01/2018	PAYDOWN		1.376	1.376	1.423	1.407		(31)		(31)		1.376				.45	04/01/2029
36210K-CR-4	GOVERNMENT NATIONAL MORT-POOL #494280		12/01/2018	PAYDOWN		.30	.30	.31	.31						.30					01/01/2029
36210K-LR-4	GOVERNMENT NATIONAL MORT-POOL #494536		12/01/2018	PAYDOWN		1.555	1.555	1.582	1.582		(27)		(27)		1.555				.57	03/01/2029
36210L-3M-3	GOVERNMENT NATIONAL MORT-POOL #495904		12/01/2018	PAYDOWN		.144	.144	.149	.148		(4)		(4)		.144				.2	02/01/2029
36210L-CY-7	GOVERNMENT NATIONAL MORT-POOL #495187		12/01/2018	PAYDOWN		2.313	2.313	2.282	2.292		21		21		2.313				.82	12/01/2028
36210L-XC-2	GOVERNMENT NATIONAL MORT-POOL #495775		12/01/2018	PAYDOWN		1.011	1.011	.992	.998		13		13		1.011				.36	12/01/2028
36210L-ZM-8	GOVERNMENT NATIONAL MORT-POOL #495848		12/01/2018	PAYDOWN		8.237	8.237	8.522	8.433		(196)		(196)		8.237				.239	01/01/2029
36210M-FG-1	GOVERNMENT NATIONAL MORT-POOL #496167		12/01/2018	PAYDOWN		.320	.320	.323	.323		(2)		(2)		.320				.11	02/01/2029
36210M-GG-0	GOVERNMENT NATIONAL MORT-POOL #496199		12/01/2018	PAYDOWN		.393	.393	.407	.402		(9)		(9)		.393				.13	03/01/2029
36210M-TW-1	GOVERNMENT NATIONAL MORT-POOL #496565		12/01/2018	PAYDOWN		.346	.346	.358	.356		(10)		(10)		.346				.11	03/01/2029
36210N-JG-2	GOVERNMENT NATIONAL MORT-POOL #497483		12/01/2018	PAYDOWN		1.478	1.478	1.530	1.512		(34)		(34)		1.478				.49	01/01/2029
36210N-Y3-7	GOVERNMENT NATIONAL MORT-POOL # 497630		12/01/2018	PAYDOWN		.111	.111	.115	.115		(3)		(3)		.111				.3	02/01/2029
36210P-P5-7	GOVERNMENT NATIONAL MORT-POOL # 498244		12/01/2018	PAYDOWN		.307	.307	.318	.317		(10)		(10)		.307				.10	06/01/2031
36210P-W4-2	GOVERNMENT NATIONAL MORT-POOL #498467		12/01/2018	PAYDOWN		1.450	1.450	1.500	1.485		(35)		(35)		1.450				.50	03/01/2029
36210Q-HU-9	GOVERNMENT NATIONAL MORT-POOL #498943		11/01/2018	PAYDOWN		4.441	4.441	4.547	4.513		(72)		(72)		4.441				.235	05/01/2031
36210Q-XG-2	GOVERNMENT NATIONAL MORT-POOL #499379		12/01/2018	PAYDOWN		.278	.278	.281	.280		(2)		(2)		.278				.10	01/01/2029
36210R-M7-2	GOVERNMENT NATIONAL MORT-POOL #499982		09/01/2018	PAYDOWN		.377	.377	.377	.377						.377				.18	10/01/2029
36210R-WC-0	GOVERNMENT NATIONAL MORT-POOL #500243		12/01/2018	PAYDOWN		.136	.136	.137	.137						.136				.6	09/01/2029
36210S-PE-2	GOVERNMENT NATIONAL MORT-POOL #500921		12/01/2018	PAYDOWN		.812	.812	.817	.815		(3)		(3)		.812				.29	05/01/2029
36210S-PP-7	GOVERNMENT NATIONAL MORT-POOL #500930		12/01/2018	PAYDOWN		.162	.162	.166	.164		(2)		(2)		.162				.6	06/01/2029
36210T-3L-8	GOVERNMENT NATIONAL MORT-POOL #502203		12/01/2018	PAYDOWN		.14	.14	.14	.14						.14					05/01/2029
36210T-4D-5	GOVERNMENT NATIONAL MORT-POOL #502220		12/01/2018	PAYDOWN		.285	.285	.286	.286		(1)		(1)		.285				.10	06/01/2029
36210T-AE-6	GOVERNMENT NATIONAL MORT-POOL #501405		12/01/2018	PAYDOWN		.12	.12	.12	.12						.12					03/01/2029
36210T-B8-8	GOVERNMENT NATIONAL MORT-POOL #501463		12/01/2018	PAYDOWN		1.250	1.250	1.257	1.254		(4)		(4)		1.250				.44	03/01/2029
36210T-ED-4	GOVERNMENT NATIONAL MORT-POOL # 501532		12/01/2018	PAYDOWN		.662	.662	.685	.677		(15)		(15)		.662				.22	03/01/2029
36210T-PR-1	GOVERNMENT NATIONAL MORT-POOL #501832		09/01/2018	PAYDOWN		.834	.834	.863	.853		(19)		(19)		.834				.23	04/01/2029
36210T-Q2-5	GOVERNMENT NATIONAL MORT-POOL #501873		12/01/2018	PAYDOWN		3.619	3.619	3.745	3.713		(94)		(94)		3.619				.186	04/01/2029
36210V-2G-5	GOVERNMENT NATIONAL MORT-POOL #503975		12/01/2018	PAYDOWN		.156	.156	.157	.156						.156				.4	08/01/2029
36210V-DT-5	GOVERNMENT NATIONAL MORT-POOL #503314		12/01/2018	PAYDOWN		1.541	1.541	1.578	1.565		(24)		(24)		1.541				.55	11/01/2029
36210V-F5-5	GOVERNMENT NATIONAL MORT-POOL # 503388		12/01/2018	PAYDOWN		.332	.332	.343	.340		(8)		(8)		.332				.8	03/01/2029
36210V-HN-4	GOVERNMENT NATIONAL MORT-POOL #503437		12/01/2018	PAYDOWN		.581	.581	.584	.583		(2)		(2)		.581				.21	04/01/2029
36210V-MG-3	GOVERNMENT NATIONAL MORT-POOL #503559		12/01/2018	PAYDOWN		.817	.817	.846	.896		(78)		(78)		.817				.27	03/01/2029
36210V-HS-6	GOVERNMENT NATIONAL MORT-POOL #503857		05/01/2018	PAYDOWN		.733	.733	.740	.742		(9)		(9)		.733				.8	02/01/2029
36210V-WW-7	GOVERNMENT NATIONAL MORT-POOL #503861		12/01/2018	PAYDOWN		8.766	8.766	9.072	9.047		(281)		(281)		8.766				.221	02/01/2029
36210V-Z4-6	GOVERNMENT NATIONAL MORT-POOL #503963		12/01/2018	PAYDOWN		.269	.269	.275	.273		(4)		(4)		.269				.10	08/01/2029
36210V-Z0-7	GOVERNMENT NATIONAL MORT-POOL #503951		12/01/2018	PAYDOWN		.264	.264	.270	.268		(4)		(4)		.264				.9	07/01/2029
36210W-B6-5	GOVERNMENT NATIONAL MORT-POOL #504161		12/01/2018	PAYDOWN		.416	.416	.408	.411		6		6		.416				.15	07/01/2029
36210X-3A-3	GOVERNMENT NATIONAL MORT-POOL #505793		12/01/2018	PAYDOWN		.44	.44	.44	.44						.44				.2	08/01/2029
36210X-4M-6	GOVERNMENT NATIONAL MORT-POOL #505828		12/01/2018	PAYDOWN		.293	.293	.294	.293						.293				.12	09/01/2029
36210X-EM-5	GOVERNMENT NATIONAL MORT-POOL #505140		08/01/2018	PAYDOWN		.922	.922	.924	.923		(1)		(1)		.922				.39	09/01/2029
36210X-JR-9	GOVERNMENT NATIONAL MORT-POOL #505272		12/01/2018	PAYDOWN		4.092	4.092	5.067	5.072		(980)		(980)		4.092				.111	11/01/2029
36210X-T2-3	GOVERNMENT NATIONAL MORT-POOL #505569		12/01/2018	PAYDOWN		.412	.412	.426	.421		(10)		(10)		.412				.14	03/01/2029
36210X-T6-4	GOVERNMENT NATIONAL MORT-POOL #505573		12/01/2018	PAYDOWN		1.008	1.008	1.043	1.042		(34)		(34)		1.008				.33	04/01/2029
36210X-WD-5	GOVERNMENT NATIONAL MORT-POOL #505644		12/01/2018	PAYDOWN		.228	.228	.234	.232		(4)		(4)		.228				.8	05/01/2029
36210Y-RX-5	GOVERNMENT NATIONAL MORT-POOL #506402		12/01/2018	PAYDOWN		.265	.265	.274	.272		(7)		(7)		.265				.9	04/01/2029
36210Y-TN-5	GOVERNMENT NATIONAL MORT-POOL #506457		12/01/2018	PAYDOWN		.78	.78	.80	.80		(2)		(2)		.78				.3	04/01/2029
36210Y-H4-3	GOVERNMENT NATIONAL MORT-POOL #506567		12/01/2018	PAYDOWN		.494	.494	.497	.496		(2)		(2)		.494				.18	05/01/2029
36210Y-XM-2	GOVERNMENT NATIONAL MORT-POOL #506584		02/01/2018	PAYDOWN		.348	.348	.356	.361		(13)		(13)		.348				.1	06/01/2029
36210Y-ZY-4	GOVERNMENT NATIONAL MORT-POOL # 506659		12/01/2018	PAYDOWN		.116	.116	.120	.119		(3)		(3)		.116				.4	04/01/2029
36211A-AD-8	GOVERNMENT NATIONAL MORT-POOL #506804		12/01/2018	PAYDOWN		.76	.76	.77	.77		(2)		(2)		.76				.3	05/01/2029
36211A-C8-7	GOVERNMENT NATIONAL MORT-POOL #506895		12/01/2018	PAYDOWN		.199	.199	.204	.202		(3)		(3)		.199				.7	05/01/2029
36211A-DT-0	GOVERNMENT NATIONAL MORT-POOL #506914		12/01/2018	PAYDOWN		.483	.483	.499	.515		(33)		(33)		.483				.18	05/01/2029
36211A-NL-6	GOVERNMENT NATIONAL MORT-POOL #507195		12/01/2018	PAYDOWN		.704	.704	.706	.705		(1)		(1)		.704				.29	11/01/2029
36211A-SE-7	GOVERNMENT NATIONAL MORT-POOL #507317		12/01/2018	PAYDOWN		.776	.776	.794	.788		(13)		(13)		.776				.27	11/01/2031

E14.14

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36211B-2N-3	GOVERNMENT NATIONAL MORT-POOL #508481		12/01/2018	PAYDOWN		.24	.24	.25	.24			(1)	(1)		.24					.05/01/2031
36211B-BF-0	GOVERNMENT NATIONAL MORT-POOL #507738		12/01/2018	PAYDOWN		.612	.612	.626	.621		(9)	(9)	(9)		.612					.25 04/01/2029
36211B-L6-9	GOVERNMENT NATIONAL MORT-POOL #508049		12/01/2018	PAYDOWN		2.925	2.925	2.866	2.885		.41	.41	.41		2.925					.104 06/01/2029
36211B-TU-8	GOVERNMENT NATIONAL MORT-POOL #508263		12/01/2018	PAYDOWN		4.202	4.202	4.135	4.156		.46	.46	.46		4.202					.150 06/01/2029
36211C-2P-6	GOVERNMENT NATIONAL MORT-POOL #509382		12/01/2018	PAYDOWN		.127	.127	.128	.127						.127					.4 07/01/2029
36211C-EE-8	GOVERNMENT NATIONAL MORT-POOL #508733		12/01/2018	PAYDOWN		.17	.17	.17	.17						.17					.05/01/2029
36211D-EE-6	GOVERNMENT NATIONAL MORT-POOL #509633		12/01/2018	PAYDOWN		.335	.335	.343	.341		(5)	(5)	(5)		.335					.12 07/01/2029
36211D-P4-6	GOVERNMENT NATIONAL MORT-POOL #509943		12/01/2018	PAYDOWN		.170	.170	.174	.172		(3)	(3)	(3)		.170					.6 06/01/2029
36211D-QQ-6	GOVERNMENT NATIONAL MORT-POOL #509963		12/01/2018	PAYDOWN		.839	.839	.868	.859		(20)	(20)	(20)		.839					.28 06/01/2029
36211D-UB-1	GOVERNMENT NATIONAL MORT-POOL #510107		12/01/2018	PAYDOWN		1.280	1.280	1.309	1.298		(18)	(18)	(18)		1.280					.42 07/01/2029
36211D-UM-0	GOVERNMENT NATIONAL MORT-POOL #510088		08/01/2018	PAYDOWN		7.824	7.824	8.011	7.945		(121)	(121)	(121)		7.824					.291 07/01/2029
36211E-EF-1	GOVERNMENT NATIONAL MORT-POOL #510534		12/01/2018	PAYDOWN		.83	.83	.83	.83						.83					.3 10/01/2029
36211E-KR-8	GOVERNMENT NATIONAL MORT-POOL #510704		12/01/2018	PAYDOWN		.30	.30	.30	.30						.30					.11/01/2029
36211E-OP-6	GOVERNMENT NATIONAL MORT-POOL #510862		12/01/2018	PAYDOWN		.126	.126	.127	.127						.126					.5 12/01/2029
36211E-UE-6	GOVERNMENT NATIONAL MORT-POOL #510981		12/01/2018	PAYDOWN		.764	.764	.749	.754		.10	.10	.10		.764					.27 06/01/2029
36211G-NC-4	GOVERNMENT NATIONAL MORT-POOL #512555		12/01/2018	PAYDOWN		.30	.30	.32	.31		(2)	(2)	(2)		.30					.04/01/2030
36211G-PJ-6	GOVERNMENT NATIONAL MORT-POOL #512625		12/01/2018	PAYDOWN		.174	.174	.178	.177		(3)	(3)	(3)		.174					.6 06/01/2029
36211H-HLL-2	GOVERNMENT NATIONAL MORT-POOL #513463		02/01/2018	PAYDOWN		.588	.588	.589	.588		(1)	(1)	(1)		.588					.4 10/01/2029
36211H-U7-4	GOVERNMENT NATIONAL MORT-POOL #513706		12/01/2018	PAYDOWN		.77	.77	.77	.77						.77					.3 07/01/2029
36211H-WU-1	GOVERNMENT NATIONAL MORT-POOL #513759		12/01/2018	PAYDOWN		7.590	7.590	7.771	7.711		(121)	(121)	(121)		7.590					.281 08/01/2029
36211J-NE-4	GOVERNMENT NATIONAL MORT-POOL #514357		12/01/2018	PAYDOWN		.49	.49	.50	.50		(1)	(1)	(1)		.49					.2 08/01/2029
36211M-A7-1	GOVERNMENT NATIONAL MORT-POOL #517114		12/01/2018	PAYDOWN		.76	.76	.76	.76						.76					.3 09/01/2029
36211M-SU-5	GOVERNMENT NATIONAL MORT-POOL #517231		12/01/2018	PAYDOWN		.142	.142	.142	.142						.142					.6 12/01/2029
36211N-6F-0	GOVERNMENT NATIONAL MORT-POOL #518470		12/01/2018	PAYDOWN		.101	.101	.102	.101						.101					.4 09/01/2029
36211N-JN-9	GOVERNMENT NATIONAL MORT-POOL #517869		12/01/2018	PAYDOWN		.432	.432	.433	.433						.432					.18 09/01/2029
36211N-VV-7	GOVERNMENT NATIONAL MORT-POOL #518228		12/01/2018	PAYDOWN		.119	.119	.129	.126		(6)	(6)	(6)		.119					.5 04/01/2030
36211P-CL-5	GOVERNMENT NATIONAL MORT-POOL #518575		12/01/2018	PAYDOWN		.125	.125	.128	.127		(2)	(2)	(2)		.125					.5 11/01/2029
36211P-RF-2	GOVERNMENT NATIONAL MORT-POOL #518986		12/01/2018	PAYDOWN		39.814	39.814	39.938	39.916		(102)	(102)	(102)		39.814					.1 939 01/01/2033
36211P-RH-8	GOVERNMENT NATIONAL MORT-POOL #518988		12/01/2018	PAYDOWN		.104	.104	.104	.104		(1)	(1)	(1)		.104					.3 01/01/2033
36211Q-NE-7	GOVERNMENT NATIONAL MORT-POOL #520045		12/01/2018	PAYDOWN		1.016	1.016	1.040	1.038		(22)	(22)	(22)		1.016					.34 06/01/2031
36211R-HK-2	GOVERNMENT NATIONAL MORT-POOL #520662		12/01/2018	PAYDOWN		.23	.23	.24	.24						.23					.04/01/2030
36211U-R9-5	GOVERNMENT NATIONAL MORT-POOL #523512		12/01/2018	PAYDOWN		1.435	1.435	1.485	1.470		(35)	(35)	(35)		1.435					.24 11/01/2031
36211U-SQ-6	GOVERNMENT NATIONAL MORT-POOL #523527		12/01/2018	PAYDOWN		.267	.267	.273	.271		(4)	(4)	(4)		.267					.10 12/01/2031
36211W-M9-6	GOVERNMENT NATIONAL MORT-POOL #525184		12/01/2018	PAYDOWN		2.063	2.063	2.132	2.108		(45)	(45)	(45)		2.063					.93 05/01/2030
36212C-DE-8	GOVERNMENT NATIONAL MORT-POOL #529401		12/01/2018	PAYDOWN		1.746	1.746	1.788	1.787		(40)	(40)	(40)		1.746					.90 06/01/2031
36212D-HD-4	GOVERNMENT NATIONAL MORT-POOL #530428		12/01/2018	PAYDOWN		.95	.95	.98	.97		(2)	(2)	(2)		.95					.3 07/01/2031
36212D-NE-5	GOVERNMENT NATIONAL MORT-POOL #530589		12/01/2018	PAYDOWN		.547	.547	.566	.561		(14)	(14)	(14)		.547					.6 04/01/2031
36212D-PE-3	GOVERNMENT NATIONAL MORT-POOL #530621		12/01/2018	PAYDOWN		.950	.950	.973	.966		(16)	(16)	(16)		.950					.40 09/01/2031
36212F-C7-7	GOVERNMENT NATIONAL MORT-POOL #532094		12/01/2018	PAYDOWN		.264	.264	.270	.268		(4)	(4)	(4)		.264					.7 05/01/2030
36212F-KM-5	GOVERNMENT NATIONAL MORT-POOL #532300		12/01/2018	PAYDOWN		.140	.140	.143	.142		(2)	(2)	(2)		.140					.6 06/01/2030
36212G-QA-3	GOVERNMENT NATIONAL MORT-POOL #533349		12/01/2018	PAYDOWN		.85	.85	.87	.86		(1)	(1)	(1)		.85					.3 09/01/2030
36212H-EX-4	GOVERNMENT NATIONAL MORT-POOL #533950		12/01/2018	PAYDOWN		.355	.355	.367	.365		(11)	(11)	(11)		.355					.15 04/01/2032
36212J-6H-4	GOVERNMENT NATIONAL MORT-POOL #535572		12/01/2018	PAYDOWN		.111	.111	.112	.112		(1)	(1)	(1)		.111					.4 02/01/2031
36212L-AK-7	GOVERNMENT NATIONAL MORT-POOL #536510		12/01/2018	PAYDOWN		.489	.489	.492	.491		(2)	(2)	(2)		.489					.17 02/01/2031
36212M-6F-1	GOVERNMENT NATIONAL MORT-POOL #538270		12/01/2018	PAYDOWN		.204	.204	.209	.208		(4)	(4)	(4)		.204					.7 11/01/2031
36212M-6W-4	GOVERNMENT NATIONAL MORT-POOL #538285		12/01/2018	PAYDOWN		.726	.726	.743	.738		(12)	(12)	(12)		.726					.33 12/01/2031
36212M-KL-2	GOVERNMENT NATIONAL MORT-POOL #537699		12/01/2018	PAYDOWN		.426	.426	.436	.433		(7)	(7)	(7)		.426					.15 11/01/2030
36212N-3L-9	GOVERNMENT NATIONAL MORT-POOL #539103		12/01/2018	PAYDOWN		.292	.292	.294	.293		(1)	(1)	(1)		.292					.10 03/01/2031
36212N-A9-8	GOVERNMENT NATIONAL MORT-POOL #538332		12/01/2018	PAYDOWN		51.388	51.388	51.291	51.304		.83	.83	.83		51.388					.857 03/01/2032
36212Q-ED-8	GOVERNMENT NATIONAL MORT-POOL #540232		12/01/2018	PAYDOWN		1.377	1.377	1.385	1.382		(5)	(5)	(5)		1.377					.49 03/01/2031
36212Q-JJ-0	GOVERNMENT NATIONAL MORT-POOL #540365		12/01/2018	PAYDOWN		.397	.397	.407	.404		(7)	(7)	(7)		.397					.22 06/01/2031
36212R-VA-3	GOVERNMENT NATIONAL MORT-POOL #541609		12/01/2018	PAYDOWN		6.394	6.394	6.552	6.514		(120)	(120)	(120)		6.394					.192 01/01/2034
36212S-VY-2	GOVERNMENT NATIONAL MORT-POOL #542624		12/01/2018	PAYDOWN		.892	.892	.897	.897		(5)	(5)	(5)		.892					.50 03/01/2031
36212V-BH-1	GOVERNMENT NATIONAL MORT-POOL #544640		12/01/2018	PAYDOWN		.99	.99	.107	.107		(8)	(8)	(8)		.99					.4 11/01/2030
36212W-L3-9	GOVERNMENT NATIONAL MORT-POOL #545846		12/01/2018	PAYDOWN		.320	.320	.328	.335		(14)	(14)	(14)		.320					.11 07/01/2031
36212W-NM-5	GOVERNMENT NATIONAL MORT-POOL #545896		12/01/2018	PAYDOWN		1.323	1.323	1.354	1.345		(22)	(22)	(22)		1.323					.30 08/01/2031
36212X-VU-6	GOVERNMENT NATIONAL MORT-POOL #547027		03/01/2018	PAYDOWN		2.944	2.944	3.046	3.015		(71)	(71)	(71)		2.944					.29 05/01/2031
36212Y-UL-5	GOVERNMENT NATIONAL MORT-POOL #547887		12/01/2018	PAYDOWN		.166	.166	.172	.170		(4)	(4)	(4)		.166					.5 06/01/2031

E14.15

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36213A-B7-8	GOVERNMENT NATIONAL MORT-POOL #548262		12/01/2018	PAYDOWN		322	322	330	328		(5)		(5)		322				.11	12/01/2031
36213A-BV-5	GOVERNMENT NATIONAL MORT-POOL #548252		12/01/2018	PAYDOWN		968	968	991	984		(16)		(16)		968				.34	09/01/2031
36213A-BX-1	GOVERNMENT NATIONAL MORT-POOL #548254		12/01/2018	PAYDOWN		75	75	76	76		(2)		(2)		75				.2	10/01/2031
36213A-RY-2	GOVERNMENT NATIONAL MORT-POOL #548703		12/01/2018	PAYDOWN		179	179	185	184		(4)		(4)		179				.6	11/01/2032
36213B-RG-9	GOVERNMENT NATIONAL MORT-POOL #549587		12/01/2018	PAYDOWN		1,198	1,198	1,227	1,229		(31)		(31)		1,198				.45	09/01/2031
36213C-VE-7	GOVERNMENT NATIONAL MORT-POOL #550613		12/01/2018	PAYDOWN		194,486	194,486	193,149	193,240		1,247		1,247		194,486				5.196	08/01/2035
36213D-3C-0	GOVERNMENT NATIONAL MORT-POOL #551695		12/01/2018	PAYDOWN		832	832	972	948		(116)		(116)		832				.22	02/01/2032
36213D-6E-3	GOVERNMENT NATIONAL MORT-POOL #551769		12/01/2018	PAYDOWN		30	30	32	31		(1)		(1)		30					04/01/2032
36213D-CX-4	GOVERNMENT NATIONAL MORT-POOL #550986		12/01/2018	PAYDOWN		1,973	1,973	2,021	2,013		(40)		(40)		1,973				.49	10/01/2031
36213D-FB-9	GOVERNMENT NATIONAL MORT-POOL #551062		12/01/2018	PAYDOWN		3,658	3,658	3,746	3,718		(60)		(60)		3,658				.152	11/01/2031
36213D-G3-6	GOVERNMENT NATIONAL MORT-POOL # 551118		12/01/2018	PAYDOWN		255	255	264	261		(6)		(6)		255				.7	08/01/2031
36213D-GB-8	GOVERNMENT NATIONAL MORT-POOL #551094		12/01/2018	PAYDOWN		429	429	439	437		(8)		(8)		429				.14	11/01/2031
36213D-LJ-8	GOVERNMENT NATIONAL MORT-POOL #551488		12/01/2018	PAYDOWN		145	145	150	148		(4)		(4)		145				.5	06/01/2031
36213E-CW-4	GOVERNMENT NATIONAL MORT-POOL #551885		12/01/2018	PAYDOWN		71	71	74	74		(3)		(3)		71				.2	11/01/2031
36213E-DZ-6	GOVERNMENT NATIONAL MORT-POOL #551920		12/01/2018	PAYDOWN		435	435	450	445		(11)		(11)		435				.17	12/01/2031
36213E-EW-2	GOVERNMENT NATIONAL MORT-POOL #551949		04/01/2018	PAYDOWN		76,861	76,861	76,717	76,739		122		122		76,861				1.238	01/01/2032
36213E-F2-7	GOVERNMENT NATIONAL MORT-POOL #551985		12/01/2018	PAYDOWN		148	148	154	152		(4)		(4)		148				.5	01/01/2032
36213E-FP-6	GOVERNMENT NATIONAL MORT-POOL #551974		12/01/2018	PAYDOWN		3,063	3,063	3,643	3,501		(438)		(438)		3,063				.118	01/01/2032
36213E-HF-6	GOVERNMENT NATIONAL MORT-POOL #552030		06/01/2018	PAYDOWN		1,773	1,773	1,816	1,802		(29)		(29)		1,773				.48	11/01/2031
36213E-M6-0	GOVERNMENT NATIONAL MORT-POOL # 552181		12/01/2018	PAYDOWN		464	464	480	478		(14)		(14)		464				.15	11/01/2031
36213E-NK-9	GOVERNMENT NATIONAL MORT-POOL #552162		12/01/2018	PAYDOWN		2,211	2,211	2,264	2,248		(37)		(37)		2,211				.82	11/01/2031
36213E-NM-5	GOVERNMENT NATIONAL MORT-POOL #552164		12/01/2018	PAYDOWN		5,348	5,348	5,496	5,487		(138)		(138)		5,348				.190	11/01/2031
36213E-P5-9	GOVERNMENT NATIONAL MORT-POOL #552244		12/01/2018	PAYDOWN		186	186	190	191		(6)		(6)		186				.7	12/01/2031
36213E-P8-3	GOVERNMENT NATIONAL MORT-POOL #552247		12/01/2018	PAYDOWN		157	157	161	160		(3)		(3)		157				.6	12/01/2031
36213E-PG-5	GOVERNMENT NATIONAL MORT-POOL #552223		12/01/2018	PAYDOWN		157	157	161	160		(3)		(3)		157				.6	11/01/2031
36213E-PU-4	GOVERNMENT NATIONAL MORT-POOL #552235		12/01/2018	PAYDOWN		54	54	56	55		(1)		(1)		54				.2	12/01/2031
36213E-R9-9	GOVERNMENT NATIONAL MORT-POOL #552312		12/01/2018	PAYDOWN		9,357	9,357	9,245	9,272		84		84		9,357				181	01/01/2032
36213E-SF-4	GOVERNMENT NATIONAL MORT-POOL #552318		12/01/2018	PAYDOWN		605	605	626	622		(17)		(17)		605				.15	01/01/2032
36213E-SK-3	GOVERNMENT NATIONAL MORT-POOL #552322		12/01/2018	PAYDOWN		858	858	1,020	987		(129)		(129)		858				.30	01/01/2032
36213E-LH-7	GOVERNMENT NATIONAL MORT-POOL #552384		12/01/2018	PAYDOWN		133	133	137	137		(4)		(4)		133				.3	02/01/2032
36213E-IV-4	GOVERNMENT NATIONAL MORT-POOL #552460		12/01/2018	PAYDOWN		118	118	122	122		(4)		(4)		118				.4	03/01/2032
36213E-YC-4	GOVERNMENT NATIONAL MORT-POOL #552507		12/01/2018	PAYDOWN		30	30	31	31		(1)		(1)		30					04/01/2032
36213F-DB-3	GOVERNMENT NATIONAL MORT-POOL #552827		12/01/2018	PAYDOWN		525	525	544	539		(13)		(13)		525				.17	10/01/2032
36213F-F6-5	GOVERNMENT NATIONAL MORT-POOL #552889		12/01/2018	PAYDOWN		60	60	62	62		(2)		(2)		60				.2	11/01/2032
36213F-F7-3	GOVERNMENT NATIONAL MORT-POOL # 552890		12/01/2018	PAYDOWN		1,845	1,845	1,909	1,896		(51)		(51)		1,845				.39	11/01/2032
36213F-FU-2	GOVERNMENT NATIONAL MORT-POOL #552879		12/01/2018	PAYDOWN		11,410	11,410	11,431	11,426		(16)		(16)		11,410				.386	11/01/2032
36213F-FW-8	GOVERNMENT NATIONAL MORT-POOL #552881		12/01/2018	PAYDOWN		4,345	4,345	4,353	4,351		(7)		(7)		4,345				.115	11/01/2032
36213F-H5-5	GOVERNMENT NATIONAL MORT-POOL #552952		12/01/2018	PAYDOWN		4,932	4,932	5,104	5,093		(161)		(161)		4,932				.131	12/01/2032
36213F-HL-0	GOVERNMENT NATIONAL MORT-POOL #552935		12/01/2018	PAYDOWN		16,980	16,980	17,011	17,000		(20)		(20)		16,980				.619	11/01/2032
36213F-JA-2	GOVERNMENT NATIONAL MORT-POOL #552957		12/01/2018	PAYDOWN		381	381	394	391		(11)		(11)		381				.4	12/01/2032
36213F-K2-8	GOVERNMENT NATIONAL MORT-POOL #553013		12/01/2018	PAYDOWN		3,116	3,116	3,126	3,124		(8)		(8)		3,116				.107	01/01/2033
36213F-K7-7	GOVERNMENT NATIONAL MORT-POOL # 553018		12/01/2018	PAYDOWN		66	66	68	68		(2)		(2)		66				.2	01/01/2033
36213F-KZ-5	GOVERNMENT NATIONAL MORT-POOL #553012		12/01/2018	PAYDOWN		148,355	148,355	148,815	148,690		(335)		(335)		148,355				2.794	01/01/2033
36213F-PU-1	GOVERNMENT NATIONAL MORT-POOL # 553135		12/01/2018	PAYDOWN		2,746	2,746	2,841	2,823		(77)		(77)		2,746				.45	03/01/2033
36213F-RF-2	GOVERNMENT NATIONAL MORT-POOL #553186		12/01/2018	PAYDOWN		294	294	302	301		(7)		(7)		294				.10	04/01/2033
36213G-AL-5	GOVERNMENT NATIONAL MORT-POOL #553611		12/01/2018	PAYDOWN		11,396	11,396	13,554	13,030		(1,635)		(1,635)		11,396				4.66	02/01/2032
36213G-TC-5	GOVERNMENT NATIONAL MORT-POOL #554147		12/01/2018	PAYDOWN		260	260	266	266		(4)		(4)		260				.9	10/01/2031
36213G-Y5-4	GOVERNMENT NATIONAL MORT-POOL #554332		12/01/2018	PAYDOWN		489	489	492	491		(2)		(2)		489				.17	03/01/2031
36213G-ZA-2	GOVERNMENT NATIONAL MORT-POOL #554337		12/01/2018	PAYDOWN		1,164	1,164	1,170	1,169		(5)		(5)		1,164				.41	03/01/2031
36213H-R4-3	GOVERNMENT NATIONAL MORT-POOL #555007		12/01/2018	PAYDOWN		1,632	1,632	1,689	1,673		(41)		(41)		1,632				.54	12/01/2032
36213J-E2-7	GOVERNMENT NATIONAL MORT-POOL #555553		12/01/2018	PAYDOWN		6,700	6,700	6,860	6,818		(118)		(118)		6,700				2.39	10/01/2031
36213J-E8-4	GOVERNMENT NATIONAL MORT-POOL #555559		12/01/2018	PAYDOWN		25	25	26	26						25					10/01/2031
36213J-GT-6	GOVERNMENT NATIONAL MORT-POOL #555610		12/01/2018	PAYDOWN		433	433	443	440		(7)		(7)		433				.22	11/01/2031
36213J-QT-5	GOVERNMENT NATIONAL MORT-POOL #555866		12/01/2018	PAYDOWN		536	536	549	547		(11)		(11)		536				.19	09/01/2031
36213L-LK-4	GOVERNMENT NATIONAL MORT-POOL #557530		12/01/2018	PAYDOWN		13	13	13	13		(1)		(1)		13					07/01/2031
36213N-40-6	GOVERNMENT NATIONAL MORT-POOL #559831		12/01/2018	PAYDOWN		1,644	1,644	1,684	1,671		(27)		(27)		1,644				.30	09/01/2031
36213N-5A-0	GOVERNMENT NATIONAL MORT-POOL #559841		12/01/2018	PAYDOWN		12,790	12,790	13,095	13,024		(234)		(234)		12,790				4.02	11/01/2031
36213N-KS-4	GOVERNMENT NATIONAL MORT-POOL #559305		12/01/2018	PAYDOWN		470	470	481	478		(8)		(8)		470				.17	10/01/2031

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36213N-YA-8	GOVERNMENT NATIONAL MORT-POOL #559705		12/01/2018	PAYDOWN		.71	.71	.73	.72		(1)		(1)		.71				.3	11/01/2031
36213Q-UF-4	GOVERNMENT NATIONAL MORT-POOL #561382		12/01/2018	PAYDOWN		1,025	1,025	1,061	1,075		(49)		(49)		1,025				.30	11/01/2031
36213Q-YQ-6	GOVERNMENT NATIONAL MORT-POOL #561519		12/01/2018	PAYDOWN		30,959	30,959	30,901	30,907		52		52		30,959			1,220	.07	07/01/2031
36213R-3R-6	GOVERNMENT NATIONAL MORT-POOL #562508		12/01/2018	PAYDOWN		1,960	1,960	2,008	2,008		(48)		(48)		1,960			.05	.02	01/2034
36213R-5C-7	GOVERNMENT NATIONAL MORT-POOL #562543		12/01/2018	PAYDOWN		4,166	4,166	4,266	4,238		(71)		(71)		4,166			.17	.15	12/01/2031
36213R-KE-6	GOVERNMENT NATIONAL MORT-POOL # 561993		12/01/2018	PAYDOWN		530	530	548	543		(13)		(13)		530			.18	.07	01/2031
36213R-IM-5	GOVERNMENT NATIONAL MORT-POOL #562352		12/01/2018	PAYDOWN		360	360	369	367		(8)		(8)		360			.11	.01	01/2034
36213S-4M-4	GOVERNMENT NATIONAL MORT-POOL #563428		12/01/2018	PAYDOWN		606	606	620	616		(10)		(10)		606			.22	.11	01/2031
36213S-4N-2	GOVERNMENT NATIONAL MORT-POOL #563429		12/01/2018	PAYDOWN		1,291	1,291	1,322	1,313		(21)		(21)		1,291			.46	.11	01/2031
36213S-7M-1	GOVERNMENT NATIONAL MORT-POOL #563500		12/01/2018	PAYDOWN		4,330	4,330	4,437	4,412		(82)		(82)		4,330			.130	.01	01/2034
36213S-CV-5	GOVERNMENT NATIONAL MORT-POOL #562684		12/01/2018	PAYDOWN		3,496	3,496	3,502	3,502		(7)		(7)		3,496			.180	.12	01/2032
36213S-LH-6	GOVERNMENT NATIONAL MORT-POOL #562928		12/01/2018	PAYDOWN		215	215	220	218		(4)		(4)		215			.8	.09	01/2031
36213S-YK-5	GOVERNMENT NATIONAL MORT-POOL #563314		12/01/2018	PAYDOWN		97	97	100	100		(2)		(2)		97			.3	.11	01/2031
36213T-FB-4	GOVERNMENT NATIONAL MORT-POOL #563662		12/01/2018	PAYDOWN		120	120	120	120						120			.3	.10	01/2032
36213T-FC-2	GOVERNMENT NATIONAL MORT-POOL #563663		12/01/2018	PAYDOWN		2,458	2,458	2,544	2,526		(67)		(67)		2,458			.73	.10	01/2032
36213T-FS-7	GOVERNMENT NATIONAL MORT-POOL # 563677		12/01/2018	PAYDOWN		298	298	309	307		(8)		(8)		298			.9	.11	01/2032
36213U-BH-2	GOVERNMENT NATIONAL MORT-POOL #564440		12/01/2018	PAYDOWN		45	45	46	46		(1)		(1)		45			.1	.10	01/2031
36213U-CS-7	GOVERNMENT NATIONAL MORT-POOL #564492		12/01/2018	PAYDOWN		1,746	1,746	1,807	1,794		(48)		(48)		1,746			.57	.11	01/2031
36213U-D3-1	GOVERNMENT NATIONAL MORT-POOL #564522		12/01/2018	PAYDOWN		177	177	183	183		(6)		(6)		177			.6	.11	01/2031
36213U-E2-2	GOVERNMENT NATIONAL MORT-POOL #564553		12/01/2018	PAYDOWN		4,528	4,528	4,685	4,638		(110)		(110)		4,528			.91	.12	01/2031
36213U-FZ-8	GOVERNMENT NATIONAL MORT-POOL #564584		12/01/2018	PAYDOWN		41	41	41	42		(1)		(1)		41			.1	.07	01/2031
36213U-KM-1	GOVERNMENT NATIONAL MORT-POOL #564700		12/01/2018	PAYDOWN		445	445	460	458		(13)		(13)		445			.19	.07	01/2031
36213U-KX-7	GOVERNMENT NATIONAL MORT-POOL #564710		12/01/2018	PAYDOWN		276	276	286	283		(7)		(7)		276			.7	.07	01/2031
36213U-MB-3	GOVERNMENT NATIONAL MORT-POOL #564754		12/01/2018	PAYDOWN		68,345	68,345	70,224	69,811		(1,466)		(1,466)		68,345			1,615	.08	01/2031
36213U-M6-3	GOVERNMENT NATIONAL MORT-POOL #565069		12/01/2018	PAYDOWN		241	241	249	247		(7)		(7)		241			.4	.01	01/2032
36213V-G7-7	GOVERNMENT NATIONAL MORT-POOL # 565522		12/01/2018	PAYDOWN		78	78	80	80		(2)		(2)		78			.3	.11	01/2032
36213V-JJ-3	GOVERNMENT NATIONAL MORT-POOL #565575		12/01/2018	PAYDOWN		213	213	219	217		(3)		(3)		213			.8	.09	01/2031
36213V-HK-1	GOVERNMENT NATIONAL MORT-POOL #565662		12/01/2018	PAYDOWN		3,523	3,523	3,607	3,608		(85)		(85)		3,523			.90	.10	01/2031
36213V-HL-9	GOVERNMENT NATIONAL MORT-POOL #565663		12/01/2018	PAYDOWN		329	329	340	337		(8)		(8)		329			.12	.11	01/2031
36213V-HV-7	GOVERNMENT NATIONAL MORT-POOL #565672		12/01/2018	PAYDOWN		2,151	2,151	2,203	2,187		(35)		(35)		2,151			.76	.12	01/2031
36213V-OZ-4	GOVERNMENT NATIONAL MORT-POOL #565772		12/01/2018	PAYDOWN		37	37	38	38		(1)		(1)		37			.1	.09	01/2031
36213V-R3-4	GOVERNMENT NATIONAL MORT-POOL #565806		12/01/2018	PAYDOWN		857	857	877	871		(14)		(14)		857			.30	.11	01/2031
36213V-RK-6	GOVERNMENT NATIONAL MORT-POOL #565790		12/01/2018	PAYDOWN		966	966	989	982		(16)		(16)		966			.30	.10	01/2031
36213W-JE-7	GOVERNMENT NATIONAL MORT-POOL #566461		12/01/2018	PAYDOWN		3,092	3,092	3,166	3,143		(51)		(51)		3,092			.110	.11	01/2031
36213W-KW-5	GOVERNMENT NATIONAL MORT-POOL #566509		12/01/2018	PAYDOWN		5,938	5,938	6,085	6,081		(143)		(143)		5,938			.212	.01	01/2034
36213W-PR-1	GOVERNMENT NATIONAL MORT-POOL #566632		12/01/2018	PAYDOWN		6	6	6	6						6			.1	.10	01/2031
36213W-QC-3	GOVERNMENT NATIONAL MORT-POOL #566651		12/01/2018	PAYDOWN		189	189	193	192		(3)		(3)		189			.7	.11	01/2031
36213W-SE-7	GOVERNMENT NATIONAL MORT-POOL # 566717		12/01/2018	PAYDOWN		3,151	3,151	3,261	3,229		(77)		(77)		3,151			.103	.08	01/2031
36213W-TE-6	GOVERNMENT NATIONAL MORT-POOL #566749		12/01/2018	PAYDOWN		189	189	193	192		(3)		(3)		189			.7	.11	01/2031
36213X-3I-2	GOVERNMENT NATIONAL MORT-POOL #567913		12/01/2018	PAYDOWN		26,159	26,159	27,071	26,886		(727)		(727)		26,159			.604	.11	01/2032
36213X-6E-9	GOVERNMENT NATIONAL MORT-POOL #567969		12/01/2018	PAYDOWN		43	43	43	43						43			.1	.01	01/2033
36213X-DR-2	GOVERNMENT NATIONAL MORT-POOL #567212		12/01/2018	PAYDOWN		53	53	54	53		(1)		(1)		53			.2	.10	01/2031
36213X-E7-5	GOVERNMENT NATIONAL MORT-POOL #567258		12/01/2018	PAYDOWN		309	309	316	315		(6)		(6)		309			.12	.10	01/2031
36213X-FH-2	GOVERNMENT NATIONAL MORT-POOL #567268		12/01/2018	PAYDOWN		177	177	181	180		(3)		(3)		177			.6	.10	01/2031
36213X-FR-0	GOVERNMENT NATIONAL MORT-POOL #567276		12/01/2018	PAYDOWN		55	55	56	57		(2)		(2)		55			.2	.11	01/2031
36213Y-3V-2	GOVERNMENT NATIONAL MORT-POOL #568812		12/01/2018	PAYDOWN		290	290	297	295		(5)		(5)		290			.10	.10	01/2031
36213Y-6B-3	GOVERNMENT NATIONAL MORT-POOL #568866		12/01/2018	PAYDOWN		231	231	239	238		(6)		(6)		231			.7	.12	01/2031
36213Y-DZ-2	GOVERNMENT NATIONAL MORT-POOL # 568120		12/01/2018	PAYDOWN		2,754	2,754	2,849	2,821		(67)		(67)		2,754			.92	.10	01/2031
36213Y-PR-7	GOVERNMENT NATIONAL MORT-POOL #568432		12/01/2018	PAYDOWN		118	118	121	121		(2)		(2)		118			.4	.11	01/2031
362160-OH-9	GOVERNMENT NATIONAL MORT-POOL #179656		03/01/2018	PAYDOWN		6,736	6,736	6,798	6,762		(26)		(26)		6,736			.72	.11	01/2023
362165-MM-1	GOVERNMENT NATIONAL MORT-POOL #184064		06/01/2018	PAYDOWN		602	602	605	603		(2)		(2)		602			.15	.07	01/2023
362165-NG-3	GOVERNMENT NATIONAL MORT-POOL #184091		12/01/2018	PAYDOWN		59	59	59	59						59			.2	.10	01/2023
362160-5C-5	GOVERNMENT NATIONAL MORT-POOL #162043		12/01/2018	PAYDOWN		575	575	583	580		(5)		(5)		575			.14	.04	01/2024
36216R-ON-7	GOVERNMENT NATIONAL MORT-POOL #172461		06/01/2018	PAYDOWN		2,350	2,350	2,274	2,343		(7)		(7)		2,350			.46	.07	01/2018
36216X-3Q-2	GOVERNMENT NATIONAL MORT-POOL #178207		12/01/2018	PAYDOWN		45	45	52	49		(4)		(4)		45			.2	.02	01/2024
36217A-CP-3	GOVERNMENT NATIONAL MORT-POOL #187378		12/01/2018	PAYDOWN		2,030	2,030	2,079	2,049		(19)		(19)		2,030			.83	.10	01/2022
36218D-YJ-6	GOVERNMENT NATIONAL MORT-POOL #219513		12/01/2018	PAYDOWN		1,198	1,198	1,210	1,204		(6)		(6)		1,198			.42	.11	01/2023
36218X-J4-2	GOVERNMENT NATIONAL MORT-POOL #235283		02/01/2018	PAYDOWN		352	352	317	351		1		1		352			.2	.04	01/2018

E14.17

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
362194-MM-1	GOVERNMENT NATIONAL MORT-POOL #266864		12/01/2018	PAYDOWN		136	136	138	137		(1)		(1)		136				.6	06/01/2023	
362195-SW-0	GOVERNMENT NATIONAL MORT-POOL #267933		12/01/2018	PAYDOWN		322	322	332	328		(6)		(6)		322				.12	02/01/2028	
362197-HG-3	GOVERNMENT NATIONAL MORT-POOL #269431		12/01/2018	PAYDOWN		349	349	353	351		(2)		(2)		349				.14	07/01/2024	
362198-6N-8	GOVERNMENT NATIONAL MORT-POOL #270977		12/01/2018	PAYDOWN		3,990	3,990	4,053	3,998		(8)		(8)		3,990				.181	08/01/2019	
36220E-DK-0	GOVERNMENT NATIONAL MORT-POOL #275606		12/01/2018	PAYDOWN		5,608	5,608	5,751	5,626		(18)		(18)		5,608				.309	07/01/2019	
36220F-VS-0	GOVERNMENT NATIONAL MORT-POOL #277025		06/01/2018	PAYDOWN		3,915	3,915	3,976	3,925		(10)		(10)		3,915				.93	10/01/2019	
36220J-QK-5	GOVERNMENT NATIONAL MORT-POOL #279558		12/01/2018	PAYDOWN		307	307	303	306		1		1		307				.14	11/01/2019	
36220J-R5-7	GOVERNMENT NATIONAL MORT-POOL #279608		12/01/2018	PAYDOWN		15,002	15,002	14,674	14,907		95		95		15,002				.763	01/01/2020	
36220L-4S-7	GOVERNMENT NATIONAL MORT-POOL #281733		11/01/2018	PAYDOWN		16,990	16,990	16,816	16,931		60		60		16,990				.754	11/01/2019	
36223E-CE-2	GOVERNMENT NATIONAL MORT-POOL #305269		12/01/2018	PAYDOWN		3,264	3,264	3,248	3,255		9		9		3,264				.138	01/01/2022	
36223E-P7-3	GOVERNMENT NATIONAL MORT-POOL #305646		12/01/2018	PAYDOWN		2,691	2,691	2,708	2,695		(4)		(4)		2,691				.110	06/01/2021	
36223G-QD-4	GOVERNMENT NATIONAL MORT-POOL #307452		12/01/2018	PAYDOWN		1,538	1,538	1,588	1,561		(23)		(23)		1,538				.76	10/01/2021	
36223L-WW-4	GOVERNMENT NATIONAL MORT-POOL #311261		12/01/2018	PAYDOWN		7,049	7,049	7,094	7,059		(10)		(10)		7,049				.288	07/01/2021	
36223N-W9-1	GOVERNMENT NATIONAL MORT-POOL #313072		12/01/2018	PAYDOWN		411	411	413	413		(2)		(2)		411				.21	08/01/2022	
36223Q-J6-5	GOVERNMENT NATIONAL MORT-POOL #314485		12/01/2018	PAYDOWN		6,950	6,950	6,963	6,946		4		4		6,950				.335	12/01/2021	
36223R-Q2-2	GOVERNMENT NATIONAL MORT-POOL #315381		12/01/2018	PAYDOWN		3,926	3,926	3,951	3,933		(7)		(7)		3,926				.160	02/01/2022	
36223S-CV-3	GOVERNMENT NATIONAL MORT-POOL #316084		12/01/2018	PAYDOWN		12	12	13	13						12					.12	02/01/2022
36223S-F8-1	GOVERNMENT NATIONAL MORT-POOL #316191		12/01/2018	PAYDOWN		7	7	7	7						7					.04	01/2022
36223V-NA-0	GOVERNMENT NATIONAL MORT-POOL #319085		12/01/2018	PAYDOWN		880	880	891	884		(3)		(3)		880				.37	02/01/2022	
36223W-AD-6	GOVERNMENT NATIONAL MORT-POOL #319604		12/01/2018	PAYDOWN		87	87	87	87						87				.3	10/01/2023	
36223W-P8-1	GOVERNMENT NATIONAL MORT-POOL #320047		12/01/2018	PAYDOWN		145	145	147	146		(1)		(1)		145				.6	02/01/2023	
36223W-PU-2	GOVERNMENT NATIONAL MORT-POOL #320035		12/01/2018	PAYDOWN		147	147	167	158		(11)		(11)		147				.6	01/01/2023	
36223W-TQ-7	GOVERNMENT NATIONAL MORT-POOL #320159		12/01/2018	PAYDOWN		5,847	5,847	5,885	5,857		(9)		(9)		5,847				.233	09/01/2021	
36223X-RY-0	GOVERNMENT NATIONAL MORT-POOL #321003		12/01/2018	PAYDOWN		370	370	397	384		(15)		(15)		370				.15	01/01/2023	
36223Y-3H-1	GOVERNMENT NATIONAL MORT-POOL #322200		12/01/2018	PAYDOWN		4,201	4,201	4,240	4,217		(16)		(16)		4,201				.149	07/01/2023	
36223Y-TX-8	GOVERNMENT NATIONAL MORT-POOL #321966		12/01/2018	PAYDOWN		37	37	43	42		(6)		(6)		37				.2	05/01/2023	
36224B-LV-9	GOVERNMENT NATIONAL MORT-POOL #323540		12/01/2018	PAYDOWN		113	113	119	116		(3)		(3)		113				.4	11/01/2022	
36224E-TU-7	GOVERNMENT NATIONAL MORT-POOL #326463		12/01/2018	PAYDOWN		47	47	54	55		(8)		(8)		47				.2	11/01/2023	
36224F-DV-9	GOVERNMENT NATIONAL MORT-POOL #326916		12/01/2018	PAYDOWN		123	123	144	135		(12)		(12)		123				.5	01/01/2023	
36224F-FS-4	GOVERNMENT NATIONAL MORT-POOL #326977		12/01/2018	PAYDOWN		81	81	82	81						81				.3	05/01/2023	
36224F-KK-5	GOVERNMENT NATIONAL MORT-POOL #327098		12/01/2018	PAYDOWN		355	355	359	359		(3)		(3)		355				.15	07/01/2022	
36224F-MM-9	GOVERNMENT NATIONAL MORT-POOL #327164		12/01/2018	PAYDOWN		6,492	6,492	6,562	6,518		(26)		(26)		6,492				.222	04/01/2021	
36224J-F5-6	GOVERNMENT NATIONAL MORT-POOL #329688		12/01/2018	PAYDOWN		182	182	183	182		(1)		(1)		182				.7	10/01/2022	
36224K-JZ-3	GOVERNMENT NATIONAL MORT-POOL #330680		12/01/2018	PAYDOWN		566	566	576	570		(4)		(4)		566				.31	01/01/2023	
36224K-X5-3	GOVERNMENT NATIONAL MORT-POOL #331100		12/01/2018	PAYDOWN		1,302	1,302	1,511	1,416		(115)		(115)		1,302				.54	01/01/2023	
36224N-HP-5	GOVERNMENT NATIONAL MORT-POOL #334466		12/01/2018	PAYDOWN		2,390	2,390	2,413	2,402		(12)		(12)		2,390				.99	03/01/2023	
36224P-6G-8	GOVERNMENT NATIONAL MORT-POOL #334871		12/01/2018	PAYDOWN		1,010	1,010	1,039	1,026		(15)		(15)		1,010				.42	01/01/2023	
36224P-XD-5	GOVERNMENT NATIONAL MORT-POOL #334676		12/01/2018	PAYDOWN		377	377	382	379		(2)		(2)		377				.15	07/01/2023	
36224P-ZJ-0	GOVERNMENT NATIONAL MORT-POOL #334745		12/01/2018	PAYDOWN		1,174	1,174	1,191	1,180		(6)		(6)		1,174				.48	02/01/2023	
36224Q-CC-8	GOVERNMENT NATIONAL MORT-POOL #334967		12/01/2018	PAYDOWN		91	91	93	92		(1)		(1)		91				.4	09/01/2022	
36224Q-FC-5	GOVERNMENT NATIONAL MORT-POOL #335063		12/01/2018	PAYDOWN		1,429	1,429	1,443	1,435		(6)		(6)		1,429				.51	01/01/2024	
36224Q-L5-3	GOVERNMENT NATIONAL MORT-POOL #335248		12/01/2018	PAYDOWN		198	198	202	200		(2)		(2)		198				.8	01/01/2024	
36224Q-L9-5	GOVERNMENT NATIONAL MORT-POOL #335252		04/01/2018	PAYDOWN		1,744	1,744	1,760	1,754		(11)		(11)		1,744				.28	01/01/2024	
36224R-HB-6	GOVERNMENT NATIONAL MORT-POOL #336442		12/01/2018	PAYDOWN		99	99	99	99						99				.4	02/01/2023	
36224S-BC-5	GOVERNMENT NATIONAL MORT-POOL #336735		12/01/2018	PAYDOWN		777	777	780	778		(1)		(1)		777				.32	01/01/2023	
36224S-CD-2	GOVERNMENT NATIONAL MORT-POOL #336768		10/01/2018	PAYDOWN		1,031	1,031	1,050	1,041		(10)		(10)		1,031				.29	10/01/2022	
36224S-TX-0	GOVERNMENT NATIONAL MORT-POOL #337266		12/01/2018	PAYDOWN		1,400	1,400	1,472	1,440		(40)		(40)		1,400				.58	02/01/2023	
36224S-V8-2	GOVERNMENT NATIONAL MORT-POOL #337339		12/01/2018	PAYDOWN		809	809	814	810		(2)		(2)		809				.31	07/01/2023	
36224S-YB-2	GOVERNMENT NATIONAL MORT-POOL #337406		12/01/2018	PAYDOWN		43	43	44	44						43				.2	05/01/2023	
36224S-ZD-7	GOVERNMENT NATIONAL MORT-POOL #337440		07/01/2018	PAYDOWN		17	17	17	17						17					.06	01/2023
36224T-VN-7	GOVERNMENT NATIONAL MORT-POOL #338221		12/01/2018	PAYDOWN		11	11	12	12		(1)		(1)		11					.11	01/2022
36224T-WQ-9	GOVERNMENT NATIONAL MORT-POOL #338255		12/01/2018	PAYDOWN		1,436	1,436	1,462	1,446		(10)		(10)		1,436				.81	11/01/2022	
36224T-Z6-0	GOVERNMENT NATIONAL MORT-POOL #338365		12/01/2018	PAYDOWN		1,075	1,075	1,087	1,080		(5)		(5)		1,075				.47	12/01/2022	
36224U-AX-5	GOVERNMENT NATIONAL MORT-POOL #338522		12/01/2018	PAYDOWN		87	87	101	95		(8)		(8)		87				.3	12/01/2022	
36224U-FW-2	GOVERNMENT NATIONAL MORT-POOL #338681		12/01/2018	PAYDOWN		2,940	2,940	3,169	3,080		(140)		(140)		2,940				.116	01/01/2023	
36224U-T6-4	GOVERNMENT NATIONAL MORT-POOL #339073		12/01/2018	PAYDOWN		446	446	449	448		(2)		(2)		446				.18	11/01/2022	
36224U-ZX-8	GOVERNMENT NATIONAL MORT-POOL #339258		12/01/2018	PAYDOWN		2,229	2,229	2,260	2,256		(27)		(27)		2,229				.68	06/01/2023	
36224V-C8-6	GOVERNMENT NATIONAL MORT-POOL #339495		12/01/2018	PAYDOWN		1,720	1,720	2,019	1,908		(188)		(188)		1,720				.79	05/01/2023	

E14.18

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36224V-DA-0	GOVERNMENT NATIONAL MORT-POOL #339497		12/01/2018	PAYDOWN		897	897	1,051	985		(88)		(88)		897				36	05/01/2023
36224W-AC-7	GOVERNMENT NATIONAL MORT-POOL #340303		12/01/2018	PAYDOWN		938	938	951	943		(5)		(5)		938				43	02/01/2023
36224W-DK-6	GOVERNMENT NATIONAL MORT-POOL #340406		12/01/2018	PAYDOWN		189	189	192	190		(2)		(2)		189				8	08/01/2024
36224W-FM-7	GOVERNMENT NATIONAL MORT-POOL #340792		12/01/2018	PAYDOWN		4,341	4,341	5,093	4,905		(564)		(564)		4,341				198	05/01/2023
36224W-SJ-3	GOVERNMENT NATIONAL MORT-POOL #340821		12/01/2018	PAYDOWN		860	860	875	866		(6)		(6)		860				32	06/01/2023
36224W-V4-2	GOVERNMENT NATIONAL MORT-POOL #340935		12/01/2018	PAYDOWN		31	31	32	32						31				05/01/2023	
36224X-4A-6	GOVERNMENT NATIONAL MORT-POOL #342017		12/01/2018	PAYDOWN		659	659	746	710		(51)		(51)		659				27	04/01/2023
36224X-RL-7	GOVERNMENT NATIONAL MORT-POOL #341691		12/01/2018	PAYDOWN		3,881	3,881	3,939	3,908		(26)		(26)		3,881				111	02/01/2023
36224X-VF-5	GOVERNMENT NATIONAL MORT-POOL #341814		12/01/2018	PAYDOWN		1,656	1,656	1,672	1,663		(7)		(7)		1,656				59	11/01/2023
36224X-ZT-1	GOVERNMENT NATIONAL MORT-POOL #341954		12/01/2018	PAYDOWN		398	398	408	404		(6)		(6)		398				17	02/01/2023
36224Y-5G-0	GOVERNMENT NATIONAL MORT-POOL #342947		12/01/2018	PAYDOWN		592	592	594	593		(1)		(1)		592				24	01/01/2023
36224Y-JN-0	GOVERNMENT NATIONAL MORT-POOL #342369		12/01/2018	PAYDOWN		237	237	251	245		(8)		(8)		237				10	01/01/2023
36224Y-MA-8	GOVERNMENT NATIONAL MORT-POOL #342479		12/01/2018	PAYDOWN		17	17	17	17						17				11/01/2022	
36224Y-QD-4	GOVERNMENT NATIONAL MORT-POOL #342552		12/01/2018	PAYDOWN		13	13	15	14		(1)		(1)		13				03/01/2023	
36225A-2B-5	GOVERNMENT NATIONAL MORT-POOL #780770		12/01/2018	PAYDOWN		221	221	228	227		(6)		(6)		221				7	04/01/2028
36225A-2C-3	GOVERNMENT NATIONAL MORT-POOL #780771		12/01/2018	PAYDOWN		17,160	17,160	16,721	16,897		264		264		17,160				528	05/01/2024
36225A-2E-9	GOVERNMENT NATIONAL MORT-POOL #780773		12/01/2018	PAYDOWN		3,989	3,989	4,051	4,030		(40)		(40)		3,989				152	04/01/2028
36225A-2J-8	GOVERNMENT NATIONAL MORT-POOL #780777		12/01/2018	PAYDOWN		1,460	1,460	1,497	1,485		(26)		(26)		1,460				53	04/01/2028
36225A-5B-2	GOVERNMENT NATIONAL MORT-POOL #780842		12/01/2018	PAYDOWN		1,536	1,536	1,581	1,564		(29)		(29)		1,536				71	08/01/2028
36225A-5S-5	GOVERNMENT NATIONAL MORT-POOL #780857		12/01/2018	PAYDOWN		2,528	2,528	2,650	2,556		(28)		(28)		2,528				97	04/01/2020
36225A-6N-5	GOVERNMENT NATIONAL MORT-POOL #780877		12/01/2018	PAYDOWN		51,630	51,630	52,799	52,466		(836)		(836)		51,630			2,203	10/01/2028	
36225A-7D-6	GOVERNMENT NATIONAL MORT-POOL #780892		12/01/2018	PAYDOWN		6,333	6,333	6,392	6,371		(38)		(38)		6,333				213	11/01/2028
36225A-BA-7	GOVERNMENT NATIONAL MORT-POOL #780033		12/01/2018	PAYDOWN		1,182	1,182	1,193	1,188		(6)		(6)		1,182				44	07/01/2024
36225A-C6-5	GOVERNMENT NATIONAL MORT-POOL #780093		12/01/2018	PAYDOWN		316	316	304	309		7		7		316				10	07/01/2024
36225A-DG-2	GOVERNMENT NATIONAL MORT-POOL #780103		12/01/2018	PAYDOWN		157	157	170	175		(18)		(18)		157				8	02/01/2025
36225A-DS-6	GOVERNMENT NATIONAL MORT-POOL #780113		12/01/2018	PAYDOWN		1,960	1,960	1,983	1,973		(12)		(12)		1,960				73	10/01/2024
36225A-EA-4	GOVERNMENT NATIONAL MORT-POOL #780129		12/01/2018	PAYDOWN		1,879	1,879	1,900	1,891		(12)		(12)		1,879				70	11/01/2024
36225A-FF-2	GOVERNMENT NATIONAL MORT-POOL #780166		12/01/2018	PAYDOWN		74	74	74	74						74				3	06/01/2025
36225A-GN-4	GOVERNMENT NATIONAL MORT-POOL #780205		12/01/2018	PAYDOWN		2,902	2,902	2,999	2,946		(44)		(44)		2,902				134	04/01/2023
36225A-KZ-2	GOVERNMENT NATIONAL MORT-POOL #780312		12/01/2018	PAYDOWN		2,578	2,578	2,395	2,451		127		127		2,578				84	01/01/2026
36225A-MX-5	GOVERNMENT NATIONAL MORT-POOL #780374		12/01/2018	PAYDOWN		432	432	442	438		(5)		(5)		432				17	12/01/2023
36225A-NF-3	GOVERNMENT NATIONAL MORT-POOL #780390		12/01/2018	PAYDOWN		2,813	2,813	2,879	2,840		(28)		(28)		2,813				138	12/01/2022
36225A-S6-8	GOVERNMENT NATIONAL MORT-POOL #780541		12/01/2018	PAYDOWN		3,063	3,063	3,051	3,053		10		10		3,063				101	07/01/2026
36225A-TR-1	GOVERNMENT NATIONAL MORT-POOL #780560		12/01/2018	PAYDOWN		3,052	3,052	2,937	2,984		69		69		3,052				101	05/01/2024
36225A-TT-7	GOVERNMENT NATIONAL MORT-POOL #780562		12/01/2018	PAYDOWN		2,293	2,293	2,364	2,341		(48)		(48)		2,293				106	05/01/2027
36225A-TV-2	GOVERNMENT NATIONAL MORT-POOL #780564		12/01/2018	PAYDOWN		463	463	478	472		(9)		(9)		463				23	05/01/2027
36225A-UH-1	GOVERNMENT NATIONAL MORT-POOL #780584		12/01/2018	PAYDOWN		1,213	1,213	1,231	1,225		(11)		(11)		1,213				47	06/01/2027
36225A-IL-0	GOVERNMENT NATIONAL MORT-POOL #780651		12/01/2018	PAYDOWN		24	24	25	25		(1)		(1)		24				3	10/01/2027
36225A-IN-6	GOVERNMENT NATIONAL MORT-POOL #780653		12/01/2018	PAYDOWN		81	81	81	81		(1)		(1)		81				39	03/01/2028
36225A-Y5-3	GOVERNMENT NATIONAL MORT-POOL #780732		12/01/2018	PAYDOWN		949	949	971	964		(15)		(15)		949				3	03/01/2028
36225A-YN-4	GOVERNMENT NATIONAL MORT-POOL #780717		12/01/2018	PAYDOWN		1,244	1,244	1,258	1,253		(9)		(9)		1,244				45	02/01/2028
36225A-ZA-1	GOVERNMENT NATIONAL MORT-POOL #780737		12/01/2018	PAYDOWN		5,204	5,204	5,176	5,183		22		22		5,204				172	03/01/2028
36225B-B3-1	GOVERNMENT NATIONAL MORT-POOL #780958		12/01/2018	PAYDOWN		8,232	8,232	8,517	8,430		(198)		(198)		8,232				258	01/01/2029
36225B-BR-8	GOVERNMENT NATIONAL MORT-POOL #780948		12/01/2018	PAYDOWN		81,504	81,504	81,237	81,332		172		172		81,504				2,658	12/01/2023
36225B-CJ-5	GOVERNMENT NATIONAL MORT-POOL #780973		12/01/2018	PAYDOWN		740	740	763	745		(6)		(6)		740				1	05/01/2020
36225B-CN-6	GOVERNMENT NATIONAL MORT-POOL #780977		12/01/2018	PAYDOWN		21,275	21,275	21,780	21,633		(358)		(358)		21,275				852	12/01/2028
36225B-DJ-4	GOVERNMENT NATIONAL MORT-POOL #781005		12/01/2018	PAYDOWN		1,722	1,722	1,827	1,792		(71)		(71)		1,722				119	03/01/2025
36225B-EU-8	GOVERNMENT NATIONAL MORT-POOL #781047		12/01/2018	PAYDOWN		1,504	1,504	1,556	1,542		(38)		(38)		1,504				51	06/01/2029
36225B-HZ-4	GOVERNMENT NATIONAL MORT-POOL #781148		12/01/2018	PAYDOWN		2,445	2,445	2,530	2,511		(65)		(65)		2,445				75	07/01/2029
36225B-KD-9	GOVERNMENT NATIONAL MORT-POOL #781192		12/01/2018	PAYDOWN		43,605	43,605	43,692	43,602		4		4		43,605				1,733	02/01/2022
36225B-KX-5	GOVERNMENT NATIONAL MORT-POOL #781210		12/01/2018	PAYDOWN		483	483	495	492		(9)		(9)		483				16	09/01/2029
36225B-NC-8	GOVERNMENT NATIONAL MORT-POOL #781287		12/01/2018	PAYDOWN		20,175	20,175	24,222	23,465		(3,290)		(3,290)		20,175				742	05/01/2031
36225B-P6-9	GOVERNMENT NATIONAL MORT-POOL #781345		12/01/2018	PAYDOWN		506	506	524	520		(14)		(14)		506				18	10/01/2031
36225B-PM-4	GOVERNMENT NATIONAL MORT-POOL #781328		12/01/2018	PAYDOWN		12,892	12,892	15,471	15,027		(2,135)		(2,135)		12,892				475	09/01/2031
36225B-PP-7	GOVERNMENT NATIONAL MORT-POOL #781330		12/01/2018	PAYDOWN		2,191	2,191	2,267	2,252		(61)		(61)		2,191				69	09/01/2031
36225B-PV-4	GOVERNMENT NATIONAL MORT-POOL #781336		12/01/2018	PAYDOWN		336	336	348	345		(9)		(9)		336				11	10/01/2031
36225B-Q6-8	GOVERNMENT NATIONAL MORT-POOL #781377		12/01/2018	PAYDOWN		2,185	2,185	2,261	2,246		(61)		(61)		2,185				66	09/01/2029
36225B-TW-8	GOVERNMENT NATIONAL MORT-POOL #781465		12/01/2018	PAYDOWN		2,081	2,081	2,154	2,140		(59)		(59)		2,081				58	07/01/2032

E14.19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
36225B-UN-6	GOVERNMENT NATIONAL MORT-POOL #781489		12/01/2018	PAYDOWN		1,307	1,307	1,353	1,344		(37)		(37)		1,307				.46	08/01/2032
36225B-VU-9	GOVERNMENT NATIONAL MORT-POOL #781527		12/01/2018	PAYDOWN		.74	.74	.77	.76		(2)		(2)		.74				.2	11/01/2032
36225C-A7-1	GOVERNMENT NATIONAL MORT-POOL #80029 ARM		12/01/2018	PAYDOWN		3,097	3,097	3,083	2,933		164		164		3,097				.48	01/01/2027
36225C-A8-9	GOVERNMENT NATIONAL MORT-POOL #80030 ARM		12/01/2018	PAYDOWN		50,650	50,650	50,624	48,218		2,431		2,431		50,650				.887	01/01/2027
36225C-AM-8	GOVERNMENT NATIONAL MORT-POOL #80011 ARM		12/01/2018	PAYDOWN		8,460	8,460	8,502	8,110		350		350		8,460				.152	11/01/2026
36225C-AY-2	GOVERNMENT NATIONAL MORT-POOL #80022 ARM		12/01/2018	PAYDOWN		17,882	17,882	17,972	17,141		741		741		17,882				.275	12/01/2026
36225C-BN-5	GOVERNMENT NATIONAL MORT-POOL #80044 ARM		12/01/2018	PAYDOWN		4,028	4,028	4,010	3,820		208		208		4,028				.68	02/01/2027
36225C-BP-0	GOVERNMENT NATIONAL MORT-POOL #80045 ARM		12/01/2018	PAYDOWN		15,469	15,469	15,503	14,702		767		767		15,469				.210	02/01/2027
36225C-BW-5	GOVERNMENT NATIONAL MORT-POOL #80052 ARM		12/01/2018	PAYDOWN		15,152	15,152	15,062	14,330		821		821		15,152				.228	03/01/2027
36225C-BX-3	GOVERNMENT NATIONAL MORT-POOL #80053 ARM		12/01/2018	PAYDOWN		15,763	15,763	15,780	14,974		789		789		15,763				.280	03/01/2027
36225C-DA-5	GOVERNMENT NATIONAL MORT-POOL #80122 ARM		12/01/2018	PAYDOWN		27,209	27,209	27,413	26,054		1,155		1,155		27,209				.442	10/01/2027
36225C-DL-7	GOVERNMENT NATIONAL MORT-POOL #80106 ARM		12/01/2018	PAYDOWN		38,881	38,881	39,111	37,095		1,786		1,786		38,881				.611	08/01/2027
36225C-ER-3	GOVERNMENT NATIONAL MORT-POOL #80143 ARM		12/01/2018	PAYDOWN		11,536	11,536	11,611	11,040		495		495		11,536				.153	12/01/2027
36225E-IY-4	GOVERNMENT NATIONAL MORT-POOL #82462		12/01/2018	PAYDOWN		17,569	17,569	18,509	18,155		(586)		(586)		17,569				.288	01/01/2040
36225E-XS-6	GOVERNMENT NATIONAL MORT-POOL #82488		12/01/2018	PAYDOWN		25,293	25,293	26,117	25,804		(512)		(512)		25,293				.375	03/01/2040
36290Q-AA-3	GOVERNMENT NATIONAL MORT-POOL #613901		12/01/2018	PAYDOWN		1,763	1,763	1,810	1,797		(34)		(34)		1,763				.53	10/01/2033
36290R-RD-7	GOVERNMENT NATIONAL MORT-POOL #615284		12/01/2018	PAYDOWN		3,482	3,482	3,568	3,553		(71)		(71)		3,482				.93	07/01/2033
36290R-UA-9	GOVERNMENT NATIONAL MORT-POOL #615377		12/01/2018	PAYDOWN		15,505	15,505	15,912	15,863		(359)		(359)		15,505				.499	07/01/2033
36290R-ZT-3	GOVERNMENT NATIONAL MORT-POOL #615554		12/01/2018	PAYDOWN		835	835	857	852		(17)		(17)		835				.32	09/01/2033
36290X-KD-1	GOVERNMENT NATIONAL MORT-POOL #620492		12/01/2018	PAYDOWN		520	520	533	530		(9)		(9)		520				.16	06/01/2033
36290Y-2F-4	GOVERNMENT NATIONAL MORT-POOL #621874		12/01/2018	PAYDOWN		1,713	1,713	1,755	1,744		(31)		(31)		1,713				.51	02/01/2034
36290Y-J9-0	GOVERNMENT NATIONAL MORT-POOL #621388		12/01/2018	PAYDOWN		12,601	12,601	12,912	12,842		(241)		(241)		12,601				.330	01/01/2034
36290Y-KE-7	GOVERNMENT NATIONAL MORT-POOL #621393		12/01/2018	PAYDOWN		6,146	6,146	6,297	6,310		(165)		(165)		6,146				.185	02/01/2034
36290Y-IU-8	GOVERNMENT NATIONAL MORT-POOL #621759		12/01/2018	PAYDOWN		2,665	2,665	2,731	2,726		(60)		(60)		2,665				.57	12/01/2033
36290Y-XP-8	GOVERNMENT NATIONAL MORT-POOL #621786		12/01/2018	PAYDOWN		43,681	43,681	44,828	44,684		(1,003)		(1,003)		43,681				1,320	11/01/2033
36290Y-YJ-1	GOVERNMENT NATIONAL MORT-POOL #621813		12/01/2018	PAYDOWN		3,030	3,030	3,105	3,085		(55)		(55)		3,030				.44	11/01/2033
36291A-PC-7	GOVERNMENT NATIONAL MORT-POOL #622419		12/01/2018	PAYDOWN		7,700	7,700	7,891	7,875		(175)		(175)		7,700				.232	02/01/2034
36291B-C2-1	GOVERNMENT NATIONAL MORT-POOL #622989		12/01/2018	PAYDOWN		417	417	427	425		(8)		(8)		417				.9	11/01/2033
36291B-D5-3	GOVERNMENT NATIONAL MORT-POOL #623024		12/01/2018	PAYDOWN		3,078	3,078	3,154	3,134		(56)		(56)		3,078				.107	01/01/2034
36291B-DV-6	GOVERNMENT NATIONAL MORT-POOL #623016		12/01/2018	PAYDOWN		2,735	2,735	2,803	2,787		(52)		(52)		2,735				.79	01/01/2034
36291B-RH-2	GOVERNMENT NATIONAL MORT-POOL #623388		12/01/2018	PAYDOWN		83,677	83,677	85,743	85,472		(1,795)		(1,795)		83,677				2,608	02/01/2034
36291D-NL-3	GOVERNMENT NATIONAL MORT-POOL #625095		12/01/2018	PAYDOWN		5,569	5,569	5,706	5,688		(119)		(119)		5,569				.167	02/01/2034
36291E-6N-6	GOVERNMENT NATIONAL MORT-POOL #626477		12/01/2018	PAYDOWN		48,992	48,992	50,202	49,980		(988)		(988)		48,992				1,862	02/01/2034
36291E-B3-4	GOVERNMENT NATIONAL MORT-POOL #625658		12/01/2018	PAYDOWN		465	465	477	474		(9)		(9)		465				.14	01/01/2034
36291E-CM-1	GOVERNMENT NATIONAL MORT-POOL #625676		12/01/2018	PAYDOWN		1,344	1,344	1,378	1,372		(28)		(28)		1,344				.41	01/01/2034
36291E-K8-3	GOVERNMENT NATIONAL MORT-POOL #625919		12/01/2018	PAYDOWN		600	600	615	611		(11)		(11)		600				.18	02/01/2034
36291E-HF-5	GOVERNMENT NATIONAL MORT-POOL #625958		12/01/2018	PAYDOWN		17,002	17,002	17,421	17,314		(312)		(312)		17,002				.422	01/01/2034
36291E-HG-3	GOVERNMENT NATIONAL MORT-POOL #625959		12/01/2018	PAYDOWN		180	180	184	187		(7)		(7)		180				.5	01/01/2034
36291E-HL-2	GOVERNMENT NATIONAL MORT-POOL #625963		12/01/2018	PAYDOWN		2,027	2,027	2,077	2,069		(42)		(42)		2,027				.61	01/01/2034
36291F-EZ-7	GOVERNMENT NATIONAL MORT-POOL #626652		12/01/2018	PAYDOWN		17,462	17,462	17,893	17,780		(318)		(318)		17,462				.353	01/01/2034
36291F-IA-3	GOVERNMENT NATIONAL MORT-POOL #626853		12/01/2018	PAYDOWN		1,821	1,821	1,866	1,855		(33)		(33)		1,821				.55	01/01/2034
36291F-MD-7	GOVERNMENT NATIONAL MORT-POOL #626856		12/01/2018	PAYDOWN		34,636	34,636	35,491	35,421		(785)		(785)		34,636				1,461	02/01/2034
36291G-MC-7	GOVERNMENT NATIONAL MORT-POOL #627755		12/01/2018	PAYDOWN		3,571	3,571	3,659	3,636		(65)		(65)		3,571				.107	02/01/2034
36291G-RK-4	GOVERNMENT NATIONAL MORT-POOL #627890		12/01/2018	PAYDOWN		12,571	12,571	12,881	12,802		(231)		(231)		12,571				.132	01/01/2034
36292F-T6-4	GOVERNMENT NATIONAL MORT-POOL #647773		12/01/2018	PAYDOWN		207,306	207,306	205,881	206,202		1,104		1,104		207,306				3,870	09/01/2035
362956-N2-4	GOVERNMENT NATIONAL MORT-POOL #670109		12/01/2018	PAYDOWN		7,642	7,642	7,649	7,646		(5)		(5)		7,642				.300	07/01/2037
36295H-5N-6	GOVERNMENT NATIONAL MORT-POOL #671453		12/01/2018	PAYDOWN		209	209	209	209						209				.7	07/01/2037
36295N-K3-0	GOVERNMENT NATIONAL MORT-POOL #675414		12/01/2018	PAYDOWN		153,207	153,207	159,096	159,245		(6,038)		(6,038)		153,207				2,376	09/01/2035
38373R-C9-8	GOVERNMENT NATIONAL MORT-SERIES 2001-49		12/01/2018	PAYDOWN		20,031	20,031	21,190	20,516		(485)		(485)		20,031				.714	10/01/2031
38373V-SR-7	GOVERNMENT NATIONAL MORT-SERIES 2002-76C		11/16/2018	PAYDOWN		1,300	1,300	1,087	945						1,300				.170	12/16/2026
38373W-4S-4	GOVERNMENT NATIONAL MORT-SERIES 2002-33		12/01/2018	PAYDOWN		94,442	94,442	102,332	98,030		(3,589)		(3,589)		94,442				2,601	05/01/2032
38373W-C6-3	GOVERNMENT NATIONAL MORT-SERIES 2002-29		12/01/2018	PAYDOWN		85,494	85,494	92,379	88,729		(3,234)		(3,234)		85,494				2,053	05/01/2032
38373X-VS-2	GOVERNMENT NATIONAL MORT-SERIES 2002-49		12/01/2018	PAYDOWN		203,087	203,087	218,059	208,558		(5,472)		(5,472)		203,087				5,880	07/01/2032
38373Y-GR-9	GOVERNMENT NATIONAL MORT-SERIES 2002-78		11/16/2018	PAYDOWN		5,274	5,274	2,930	3,070						5,274				.503	11/16/2032
38374L-G8-8	GOVERNMENT NATIONAL MORT-SERIES 2005-63		12/01/2018	PAYDOWN		509,610	509,610	492,171	503,775		5,835		5,835		509,610				9,096	08/01/2035
38374N-LX-3	GOVERNMENT NATIONAL MORT-SERIES 2006-47		11/16/2018	PAYDOWN		18,943	18,943	9,908	10,529						18,943				2,226	08/16/2036
38375K-GF-3	GOVERNMENT NATIONAL MORT-SERIES 2007-36		12/01/2018	PAYDOWN		876,964	876,964	846,373	864,914		12,050		12,050		876,964				24,642	06/01/2037
38376R-3P-9	GOVERNMENT NATIONAL MORT-SERIES 2017-H C		12/20/2018	PAYDOWN		61,066	61,066	61,066	61,066						61,066				.762	05/20/2067

E14.20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
383788-4C-0	GOVERNMENT NATIONAL MORT-SERIES 2013-2 C		12/01/2018	PAYDOWN		47,868	47,868	48,556	48,536		(668)		(668)		47,868				709	05/01/2050
383788-4G-1	GOVERNMENT NATIONAL MORT-SERIES 2013-7 C		12/01/2018	PAYDOWN		57,980	57,980	58,298	58,262		(281)		(281)		57,980				635	03/01/2047
383788-63-7	GOVERNMENT NATIONAL MORT-SERIES 2012-109		12/01/2018	PAYDOWN		57,526	57,526	59,530	59,451		(1,925)		(1,925)		57,526				593	09/01/2044
38378K-HC-6	GNMA-REMIC SER 2013-55 CL A		12/01/2018	PAYDOWN		34,812	34,812	34,877	34,869		(58)		(58)		34,812				241	05/01/2034
38378N-2R-3	GOVERNMENT NATIONAL MORT-SERIES 2014-67		12/01/2018	PAYDOWN		18,494	18,494	18,561	18,585		(91)		(91)		18,494				222	05/01/2039
38378N-TZ-6	GNMA-REMIC SER 2014-14 CL AE		12/01/2018	PAYDOWN		50,623	50,623	51,788	51,845		(1,222)		(1,222)		50,623				442	12/01/2040
38379R-AN-3	GOVERNMENT NATIONAL MORTGAGE ASSOC REMIC		12/01/2018	PAYDOWN		20,369	20,369	20,540	20,783		(415)		(415)		20,369				324	12/16/2049
3837HO-BU-6	GOVERNMENT NATIONAL MORT-SERIES 1994-5 C		12/01/2018	PAYDOWN		236,578	236,578	245,154	238,383		(1,804)		(1,804)		236,578				9,445	07/01/2024
3837HO-SC-8	GOVERNMENT NATIONAL MORT-SERIES 1996-14		12/01/2018	PAYDOWN		36,796	36,796	35,386	36,165		631		631		36,796				1,082	07/01/2026
3837H2-C2-3	GOVERNMENT NATIONAL MORT-SERIES 1999-30		12/01/2018	PAYDOWN		710,774	710,774	712,874	711,999		(1,225)		(1,225)		710,774				23,209	08/01/2029
576863-BC-7	Matson Nav US GOVT GTD SHIP FING BD		07/29/2018	VARIOUS		54,240	54,240	60,781	60,781		2,334		2,334		54,240				1,906	07/29/2029
83162C-PR-8	SMALL BUSINESS ADMIN SER 2005-20G PARTN		07/01/2018	PAYDOWN		68,697	68,697	74,171	72,608		(3,910)		(3,910)		68,697				2,606	07/01/2025
83162C-SX-2	SMALL BUSINESS ADMIN SER 2009-20K PARTN		11/01/2018	PAYDOWN		91,218	91,218	98,430	97,282		(6,065)		(6,065)		91,218					11/01/2029
83162C-TE-3	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20D		10/01/2018	PAYDOWN		264,721	264,721	294,931	290,586		(25,865)		(25,865)		264,721				9,399	04/01/2030
83162C-TG-8	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20E		11/01/2018	PAYDOWN		482,225	482,225	531,641	529,837		(47,612)		(47,612)		482,225				5,500	05/01/2030
83162C-TH-6	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20F		12/01/2018	PAYDOWN		489,071	489,071	533,265	524,074		(35,003)		(35,003)		489,071				23,174	06/01/2030
83162C-TK-9	SMALL BUSINESS ADMIN SER 2010-20G PARTN		07/01/2018	PAYDOWN		50,188	50,188	53,137	52,530		(2,341)		(2,341)		50,188				1,536	07/01/2030
83162C-TL-7	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20H		08/01/2018	PAYDOWN		459,623	459,623	497,495	490,319		(30,696)		(30,696)		459,623				11,824	08/01/2030
83162C-TN-3	SMALL BUSINESS ADMINISTRATION-SERIES 2010-20I		09/01/2018	PAYDOWN		842,627	842,627	908,396	892,602		(49,975)		(49,975)		842,627				20,493	09/01/2030
83162C-UA-9	SMALL BUSINESS ADMINISTRATION-SERIES 2011-20E		11/01/2018	PAYDOWN		107,826	107,826	119,802	118,821		(10,995)		(10,995)		107,826					05/01/2031
83162C-UD-3	SMALL BUSINESS ADMINISTRATION-SERIES 2011-20G		07/01/2018	PAYDOWN		381,568	381,568	419,961	412,758		(31,190)		(31,190)		381,568				11,273	07/01/2031
83162C-UE-1	SMALL BUSINESS ADMIN SER 2011-20H PARTN		08/01/2018	PAYDOWN		69,721	69,721	71,724	60,985		(1,791)		(1,791)		69,721				1,640	08/01/2031
83162C-UK-7	SMALL BUSINESS ADMIN SER 2011-20K PARTN		11/01/2018	PAYDOWN		75,789	75,789	76,938	76,788		(999)		(999)		75,789					11/01/2031
83162C-US-0	SMALL BUSINESS ADMIN SER 2012-20D PARTN		10/01/2018	PAYDOWN		655,630	655,630	681,877	675,535		(19,905)		(19,905)		655,630				14,064	04/01/2032
83162C-UV-3	SBA PARTN CTF SER 2012-20F		12/01/2018	PAYDOWN		48,740	48,740	47,997	48,112		629		629		48,740				931	06/01/2032
83162C-VN-0	SMALL BUSINESS ADMINISTRATION-SERIES 201		11/01/2018	PAYDOWN		93,485	93,485	89,395	89,844		3,642		3,642		93,485					05/01/2033
83162C-VP-5	SMALL BUSINESS ADMIN PARTN CTF SER 2013-		12/01/2018	PAYDOWN		96,295	96,295	95,025	95,182		831		831		96,295					(1,729)
83162C-VR-1	SMALL BUSINESS ADMIN 2013-20G PARTN CTF		07/01/2018	PAYDOWN		102,786	102,786	105,404	104,976		(2,189)		(2,189)		102,786				2,554	07/01/2033
83162C-VS-9	SMALL BUSINESS ADMIN-PARTN CTF SER 2013-		08/01/2018	PAYDOWN		117,376	117,376	120,263	119,882		(2,506)		(2,506)		117,376				2,932	08/01/2033
83162C-VU-4	SMALL BUSINESS ADMINISTRATION-SERIES 201		09/01/2018	PAYDOWN		87,174	87,174	91,778	91,131		(3,957)		(3,957)		87,174				2,663	09/01/2033
83162C-VX-8	SMALL BUSINESS ADMINISTRATION-SBAP 2013-20K 1		11/01/2018	PAYDOWN		47,468	47,468	49,280	49,108		(1,640)		(1,640)		47,468					11/01/2033
83162C-WA-7	SMALL BUSINESS ADMIN PARTN CTF SER 2014-		07/01/2018	PAYDOWN		127,140	127,140	132,357	131,603		(4,463)		(4,463)		127,140				3,675	01/01/2034
83162C-WD-1	SMALL BUSINESS ADMINISTRATION-SERIES 2014-20C		09/01/2018	PAYDOWN		89,575	89,575	91,993	91,655		(2,080)		(2,080)		89,575				2,347	03/01/2034
83162C-WK-5	SMALL BUSINESS ADMIN PARTN CTF SER 2014-		07/01/2018	PAYDOWN		135,372	135,372	135,372	135,372						135,372				3,146	07/01/2034
83162C-XN-8	SMALL BUSINESS ADMINISTRATION-SERIES 2016-20A		07/01/2018	PAYDOWN		92,582	92,582	93,665	93,596		(1,015)		(1,015)		92,582				2,214	01/01/2036
83162C-YP-3	SBA SER 2016-20B PARTN CTF		08/01/2018	PAYDOWN		39,129	39,129	39,129	39,129						39,129				705	02/01/2036
83162C-YH-0	SMALL BUSINESS ADMINISTRATION-SERIES 2017-20B		08/01/2018	PAYDOWN		23,343	23,343	23,343	23,343						23,343				499	02/01/2037
83162C-ZC-0	Small Business Admin GTD Dev Partn CTF		07/01/2018	PAYDOWN		8,716	8,716	8,698			18		18		8,716				116	01/01/2038
83162C-ZH-9	SMALL BUSINESS ADMINISTRATION-SBAP 2018-20C 1		09/01/2018	PAYDOWN		13,342	13,342	13,311			31		31		13,342				199	03/01/2038
89156H-AB-3	Tote Shipholdings Inc-SENIOR UNSECURED		07/23/2018	CALL 100		12,000	12,000	11,951			2		2		11,953			47	01/22/2041	
912803-BH-5	US TREASURY-STRIP PRINCIPAL RECEIPT		06/13/2018	JP MORGAN SECURITIES		4,128,248	5,230,000	4,095,284	4,291,770		44,615		44,615		4,336,385				(208,137)	08/15/2026
912803-BL-6	US TREAS BD STRIPPED PRIN PMT 034		06/13/2018	JP MORGAN SECURITIES		3,324,531	4,350,000	3,302,781	3,455,153		33,503		33,503		3,488,656				(164,125)	08/15/2027
912803-BP-7	US TREAS SEC STRIPPED INT PMT		06/13/2018	HSBC SECURITIES INC		1,289,062	1,740,000	1,277,581	1,337,950		13,200		13,200		1,351,150				(62,088)	08/15/2028
912803-CG-6	US TREAS SEC STRIPPED INT PMT		06/13/2018	AMHERST SECURITIES		1,149,136	1,600,000	1,140,027	1,194,438		11,815		11,815		1,206,253				(57,117)	08/15/2029
912803-CH-4	US TREASURY SEC STRIPPED INT PMT		06/13/2018	JP MORGAN SECURITIES		1,378,154	1,960,000	1,365,975	1,431,437		14,154		14,154		1,445,591				(67,437)	05/15/2030
912803-CK-7	US TREAS SEC STRIPPED INT PMT		06/13/2018	HSBC SECURITIES INC		2,386,215	3,470,000	2,370,576	2,483,844		24,391		24,391		2,508,235				(122,020)	05/15/2031
912803-DD-2	US TREASURY-STRIP PRINCIPAL RECEIPT		06/19/2018	DTCC		606,420	1,080,000	483,743	537,918		6,242		6,242		624,160				62,260	02/15/2038
912810-FG-8	US TREASURY N/B-BOND		04/19/2018	AMHERST SECURITIES		121,234,375	100,000,000	128,632,813	128,337,011		(670,666)		(670,666)		127,666,344				(6,431,969)	02/15/2029
912810-OA-9	US TREASURY N/B-NOTE		03/21/2018	VARIOUS		150,797	140,000	158,397	158,324		(140)		(140)		158,184				(7,387)	02/15/2039
912810-PF-7	TSY INF IX N/B		10/31/2018	NOIURA SECURITIES IN		77,034,661	75,733,000	67,974,258	72,272,005		(12,188,287)		(12,140,719)		68,233,672				8,800,989	02/15/2044
912810-RS-9	US TREASURY N/B-BOND		12/17/2018	VARIOUS		1,533,669	1,730,000	1,616,173	1,572,849		519		519		1,616,997				(83,328)	05/15/2046
912810-RT-7	US TREASURY N/B-UNSECURED		01/05/2018	JP MORGAN SECURITIES		39,086,094	44,000,000	40,871,875	40,954,659		1,435		1,435		40,956,095				(1,870,001)	08/15/2046
912810-RU-4	US TREASURY N/B-UNSECURED		06/27/2018	VARIOUS		360,258,203	370,000,000	364,576,211	364,692,994		39,315		39,315		364,732,308				(4,474,105)	11/15/2046</

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
912828-N3-0	US TREASURY N/B-UNSECURED		12/10/2018	DTCYID		5,735,934	5,900,000	5,865,742	5,870,346		2,604		2,604		5,872,950		(137,016)	(137,016)	117,507	12/31/2022
912828-PH-5	US TREASURY N/B-NOTE		09/30/2018	MATURITY		820,000	820,000	822,542	820,397		(397)		(397)		820,000				8,394	09/30/2018
912828-TY-6	US TREASURY N/B-NOTE		08/08/2018	GOLDMAN		285,750,000	300,000,000	275,009,964	286,225,189		1,642,108		1,642,108		287,867,297		(2,117,297)	(2,117,297)	2,996,813	11/15/2022
912828-U2-4	US TREASURY N/B-UNSECURED		08/08/2018	VARIOUS		293,959,766	315,000,000	303,186,719	304,304,966		481,512		481,512		304,786,498		(10,826,732)	(10,826,732)	2,762,830	11/15/2026
912828-U8-1	US TREASURY N/B-UNSECURED		04/03/2018	DTCYID		1,572,395	1,600,000	1,605,098	1,604,304		(193)		(193)		1,604,111		(31,716)	(31,716)	5,878	12/31/2021
912828-V7-2	US TREASURY N/B-UNSECURED		11/29/2018	DTCYID		4,083,789	4,200,000	4,185,070	4,187,679		1,289		1,289		4,188,968		(105,179)	(105,179)	68,350	01/31/2022
912828-W8-9	US TREASURY N/B-UNSECURED		04/04/2018	DTCYID		3,123,492	3,200,000	3,216,250	3,214,018		(778)		(778)		3,213,240		(89,748)	(89,748)	15,193	03/31/2022
912833-5A-4	US TREAS SEC STRIPPED INT PMT 00841		06/20/2018	DTCYID		541,314	915,000	445,541	487,114		5,129		5,129		493,243		48,071	48,071		08/15/2035
912833-7R-5	US TREASURY SEC STRIPPED INT PMT 00884		06/13/2018	JP MORGAN SECURITIES		2,788,163	4,280,000	2,719,007	2,859,878		29,964		29,964		2,889,842		(101,679)	(101,679)		05/15/2032
912833-KS-8	US TREAS SEC STRIPPED INT PMT GENERIC TI		08/15/2018	MATURITY		11,740,000	11,740,000	11,404,330	11,660,529		79,471		79,471		11,740,000					08/15/2018
912833-XU-9	US TREAS SEC STRIPPED INT PMT 00523		06/13/2018	NOMURA SECURITIES IN		3,946,527	5,685,000	3,860,757	4,057,889		42,611		42,611		4,100,499		(153,972)	(153,972)		05/15/2030
022650-AA-6	Amal Ltd Ex Im Bk Gtd Sr Nt	D	11/21/2018	SINKING PAYMENT		3,045,211	3,045,211	3,045,211	3,045,211						3,045,211				66,219	08/21/2021
09751W-AB-7	BOLDINI LTD US GOVT GTD EXPT SHIP FING 0	D	03/16/2018	CALL 100		268,125	268,125	271,812	271,629		(67)		(67)		271,561		(3,436)	(3,436)	2,151	01/19/2036
55002R-AA-0	Lulwa Ltd Ex Im Bk Gtd Secd Nt	D	11/15/2018	SINKING PAYMENT		57,776	57,776	56,572	56,880		162		162		57,776				683	02/15/2025
71654Q-BP-6	Petroleos Mexicanos Ex Im Bk Gtd Ser 201	D	08/15/2018	SINKING PAYMENT		55,500	55,500	56,571	56,205		(113)		(113)		55,500				953	02/15/2024
759470-AT-4	Reliance Industries Inc Ex Im Bk Gtd Ser	D	07/15/2018	SINKING PAYMENT		51,700	51,700	51,700	51,700						51,700				974	01/15/2026
78657A-AC-3	Safina Ltd Ex Im Bk Gtd Secd Nt	D	10/15/2018	SINKING PAYMENT		71,498	71,498	70,352	70,876		225		225		71,498				694	01/15/2022
0599999	Subtotal - Bonds - U.S. Governments					1,354,840,807	1,395,365,767	1,362,795,664	1,380,162,432	(12,188,287)	542,459		(11,645,828)		1,377,072,092		(22,231,285)	(22,231,285)	19,685,410	XXX
748148-QR-7	PROVINCE OF QUEBEC-DEBENTURE	A	04/16/2018	SUSQUEHANNA BANCSHAR		130,551	95,000	130,451	120,088		(483)		(483)		119,605		10,946	10,946	4,216	09/15/2029
040114-GL-8	REPUBLIC OF ARGENTINA-UNSECURED NOTE	D	07/28/2018	VARIOUS		6,681,412	7,010,190	7,571,005			(19,696)		(19,696)		7,522,838		(841,426)	(841,426)	336,980	12/31/2033
056732-AJ-9	Bahamas Government Inter-SENIOR UNSECURE	D	04/05/2018	DTCYID		477,225	450,000	450,000	450,000						450,000		27,225	27,225	4,225	11/21/2028
07737J-AB-9	REPUBLIC OF BELARUS-SENIOR UNSECURED	D	05/30/2018	VARIOUS		9,491,825	8,900,000	8,798,896	8,804,142		4,881		4,881		8,809,022		682,803	682,803	189,206	02/28/2023
105756-BR-0	FED REPUBLIC OF BRAZIL-SENIOR UNSECURED	D	03/09/2018	BANK OF AMERICA CORP		2,810,090	2,897,000	2,100,325	2,100,325						2,100,325		709,765	709,765	32,591	01/07/2041
105756-BV-1	FED REPUBLIC OF BRAZIL-SR UNSECURED	D	03/09/2018	BANK OF AMERICA CORP		9,975,000	10,000,000	8,100,000	8,100,000						8,100,000		1,875,000	1,875,000	85,000	01/07/2025
105756-BW-9	FED REPUBLIC OF BRAZIL-SR UNSECURED	D	03/09/2018	BANK OF AMERICA CORP		11,674,002	13,139,000	8,704,588	8,704,588						8,704,588		2,969,414	2,969,414	131,390	01/27/2045
105756-BZ-2	BRAZILIAN GOVERNMENT INT-SENIOR UNSECURE	D	03/09/2018	BANK OF AMERICA CORP		231,312	237,000	236,059	236,060		1		1		236,060		(4,748)	(4,748)	2,192	01/13/2028
119426-AD-4	BUENOS AIRES AR-SENIOR UNSECURED 144A	D	07/06/2018	VARIOUS		8,909,310	9,020,000	8,942,248	8,949,960		2,050		2,050		8,952,010		(42,700)	(42,700)	244,533	06/01/2027
17127L-AA-3	BOND GAR PROV DEL CHUBUT-SECURED	D	06/13/2018	VARIOUS		4,425,000	5,000,000	5,000,000	5,000,000						5,000,000		(575,000)	(575,000)	175,451	07/26/2026
221602-AC-9	COSTA RICA REPUBLIC NT	D	10/02/2018	VARIOUS		13,983,000	16,000,000	16,602,500	16,576,304		(4,682)		(4,682)		16,571,622		(2,588,622)	(2,588,622)	845,444	04/04/2044
221625-AP-1	IVORY COAST-SENIOR UNSECURED	B	01/09/2018	BNP PARIBAS		2,401,290	2,156,040	2,018,160	2,163,960					(145,800)	2,156,040		245,250	383,130	4,333	06/15/2025
226775-AG-9	CROATIA-SENIOR UNSECURED NOTE	D	06/13/2018	VARIOUS		46,494,025	43,290,000	47,823,120	47,084,960		(230,314)		(230,314)		46,854,646		(360,621)	(360,621)	1,089,560	01/26/2024
302154-AX-7	EXPORT IMPORT BK KOREA-SENIOR UNSECURED	D	12/18/2018	TORONTO DOMINION SEC		344,335	340,000	368,866	352,178		(3,729)		(3,729)		348,450		(4,115)	(4,115)	13,184	01/29/2021
302154-BG-3	EXPORT IMPORT BK KOREA-SENIOR UNSECURED	D	02/27/2018	MATURITY		80,000	80,000	78,592	79,945		55		55		80,000				218	02/27/2018
37311P-AA-8	REPUBLIC OF GEORGIA-UNSECURED	D	05/30/2018	STIFEL NICOLAUS		2,127,500	2,000,000	2,147,500	2,089,921		(10,484)		(10,484)		2,079,437		48,063	48,063	87,083	04/12/2021
374422-AD-5	Ghana Government Interna-UNSECURED	D	12/13/2018	VARIOUS		26,718,470	23,000,000	26,456,360	26,260,825		(161,849)		(161,849)		26,098,977		619,493	619,493	2,359,625	10/14/2030
401494-AE-9	Guatemala Government Bon-SENIOR UNSECURE	D	05/23/2018	HSBC SECURITIES INC		5,215,000	5,000,000	5,385,000	5,232,384		(19,035)		(19,035)		5,213,350		1,650	1,650	115,000	06/06/2022
401494-AF-6	Guatemala Government Bon-SENIOR UNSECURE	D	05/23/2018	HSBC SECURITIES INC		2,895,000	3,000,000	2,947,500	2,957,619		1,235		1,235		2,958,855		(63,855)	(63,855)	58,500	02/13/2028
401494-AN-9	REPUBLIC OF GUATEMALA-SENIOR UNSECURED	D	05/23/2018	HSBC SECURITIES INC		1,349,600	1,400,000	1,388,884	1,390,321		422		422		1,390,743		(41,143)	(41,143)	25,200	05/03/2026
455780-BD-7	REPUBLIC OF INDONESIA-SENIOR UNSECURED N	D	04/16/2018	JP MORGAN SECURITIES		184,406	175,000	187,163	179,555		(586)		(586)		178,969		5,437	5,437	3,056	03/13/2020
455780-BJ-4	REPUBLIC OF INDONESIA-UNSECURED BOND	D	08/14/2018	BNP PARIBAS		160,304	155,000	167,335	166,266		(163)		(163)		166,103		(5,799)	(5,799)	5,086	01/17/2042
45777V-AC-1	INSTIT COSTA DE ELECTRIC-SENIOR UNSECURE	D	11/28/2018	VARIOUS		11,934,500	12,500,000	13,348,750	12,991,105		(104,586)		(104,586)		12,886,520		(952,020)	(952,020)	783,613	11/10/2021
45777V-AD-9	INSTIT COSTA DE ELECTRIC-SENIOR UNSECURE	D	11/28/2018	VARIOUS		5,168,750	7,000,000	6,102,750	6,136,555		11,470		11,470		6,148,225		(979,275)	(979,275)	406,229	05/15/2043
491798-AE-4	REPUBLIC OF KENYA-UNSECURED NOTE	D	03/09/2018	CITIGROUP GLOBAL MAR		9,263,250	9,000,000	8,889,410	8,902,544		1,117		1,117		8,903,660		359,590	359,590	122,604	06/24/2024
50064Y-AH-6	KOREA HYDRO & NUCLEAR PIIR GLOBAL MED TER	D	10/02/2018	MATURITY		490,000	490,000	492,230	490,360		(360)		(360)		490,000				10,605	10/02/2018
504216-AA-0	PROVINCIA DE LA RIOJA-SENIOR UNSECURED	D	06/11/2018	VARIOUS		4,925,000	5,000,000	4,941,700	4,946,246		2,208		2,208		4,948,454		(23,454)	(23,454)	219,375	02/24/2025
60937L-AB-1	MONGOLIA GOVERNMENT INTE-SENIOR UNSECURE	D	01/26/2018	VARIOUS		409,902	400,000	401,450	401,383		(20)		(20)		401,363		8,539	8,539	1,594	05/01/2023
695847-AR-4	ISLAMIC REP OF PAKISTAN-UNSECURED	D	03/09/2018	CITIGROUP GLOBAL MAR		4,220,000	4,000,000	4,000,000	4,000,000						4,000,000		220,000	220,000	66,000	09/30/2025
698299-BE-3	REPUBLIC OF PANAMA-SENIOR UNSECURED	D	08/09/2018	MARKETAXESS FINANCA		198,510	200,000	204,444	203,686		(289)		(289)		203,396		(4,886)	(4,886)	6,813	03/16/2025
699149-AD-2	REPUBLIC OF PARAGUAY-SENIOR UNSECURED	D	11/19/2018	NOMURA SECURITIES IN		1,261,000	1,300,000	1,300,000	1,300,000						1,300,000		(39,000)</			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
903724-BM-3	UKRAINE GOVERNMENT INTER-SENIOR UNSECURE	D	07/12/2018	VARIOUS		11,368,548	12,130,000	12,130,000	12,130,000						12,130,001		(771,453)	(771,453)	358,343	09/25/2032
910860-BA-5	UNITED MEXICAN STATES-SENIOR UNSECURED N	D	01/04/2018	BANK OF AMERICA CORP		2,403,089	2,314,000	2,355,184	2,335,064		(101)		(101)		2,334,963		68,126	68,126	26,563	03/15/2022
910860-BB-3	UNITED MEXICAN STATES-SENIOR UNSECURED N	D	06/22/2018	BARCLAYS CAPITAL INC		187,320	200,000	185,500	186,341		121		121		186,462		858	858	7,600	03/08/2044
910860-BG-2	UNITED MEXICAN STATES TRANCHE 00031	D	01/04/2018	BANK OF AMERICA CORP		1,564,935	1,500,000	1,495,140	1,495,903		21		21		1,495,925		69,010	69,010	28,875	01/21/2026
91087B-AB-6	UNITED MEXICAN STATES-SENIOR UNSECURED	D	07/25/2018	NOMURA SECURITIES INC		8,859,200	9,800,000	9,774,030	9,774,181		279		279		9,774,460		(915,260)	(915,260)	243,938	01/15/2047
92670L-AF-6	SOCIALIST REP OF VIETNAM-SENIOR UNSECURE	D	03/09/2018	ANZ SECURITIES INC		2,120,200	2,000,000	2,272,500	2,115,143		(10,734)		(10,734)		2,104,410		15,790	15,790	27,000	01/29/2020
92671C-AA-6	SOCIALIST REP OF VIETNAM-SENIOR UNSECURE	D	03/09/2018	JEFFERIESLLC		2,052,500	2,000,000	2,000,000	2,000,000						2,000,000		52,500	52,500	19,200	11/19/2024
M82151-GV-3	REPUBLIC OF CYPRUS-SR UNSECURED	B	11/14/2018	CREDIT SUISSE INTERN		2,996,266	2,594,171	2,538,740	2,765,060					(226,320)	2,594,170	55,430	402,096	457,526	101,971	11/04/2025
M82151-HS-9	REPUBLIC OF CYPRUS-SENIOR UNSECURED	B	11/14/2018	JPMILON		3,771,134	3,383,702	3,294,221	3,597,088		1,356		1,356	(301,607)	3,376,052	79,214	395,082	474,296	115,824	07/26/2023
M87883-DE-7	LEBANESE REPUBLIC-SENIOR UNSECURED NOTE	D	03/09/2018	GOLDMAN SACHS INTERN		437,625	450,000	454,500	452,517		(97)		(97)		452,420		(14,795)	(14,795)	5,490	10/04/2022
P75735-AL-7	ARGENTINE REPUBLIC GOVER-SENIOR UNSECURE	B	07/25/2018	VARIOUS		4,939,475	5,724,179	5,690,536	5,868,463		(1,362)		(1,362)	(178,671)	5,701,202	12,772	(761,727)	(748,955)	273,830	01/15/2028
P8055K-WP-6	ARGENTINE REPUBLIC GOVER-SENIOR UNSECURE	B	07/25/2018	JP MORGAN SECURITIES		7,889,122	8,037,820	9,263,022	9,542,526		(48,675)		(48,675)	(290,659)	9,225,494	22,302	(1,336,372)	(1,314,070)	371,120	12/31/2033
Q69349-12-8	FYR MACEDONIA-SR UNSECURED	B	01/18/2018	TENDERED		5,411,333	4,891,602	4,212,848	4,776,765		256		256	(545,662)	4,859,273	627,914	552,060	1,179,974	11,852	12/10/2020
V06423-AN-3	BNG CEN TUNISIA INT BOND-SENIOR UNSECURE	B	05/31/2018	SC CONVEN SECURITIES		3,298,579	3,265,919	2,962,953	3,344,127		722		722	(379,513)	3,245,230	279,895	53,349	333,244	80,099	02/17/2024
V7179T-AE-2	REPUBLIC OF NAMIBIA-SR UNSECURED	D	01/25/2018	VARIOUS		515,090	500,000	495,744	496,011		24		24		496,035		19,055	19,055	1,823	10/29/2025
X50005-LK-5	UKRAINE GOVERNMENT-SENIOR UNSECURED	D	01/16/2018	CITIGROUP GLOBAL MAR		213,800	200,000	187,250	187,964		59		59		188,023		25,777	25,777	732	09/01/2025
X5000B-UN-6	Croatia Government Inter-SENIOR UNSECURE	B	11/26/2018	VARIOUS		13,697,306	13,634,797	13,892,432	13,892,432		7,754		7,754	(713,971)	13,410,906	(489,279)	286,400	(202,879)	164,062	06/15/2028
X7330Z-FH-0	CROATIA-SENIOR UNSECURED	B	05/21/2018	DEUTSCHE BANK SECURI		6,282,345	5,892,002	5,416,710	6,120,001		(5,502)		(5,502)	5,993,537	593,009	288,808	881,817	70,769	03/11/2025	
X7330Z-FJ-6	CROATIA-SENIOR UNSECURED	B	06/14/2018	VARIOUS		13,733,230	13,410,165	11,958,327	13,489,189		8,893		8,893	(1,517,081)	13,207,495	1,226,495	525,735	1,752,230	180,640	03/20/2027
X7330Z-FK-3	Croatia Government Inter-SENIOR UNSECURE	B	06/13/2018	VARIOUS		6,335,921	6,483,303	6,355,423	6,476,743		3,561		3,561	(120,675)	6,334,028	(5,601)	(18,107)	(23,708)	92,589	01/27/2030
Y20721-AK-5	REPUBLIC OF INDONESIA-SENIOR UNSECURED N	D	01/17/2018	MATURITY		750,000	750,000	915,938	751,533		(1,533)		(1,533)		750,000				2,292	01/17/2018
Y7177R-AL-9	REPUBLIC OF AZERBAIJAN I-SENIOR UNSECURE	D	01/01/2018	VARIOUS		176,952	202,000	191,007			(109)		(109)		191,054		(14,102)	(14,102)	(1,646)	09/01/2032
1099999. Subtotal - Bonds - All Other Governments							310,708,365	310,287,890	311,907,849	292,223,508			(621,276)		311,348,434	2,540,031	(640,069)	1,899,962	9,896,386	XXX
373384-NZ-5	State of Georgia-BUILD AMERICA GEN OBLIG		11/01/2018	SINKING PAYMENT		478,522	478,522	478,522	478,522						478,522				21,548	11/01/2025
68607L-XP-7	State of Oregon-GENERAL OBLIGATION UNLTD		06/01/2018	SINKING PAYMENT		4,516,331	4,516,331	5,668,598	4,993,982		(67,497)		(67,497)		4,516,331				130,115	06/01/2023
74514L-B3-0	PUERTO RICO CMILTH-REF PUB IMPT GEN OBLI		12/07/2018	MORGAN STANLEY AND C		1,710,000	3,000,000	675,000	675,000								1,035,000	1,035,000		07/01/2028
74514L-VL-8	PUERTO RICO CMILTH-PUB IMPT GEN OBLIG SE		12/07/2018	MORGAN STANLEY AND C		1,710,000	3,000,000	671,250	671,250						671,250		1,038,750	1,038,750		07/01/2028
74514L-WA-1	PUERTO RICO CMILTH-REF GEN OBLIG UNLTD		12/07/2018	MORGAN STANLEY AND C		1,140,000	2,000,000	445,000	445,000						445,000		695,000	695,000		07/01/2039
74514L-WX-1	PUERTO RICO CMILTH-REF PUB IMPT GEN OBLI		08/21/2018	DTCYID		2,681,250	5,000,000	1,112,500	1,112,500						1,112,500		1,568,750	1,568,750		07/01/2040
1799999. Subtotal - Bonds - U.S. States, Territories and Possessions							12,236,103	17,994,853	9,050,870	8,376,254			(67,497)		7,898,603		4,337,500	4,337,500	151,663	XXX
095680-AA-2	BLUE LAKE MET DIST #2 CO-GENERAL OBLIGAT		12/01/2018	SINKING PAYMENT		7,500	7,500	7,500	7,500						7,500				431	12/01/2046
122062-SC-7	BURLINGTON VT TXBL PUB IMPT GEN OBLIG SE		11/01/2018	SINKING PAYMENT		45,000	45,000	45,000	45,000						45,000				2,700	11/01/2032
442331-QM-9	HOUSTON TX-GENERAL OBLIGATION LTD		03/01/2018	CALL 100		195,003	195,003	235,300	221,095		(426)		(426)		220,668		(25,665)	(25,665)	6,133	03/01/2032
442331-S6-2	CITY OF HOUSTON TX-GENERAL OBLIGATION LT		03/01/2018	SINKING PAYMENT		905,575	905,575	1,101,016	1,094,552		(3,127)		(3,127)		905,575				28,480	03/01/2032
54438E-KD-9	LOS ANGELES CA CMINTY RED-TAX ALLOCATION		09/01/2018	SINKING PAYMENT		36,075	36,075	30,762	31,599		482		482		36,075				2,886	09/01/2038
54438E-KE-7	LOS ANGELES CA CMINTY RED-TAX ALLOCATION		09/01/2018	SINKING PAYMENT		(2,480)	(2,480)	(2,746)	(2,731)		(24)		(24)		(2,480)					09/01/2038
62719H-WI-0	MURIETA VLY CA UNIF SCH DIST SPECIAL TAX		09/01/2018	CALL 103		103,000	100,000	98,740	99,187		91		91		102,278		722	722	7,000	09/01/2023
62719H-WJ-9	MURIETA VLY CA UNIF SCH DIST SPECIAL TAX		09/01/2018	CALL 103		108,150	105,000	104,113	104,293		48		48		107,491		659	659	7,963	09/01/2027
796714-DD-2	SAN BERNARDINO CITY CA UNIF SD CONSTR CO		02/01/2018	SINKING PAYMENT		640,000	640,000	721,843	662,960		(1,121)		(1,121)		640,000				24,650	02/01/2021
968812-SC-0	YORK PA-GENERAL OBLIGATION UNLTD		11/15/2018	SINKING PAYMENT		125,000	125,000	125,000	125,000						125,000				11,250	11/15/2027
2499999. Subtotal - Bonds - U.S. Political Subdivisions of States, Territories and Possessions							2,162,823	2,156,673	2,466,528	2,388,455			(4,077)		2,187,107		(24,284)	(24,284)	91,493	XXX
036472-AB-4	ANSON TX EDU FACS CORP EDU REV		08/15/2018	SINKING PAYMENT		55,000	55,000	55,000	55,000						55,000				3,969	08/15/2025
044293-BE-7	ASHLAND KY MED CTR-REVENUE KING'S DAUGHT		03/14/2018	DTCYID		2,695,000	2,750,000	2,845,453	2,834,191		(1,907)		(1,907)		2,832,284		(137,284)	(137,284)	22,917	02/01/2036
072024-NV-0	BAY AREA CA TOLL AUTH TO-REVENUE BONDS		08/09/2018	RAYMOND JAMES		160,073	110,000	155,983	155,193		(470)		(470)		154,722		5,351	5,351	6,714	04/01/2050
072222-AK-8	BAY CNTY FL EDUCNL FACS REVENUE BAY HAV		09/01/2018	SINKING PAYMENT		16,056	16,056	16,056	16,056						16,056				947	09/01/2022
110354-AN-7	BRISTOL VA INDL DEV AUTH REVENUE SER A F		11/01/2018	SINKING PAYMENT		830,842	830,842	830,842	830,842						830,842				56,082	11/01/2033
130333-CA-3	CALIFORNIA ST HLTH FACS FING AGY REVENUE		08/01/2018	CALL 100		36,710	36,710	37,142	36,927		(26)		(26)		36,901		(191)	(191)	425	02/01/2042
13048D-AG-3	CALIFORNIA ST MUNI FIN AUTH REV PARTNERS		08/01/2018	SINKING PAYMENT		182,500	182,500	182,500	182,500						182,500				12,775	08/01/2019
13058T-EI-6	CALIFORNIA ST SCH FIN AU-REVENUE BONDS		01/01/2018	CALL 100		1,220,000	1,220,000	1,220,000	1,220,000						1,220,000				4,236	06/01/2025
130591-AK-6	CALIFORNIA ST SCH FIN AUTH EDU REV NEW D		06/01/2018	SINKING PAYMENT		345,000	345,000	345,000	345,000						345,0					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
235241-JW-7	DALLAS TX AREA RAPID TRA-REVENUE BOND		12/01/2018	CALL 100		8,400,000	8,400,000	8,511,216	8,437,656		(37,656)		(37,656)		8,400,000				365,750	12/01/2030
236887-AZ-8	Darville Industrial Deve-REVENUE NOTES		10/01/2018	MATURITY		360,000	360,000	360,000	360,000						360,000				13,500	10/01/2018
30250G-AB-4	FDIC STRUCTURED SALE GUA-SERIES 2010-S1		11/01/2018	PAYDOWN		310,623	310,623	309,412	293,330		17,292		17,292		310,623				5,817	04/25/2038
31282X-VL-2	FREDDIEMAC STRIP-SERIES 176 CLASS PO		12/01/2018	PAYDOWN		306		259	287		19		19		306					06/01/2026
31282Y-B4-0	FREDDIEMAC STRIP-SERIES 183 CLASS 10		12/01/2018	PAYDOWN		158		137	126						158				29	04/01/2027
31282Y-B6-5	FREDDIEMAC STRIP-SERIES 184 CLASS 10		12/01/2018	PAYDOWN		256		216	186						256				34	12/01/2026
31282Y-BV-0	FREDDIEMAC STRIP-SERIES 176 CLASS 10		12/01/2018	PAYDOWN		134		102	91						134				17	06/01/2026
31282Y-CE-7	FREDDIEMAC STRIP-SERIES 192 CLASS 10		12/01/2018	PAYDOWN		52		44	44						52				8	02/01/2028
31282Y-CP-2	FREDDIEMAC STRIP-SERIES 200 CLASS 10		12/01/2018	PAYDOWN		61		57	60						61				7	01/01/2029
31282Y-DH-9	FREDDIEMAC STRIP-SERIES 224 CLASS 10		12/01/2018	PAYDOWN		3,699		1,572	2,600						3,699				212	03/01/2033
31283E-AC-6	FHLMC-GNMA STRIPS-SERIES 3 CLASS 10		12/01/2018	PAYDOWN				94	(6)						369					07/01/2022
31283G-7M-3	FREDDIE MAC-POOL #G00900		12/01/2018	PAYDOWN		38		41	40		(2)		(2)		38				2	08/01/2022
31283G-DW-4	FREDDIE MAC-POOL #G00117		12/01/2018	PAYDOWN		395		414	413		(18)		(18)		395				27	03/01/2023
31283G-HD-2	FREDDIE MAC-POOL #G00228		12/01/2018	PAYDOWN		24		26	26		(2)		(2)		24					03/01/2024
31283G-HP-5	FREDDIE MAC-POOL #G00238		12/01/2018	PAYDOWN		1,439		1,522	1,507		(68)		(68)		1,439				55	06/01/2024
31283G-HU-4	FREDDIE MAC-POOL #G00243		12/01/2018	PAYDOWN		24		27	26		(2)		(2)		24					06/01/2024
31283G-KM-8	FREDDIE MAC-POOL #G00300		12/01/2018	PAYDOWN		569		598	589		(19)		(19)		569				20	04/01/2025
31283G-LF-2	FREDDIE MAC-POOL #G00326		12/01/2018	PAYDOWN		9		10	10		(1)		(1)		9					03/01/2024
31283G-NK-9	FREDDIE MAC-POOL #G00394		12/01/2018	PAYDOWN		1		1	1						1					08/01/2022
31283G-SC-2	FREDDIE MAC-POOL #G00515		12/01/2018	PAYDOWN		3,077		3,031	3,045		33		33		3,077				80	06/01/2026
31283G-WJ-2	FREDDIE MAC-POOL #G00649		12/01/2018	PAYDOWN		4,103		4,377	4,268		(166)		(166)		4,103				200	06/01/2025
31283G-Y8-4	FREDDIE MAC-POOL #G00735		12/01/2018	PAYDOWN		4		4	4						4					05/01/2025
31283H-B2-0	FREDDIE MAC-POOL #G00957		12/01/2018	PAYDOWN		721		736	733		(12)		(12)		721				31	07/01/2028
31283H-BL-8	FREDDIE MAC-POOL #G00943		12/01/2018	PAYDOWN		775		775	786		(10)		(10)		775				26	07/01/2028
31283H-BU-8	FREDDIE MAC-POOL #G00951		12/01/2018	PAYDOWN		14,077		14,319	14,270		(193)		(193)		14,077				428	07/01/2028
31283H-N4-3	FREDDIE MAC-POOL #G01311		12/01/2018	PAYDOWN		1,031		1,070	1,064		(34)		(34)		1,031				47	09/01/2031
31283H-P7-4	FREDDIE MAC-POOL #G01346		12/01/2018	PAYDOWN		19,529		19,581	19,575		(46)		(46)		19,529				568	01/01/2032
31283H-VE-2	FREDDIE MAC-POOL #G01513		12/01/2018	PAYDOWN		3,407		3,413	3,413		(6)		(6)		3,407				105	03/01/2033
31283H-X8-3	FREDDIE MAC-POOL #G01603		12/01/2018	PAYDOWN		38,894		43,251	42,891		(3,996)		(3,996)		38,894				1,168	08/01/2033
31283H-Y5-8	FREDDIE MAC-POOL #G01632		12/01/2018	PAYDOWN		14,642		16,609	16,394		(1,752)		(1,752)		14,642				589	12/01/2033
31283K-4G-0	FREDDIE MAC-POOL #G11723		12/01/2018	PAYDOWN		6,027		6,087	6,044		(16)		(16)		6,027				169	07/01/2020
31283K-T9-9	FREDDIE MAC-POOL #G11476		10/01/2018	PAYDOWN		307		307	307						307				4	11/01/2018
31283K-TG-3	FREDDIE MAC-POOL #G11451		03/01/2018	PAYDOWN		5		6	5						5					04/01/2018
31283Y-LD-8	FREDDIE MAC-POOL #P20425		12/01/2018	PAYDOWN		14,212		14,159	14,171		41		41		14,212				433	04/01/2034
31287L-KS-0	FREDDIE MAC-POOL #C61205		12/01/2018	PAYDOWN		120		122	121		(2)		(2)		120				5	12/01/2031
31287P-6S-7	FREDDIE MAC-POOL #C64481		12/01/2018	PAYDOWN		13,477		15,555	15,087		(1,610)		(1,610)		13,477				290	03/01/2032
31287R-6C-8	FREDDIE MAC-POOL #C66267		12/01/2018	PAYDOWN		3,431		3,489	3,474		(43)		(43)		3,431				115	04/01/2032
31288B-M8-3	FREDDIE MAC-POOL #C73083		12/01/2018	PAYDOWN		1,832		1,863	1,859		(27)		(27)		1,832				49	10/01/2032
31288B-VG-5	FREDDIE MAC-POOL #C73315		12/01/2018	PAYDOWN		33		34	34		(1)		(1)		33					11/01/2032
31288C-2D-2	FREDDIE MAC-POOL #C74372		12/01/2018	PAYDOWN		7,496		7,625	7,587		(91)		(91)		7,496				192	12/01/2032
31288D-5T-2	FREDDIE MAC-POOL #C75358		12/01/2018	PAYDOWN		285		290	288		(3)		(3)		285				9	01/01/2033
31288D-NR-6	FREDDIE MAC-POOL #C74900		12/01/2018	PAYDOWN		1,733		1,763	1,761		(28)		(28)		1,733				60	12/01/2032
31288E-2E-6	FREDDIE MAC-POOL #C76173		12/01/2018	PAYDOWN		584		594	592		(8)		(8)		584				19	01/01/2033
31288F-RQ-9	FREDDIE MAC-POOL #C76795		12/01/2018	PAYDOWN		1,991		2,025	2,015		(25)		(25)		1,991				22	02/01/2033
31288F-V2-7	FREDDIE MAC-POOL #C76933		12/01/2018	PAYDOWN		430		438	438		(7)		(7)		430				14	02/01/2033
3128CG-LG-2	FREDDIE MAC-POOL #P51227		12/01/2018	PAYDOWN		271,427		262,521	264,330		7,097		7,097		271,427				9,103	01/01/2036
3128CV-F7-4	FREDDIEMAC STRIP-SERIES 211 CLASS PO		12/01/2018	PAYDOWN		132,822		107,613	103,631		29,191		29,191		132,822					07/01/2029
3128F6-P8-3	FREDDIE MAC-POOL #D66747		12/01/2018	PAYDOWN		3,457		3,652	3,587		(130)		(130)		3,457				161	06/01/2025
3128FD-VU-2	FREDDIE MAC-POOL #D72427		12/01/2018	PAYDOWN		5,905		6,058	6,023		(118)		(118)		5,905				259	06/01/2026
3128FH-V7-4	FREDDIE MAC-POOL #D76038		12/01/2018	PAYDOWN		2,230		2,288	2,265		(35)		(35)		2,230				98	11/01/2026
3128HJ-AH-9	FREDDIE MAC-FG #00008		12/01/2018	PAYDOWN		41,056		49,990	47,118		(6,062)		(6,062)		41,056				1,721	05/01/2025
3128K2-7F-0	FREDDIE MAC-POOL #A42694		12/01/2018	PAYDOWN		846		846	851		(4)		(4)		846				28	02/01/2036
3128K3-BY-2	FREDDIE MAC-POOL #A42755		12/01/2018	PAYDOWN		109,776		108,455	108,606		1,170		1,170		109,776				1,241	02/01/2036
3128K3-GT-8	FREDDIE MAC-POOL #A42910		12/01/2018	PAYDOWN		166,690		168,409	168,267		(1,577)		(1,577)		166,690				3,969	02/01/2036
3128K3-T9-8	FREDDIE MAC-POOL #A43276		12/01/2018	PAYDOWN		24,257		24,409	24,373		(116)		(116)		24,257				283	02/01/2036
3128KJ-6M-9	FREDDIE MAC-POOL #A56276		12/01/2018	PAYDOWN		218		232	240		(22)		(22)		218				7	01/01/2037
3128KJ-C3-4	FREDDIE MAC-POOL #A55490		12/01/2018	PAYDOWN		70		74	75		(5)		(5)		70				2	12/01/2036
3128KR-WQ-3	FREDDIE MAC-POOL #A61555		12/01/2018	PAYDOWN		85,956		94,449	93,753		(7,798)		(7,798)		85,956				2,741	10/01/2036

E14.24

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/Adjusted Carrying Value	Unrealized Valuation Increase/Decrease	Current Year's (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Book/Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/Stock Dividends Received During Year	Stated Contractual Maturity Date
3128LX-DP-2	FREDDIE MAC-POOL #G01910		12/01/2018	PAYDOWN		136,686	136,686	132,522	132,780		3,906		3,906		136,686				3,393	10/01/2035
3128LX-EM-8	FREDDIE MAC-POOL #G01940		12/01/2018	PAYDOWN		184,053	184,053	178,416	178,824		5,229		5,229		184,053				4,662	10/01/2035
3128M6-FN-3	FREDDIE MAC-POOL #G04373		12/01/2018	PAYDOWN		6,974	6,974	7,155	7,148		(174)		(174)		6,974				261	03/01/2035
3128M6-FW-3	FREDDIE MAC-POOL #G04381		12/01/2018	PAYDOWN		14,170	14,170	14,150	14,151		19		19		14,170				418	05/01/2038
3128M7-BX-3	FREDDIE MAC-POOL #G05154		12/01/2018	PAYDOWN		16,172	16,172	17,686	17,534		(1,361)		(1,361)		16,172				499	12/01/2038
3128MB-V5-3	FREDDIE MAC-POOL #G13136		12/01/2018	PAYDOWN		470	470	457	462		9		9		470				11	05/01/2023
3128MB-V6-1	FREDDIE MAC-POOL #G13137		12/01/2018	PAYDOWN		2,408	2,408	2,342	2,365		42		42		2,408				60	05/01/2023
3128MB-YT-8	FREDDIE MAC-POOL #G13222		12/01/2018	PAYDOWN		2,245	2,245	2,184	2,205		41		41		2,245				49	06/01/2023
3128MJ-FH-8	FREDDIE MAC-POOL #G08167		12/01/2018	PAYDOWN		222	222	236	235		(14)		(14)		222				7	12/01/2036
3128MJ-JY-7	FREDDIE MAC-POOL #G08278		12/01/2018	PAYDOWN		1,438	1,438	1,435	1,435		3		3		1,438				40	07/01/2038
3128PB-ZL-1	FREDDIE MAC-POOL #J00747		12/01/2018	PAYDOWN		7,922	7,922	7,996	7,949		(26)		(26)		7,922				189	01/01/2021
3128PC-BG-6	FREDDIE MAC-POOL #J00939		12/01/2018	PAYDOWN		1,150	1,150	1,161	1,153		(3)		(3)		1,150				35	01/01/2021
3128PC-G2-2	FREDDIE MAC-POOL #J01117		12/01/2018	PAYDOWN		2,864	2,864	2,891	2,873		(10)		(10)		2,864				87	02/01/2021
3128PG-NG-4	FREDDIE MAC-POOL #J04891		12/01/2018	PAYDOWN		20,377	20,377	20,513	20,436		(59)		(59)		20,377				623	05/01/2022
3128PL-A2-8	FREDDIE MAC-POOL #J08125		12/01/2018	PAYDOWN		395	395	384	388		7		7		395				10	06/01/2023
3128PL-SK-9	FREDDIE MAC-POOL #J08622		06/01/2018	PAYDOWN		1,214	1,214	1,181	1,175		40		40		1,214				22	09/01/2023
312903-KY-2	FREDDIE MAC-SERIES 117 CLASS G		11/15/2018	PAYDOWN		3,486	3,486	3,685	3,515		(29)		(29)		3,486				102	01/15/2021
312903-QQ-3	FREDDIE MAC-SERIES 129 CLASS I		11/15/2018	PAYDOWN		13	13	78	24		(11)		(11)		13				20	03/15/2021
312904-7P-4	FREDDIE MAC-SERIES 1046 CLASS I		12/01/2018	PAYDOWN		35	35				35		35		35				201	02/01/2021
312904-EY-7	FREDDIE MAC-SERIES 188 CLASS H		11/15/2018	PAYDOWN		3,238	3,238	3,255	3,237		1		1		3,238				81	09/15/2021
312905-3M-2	FREDDIE MAC-SERIES 1096 CLASS H		12/01/2018	PAYDOWN		8	8	164	50		(42)		(42)		8				41	06/01/2021
312905-H6-2	FREDDIE MAC-SERIES 1083 CLASS Z		12/01/2018	PAYDOWN		25,255	25,255	26,344	25,596		(341)		(341)		25,255				1,051	05/01/2021
312905-L3-4	FREDDIE MAC-SERIES 1078 CLASS GZ		12/01/2018	PAYDOWN		2,282	2,282	2,256	2,275		6		6		2,282				76	05/01/2021
312905-VE-9	FREDDIE MAC-SERIES 197 CLASS Z		11/15/2018	PAYDOWN		9,031	9,031	9,051	9,002		29		29		9,031				251	07/15/2022
312908-H6-0	FREDDIE MAC-SERIES 1222 CLASS Q		11/15/2018	PAYDOWN		12,952	12,952	8,188	12,952						12,952				957	03/15/2022
312909-BJ-2	FREDDIE MAC-SERIES 205 CLASS R		06/28/2018	VARIOUS		1	1													05/15/2023
312909-D5-0	FREDDIE MAC-SERIES 1256 CLASS A		12/01/2018	PAYDOWN		889	889	831	868		21		21		889					04/01/2022
312909-V5-0	FREDDIE MAC-SERIES 1273 CLASS Z		12/01/2018	PAYDOWN		12,940	12,940	12,186	12,724		216		216		12,940				527	05/01/2022
31290K-VZ-9	FREDDIE MAC-POOL #555132		12/01/2018	PAYDOWN		464	464	481	474		(10)		(10)		464				10	07/01/2020
31290L-AP-2	FREDDIE MAC-POOL #555414		12/01/2018	PAYDOWN		106	106	109	107		(1)		(1)		106				7	09/01/2020
31290L-AY-3	FREDDIE MAC-POOL #555423		12/01/2018	PAYDOWN		997	997	1,024	1,006		(9)		(9)		997				62	04/01/2021
312911-NY-2	FREDDIE MAC-SERIES 1346 CLASS PS		12/01/2018	PAYDOWN		58,803	58,803	59,841	59,075		(271)		(271)		58,803				3,609	08/01/2022
312915-PK-1	FREDDIE MAC-SERIES 1494 CLASS PZ		12/01/2018	PAYDOWN		32,723	32,723	31,561	32,345		378		378		32,723				1,224	04/01/2023
312915-VY-4	FREDDIE MAC-SERIES 1507 CLASS JZ		12/01/2018	PAYDOWN		145,835	145,835	143,992	145,195		640		640		145,835				5,212	05/01/2023
312916-G7-8	FHLMC-GNMA-SERIES 15 CLASS L		12/01/2018	PAYDOWN		172,404	172,404	172,296	171,903		501		501		172,404				6,570	07/01/2023
312916-T8-2	FREDDIE MAC-SERIES 1543 CLASS PZ		12/01/2018	PAYDOWN		332,155	332,155	329,549	331,145		1,010		1,010		332,155				12,885	07/01/2023
312916-VZ-6	FREDDIE MAC-SERIES 1546 CLASS J		12/01/2018	PAYDOWN		86,800	86,800	90,001	87,323		(523)		(523)		86,800				3,296	07/01/2023
312929-V8-2	FREDDIE MAC-POOL #A83339		12/01/2018	PAYDOWN		8,958	8,958	9,536	9,445		(487)		(487)		8,958				304	11/01/2038
312926-5P-7	FREDDIE MAC-POOL #C00854		12/01/2018	PAYDOWN		908	908	1,059	1,030		(122)		(122)		908				30	07/01/2029
312926-A6-3	FREDDIE MAC-POOL #C00029		12/01/2018	PAYDOWN		1,704	1,704	1,761	1,727		(23)		(23)		1,704				89	03/01/2021
312926-D7-8	FREDDIE MAC-POOL #C00126		12/01/2018	PAYDOWN		257	257	270	263		(6)		(6)		257				10	06/01/2022
312926-HM-1	FREDDIE MAC-POOL #C00236		12/01/2018	PAYDOWN		260	260	301	291		(31)		(31)		260				10	02/01/2023
312926-JM-9	FREDDIE MAC-POOL #C00268		12/01/2018	PAYDOWN		110	110	126	121		(11)		(11)		110				4	11/01/2023
312926-K5-4	FREDDIE MAC-POOL #C00316		12/01/2018	PAYDOWN		155	155	174	169		(13)		(13)		155				6	04/01/2024
312926-LM-6	FREDDIE MAC-POOL #C00332		12/01/2018	PAYDOWN		730	730	822	799		(69)		(69)		730				23	06/01/2024
312926-NA-0	FREDDIE MAC-POOL #C00385		12/01/2018	PAYDOWN		19	19	21	20		(1)		(1)		19					01/01/2025
312926-SD-9	FREDDIE MAC-POOL #C00516		12/01/2018	PAYDOWN		2,224	2,224	2,240	2,235		(11)		(11)		2,224				95	05/01/2027
312926-ST-4	FREDDIE MAC-POOL #C00530		12/01/2018	PAYDOWN		15	15	16	16		(1)		(1)		15					07/01/2027
312926-TU-0	FREDDIE MAC-POOL #C00563		12/01/2018	PAYDOWN		55	55	59	58		(3)		(3)		55				2	11/01/2027
312926-VD-5	FREDDIE MAC-POOL #C00612		12/01/2018	PAYDOWN		4	4	4	4						4					04/01/2028
312926-HM-4	FREDDIE MAC-POOL #C00652		12/01/2018	PAYDOWN		7,535	7,535	7,831	7,772		(237)		(237)		7,535				257	09/01/2028
312926-XT-8	FREDDIE MAC-POOL #C00690		12/01/2018	PAYDOWN		261	261	265	264		(4)		(4)		261				8	12/01/2028
312926-YF-7	FREDDIE MAC-POOL #C00710		12/01/2018	PAYDOWN		5,332	5,332	5,153	5,150		181		181		5,332				199	11/01/2028
312926-YM-2	FREDDIE MAC-POOL #C00716		12/01/2018	PAYDOWN		6,539	6,539	6,447	6,463		76		76		6,539				214	02/01/2029
312926-Z5-8	FREDDIE MAC-POOL #C00764		12/01/2018	PAYDOWN		121	121	123	122		(2)		(2)		121				4	05/01/2029
31292H-JR-6	FREDDIE MAC-POOL #C01172		12/01/2018	PAYDOWN		600	600	697	687		(86)		(86)		600				19	05/01/2031
31292H-K9-4	FREDDIE MAC-POOL #C01220		12/01/2018	PAYDOWN		673	673	781	765		(91)		(91)		673				23	09/01/2031
31292H-M8-4	FREDDIE MAC-POOL #C01283		12/01/2018	PAYDOWN		101	101	101	101						101				3	11/01/2031

E14.25

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/Adjusted Carrying Value	Unrealized Valuation Increase/Decrease	Current Year's (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Book/Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/Stock Dividends Received During Year	Stated Contractual Maturity Date
31292H-N9-1	FREDDIE MAC-POOL #C01316		12/01/2018	PAYDOWN		272	272	276	276		(4)		(4)		272				.8	03/01/2032
31292H-N4-2	FREDDIE MAC-POOL #C01567		12/01/2018	PAYDOWN		209,632	209,632	227,673	226,040		(16,408)		(16,408)		209,632				5,673	05/01/2033
31292H-XN-9	FREDDIE MAC-POOL # C01585		12/01/2018	PAYDOWN		58,583	58,583	57,237	57,415		1,168		1,168		58,583				1,561	07/01/2033
31293F-B4-8	FREDDIE MAC-POOL #C19059		10/01/2018	PAYDOWN		8,262	8,262	8,167	8,152		110		110		8,262				.71	12/01/2028
31293H-3D-3	FREDDIE MAC-POOL #C20796		12/01/2018	PAYDOWN		1,232	1,232	1,215	1,218		15		15		1,232				.40	01/01/2029
31293H-AB-9	FREDDIE MAC-POOL #C20002		12/01/2018	PAYDOWN		110	110	112	111		(1)		(1)		110				.4	01/01/2029
31293H-E9-0	FREDDIE MAC-POOL #C20160		12/01/2018	PAYDOWN		3,604	3,604	3,552	3,563		41		41		3,604				.63	01/01/2029
31293H-GX-5	FREDDIE MAC-POOL #C20214		12/01/2018	PAYDOWN		588	588	579	581		7		7		588				.12	01/01/2029
31293J-SZ-8	FREDDIE MAC-POOL #C21764		02/01/2018	PAYDOWN		2,347	2,347	2,388	2,375		(27)		(27)		2,347				.12	02/01/2029
31293J-A6-6	FREDDIE MAC-POOL #C20929		12/01/2018	PAYDOWN		457	457	465	462		(5)		(5)		457				.15	01/01/2029
31293J-DF-3	FREDDIE MAC-POOL #C21002		12/01/2018	PAYDOWN		1,117	1,117	1,136	1,133		(16)		(16)		1,117				.37	01/01/2029
31293J-NW-5	FREDDIE MAC-POOL #C21305		12/01/2018	PAYDOWN		160	160	163	162		(2)		(2)		160				.5	02/01/2029
31293J-RA-3	FREDDIE MAC-POOL #C21407		12/01/2018	PAYDOWN		75,085	75,085	74,035	74,324		762		762		75,085				1,885	02/01/2029
31293K-GN-1	FREDDIE MAC-POOL #C22677		12/01/2018	PAYDOWN		3,049	3,049	3,101	3,085		(36)		(36)		3,049				.100	03/01/2029
31293K-BJ-4	FREDDIE MAC-POOL #C21841		12/01/2018	PAYDOWN		3,279	3,279	3,233	3,246		33		33		3,279				.110	02/01/2029
31293K-DN-3	FREDDIE MAC-POOL #C21909		12/01/2018	PAYDOWN		338	338	343	342		(4)		(4)		338				.11	02/01/2029
31293K-GE-0	FREDDIE MAC-POOL #C21997		12/01/2018	PAYDOWN		3,100	3,100	3,055	3,069		31		31		3,100				.102	01/01/2029
31293K-LV-6	FREDDIE MAC-POOL #C22140		12/01/2018	PAYDOWN		291	291	296	294		(4)		(4)		291				.10	02/01/2029
31293K-OH-2	FREDDIE MAC-POOL #C22256		12/01/2018	PAYDOWN		495	495	503	501		(6)		(6)		495				.16	02/01/2029
31293K-TC-0	FREDDIE MAC-POOL #C22347		12/01/2018	PAYDOWN		404	404	398	399		5		5		404				.16	02/01/2029
31293L-ZM-9	FREDDIE MAC-POOL #C23448		12/01/2018	PAYDOWN		1,068	1,068	1,086	1,090		(22)		(22)		1,068				.33	03/01/2029
31293M-20-4	FREDDIE MAC-POOL #C24383		12/01/2018	PAYDOWN		182	182	185	184		(2)		(2)		182				.6	04/01/2029
31293M-CX-8	FREDDIE MAC-POOL #C23686		12/01/2018	PAYDOWN		627	627	638	634		(7)		(7)		627				.21	03/01/2029
31293M-CZ-3	FREDDIE MAC-POOL #C23688		12/01/2018	PAYDOWN		183	183	186	185		(2)		(2)		183				.6	03/01/2029
31293M-GZ-9	FREDDIE MAC-POOL #C23816		12/01/2018	PAYDOWN		2,681	2,681	2,727	2,714		(33)		(33)		2,681				.47	03/01/2029
31293N-ZV-5	FREDDIE MAC-POOL #C25256		12/01/2018	PAYDOWN		453	453	461	459		(6)		(6)		453				.15	04/01/2029
31293P-HU-2	FREDDIE MAC-POOL #C25643		12/01/2018	PAYDOWN		414	414	421	419		(5)		(5)		414				.14	04/01/2029
31293P-KC-8	FREDDIE MAC-POOL #C25691		12/01/2018	PAYDOWN		209	209	212	211		(3)		(3)		209				.7	04/01/2029
31293Q-FQ-1	FREDDIE MAC-POOL #C26475		12/01/2018	PAYDOWN		50	50	51	51		(1)		(1)		50				.2	05/01/2029
31293Q-HP-5	FREDDIE MAC-POOL #C26666		12/01/2018	PAYDOWN		5,317	5,317	5,408	5,381		(64)		(64)		5,317				.97	05/01/2029
31293R-J4-4	FREDDIE MAC-POOL #C27483		12/01/2018	PAYDOWN		233	233	237	236		(3)		(3)		233				.8	06/01/2029
31293X-4S-4	FREDDIE MAC-POOL #C32633		12/01/2018	PAYDOWN		3,794	3,794	3,895	3,866		(72)		(72)		3,794				.180	11/01/2029
31294B-JB-9	FREDDIE MAC-POOL #C34787		12/01/2018	PAYDOWN		461	461	473	470		(10)		(10)		461				.23	12/01/2029
31294K-XK-6	FREDDIE MAC-POOL #E01582		12/01/2018	PAYDOWN		593	593	597	594						593				.11	01/01/2019
31295V-3V-0	FREDDIE MAC-POOL #A00812		12/01/2018	PAYDOWN		3	3	3	3						3					05/01/2021
312967-CV-2	FREDDIE MAC-POOL #B14584		12/01/2018	PAYDOWN		769	769	768	768		1		1		769				.20	01/01/2020
312968-VB-3	FREDDIE MAC-POOL #B16010		12/01/2018	PAYDOWN		26	26	26	26						26					08/01/2019
312969-ZX-9	FREDDIE MAC-POOL #B17058		12/01/2018	PAYDOWN		23	23	23	23						23					09/01/2019
31296L-HD-6	FREDDIE MAC-POOL # A12028		12/01/2018	PAYDOWN		5,377	5,377	5,253	5,257		120		120		5,377				.148	08/01/2033
31296L-HP-9	FREDDIE MAC-POOL # A12038		12/01/2018	PAYDOWN		6,695	6,695	6,541	6,511		184		184		6,695				.195	08/01/2033
31296Q-2G-4	FREDDIE MAC-POOL #A16175		12/01/2018	PAYDOWN		994	994	1,014	1,012		(18)		(18)		994				.35	08/01/2029
31296X-JA-4	FREDDIE MAC-POOL #A21157		12/01/2018	PAYDOWN		164	164	166	166		(2)		(2)		164				.6	04/01/2034
312971-UA-0	FREDDIE MAC-POOL #B18677		12/01/2018	PAYDOWN		20	20	20	20						20					01/01/2020
31297A-5J-9	FREDDIE MAC-POOL #A23549		12/01/2018	PAYDOWN		5,447	5,447	6,066	5,947		(501)		(501)		5,447				.71	06/01/2034
31297B-AK-8	FREDDIE MAC-POOL #A23610		12/01/2018	PAYDOWN		7,025	7,025	7,876	7,686		(661)		(661)		7,025				.191	06/01/2034
31297B-TP-7	FREDDIE MAC-POOL #A24158		12/01/2018	PAYDOWN		943	943	965	964		(22)		(22)		943				.34	10/01/2031
31298F-2A-9	FREDDIE MAC-POOL #C47069		12/01/2018	PAYDOWN		570	570	671	645		(76)		(76)		570				.22	01/01/2031
31298H-T5-7	FREDDIE MAC-POOL #C48672		08/01/2018	PAYDOWN		521	521	530	527		(6)		(6)		521				.18	03/01/2031
31298L-ET-2	FREDDIE MAC-POOL #C50146		12/01/2018	PAYDOWN		135	135	138	137		(2)		(2)		135				.5	04/01/2031
31298S-QU-1	FREDDIE MAC-POOL #C55867		12/01/2018	PAYDOWN		105	105	112	110		(5)		(5)		105				.5	02/01/2030
31298Y-GA-3	FREDDIE MAC-POOL #C60193		12/01/2018	PAYDOWN		39	39	39	40		(1)		(1)		39					11/01/2031
31326F-RD-1	FREDDIE MAC-POOL #002284		12/01/2018	PAYDOWN		21,194	21,194	23,533	23,378		(2,184)		(2,184)		21,194				.600	07/01/2041
31326G-A7-0	FREDDIE MAC-POOL #002730		12/01/2018	PAYDOWN		20,076	20,076	22,292	22,429		(2,353)		(2,353)		20,076				.455	08/01/2041
31326G-BD-6	FREDDIE MAC-POOL #002736		12/01/2018	PAYDOWN		30,559	30,559	33,932	33,990		(3,431)		(3,431)		30,559				.563	08/01/2041
31326G-BZ-7	FREDDIE MAC-POOL #002756		12/01/2018	PAYDOWN		61,171	61,171	67,922	67,457		(6,286)		(6,286)		61,171				.795	08/01/2041
31326G-DA-0	FREDDIE MAC-POOL #002797		12/01/2018	PAYDOWN		78,359	78,359	87,007	86,690		(8,331)		(8,331)		78,359				1,981	08/01/2041
31326J-EE-5	FREDDIE MAC-POOL #003133		12/01/2018	PAYDOWN		15,119	15,119	16,788	16,873		(1,755)		(1,755)		15,119				.498	09/01/2041
31326J-HU-5	FREDDIE MAC-POOL #003361		12/01/2018	PAYDOWN		14,997	14,997	16,652	16,761		(1,764)		(1,764)		14,997				.405	09/01/2041

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
3132GJ-QG-7	FREDDIE MAC-POOL #003455		12/01/2018	PAYDOWN		63,364	63,364	70,357	70,021		(6,657)		(6,657)		63,364				1,135	09/01/2041
3132GJ-QQ-5	FREDDIE MAC-POOL #003463		12/01/2018	PAYDOWN		11,851	11,851	13,159	13,485		(1,634)		(1,634)		11,851				270	09/01/2041
3132GK-BW-5	FREDDIE MAC-POOL #003953		12/01/2018	PAYDOWN		26,496	26,496	29,421	28,937		(2,441)		(2,441)		26,496				567	10/01/2041
3132GK-DE-3	FREDDIE MAC-POOL #004001		12/01/2018	PAYDOWN		50,962	50,962	56,586	56,306		(5,344)		(5,344)		50,962				974	10/01/2041
3132GK-DR-4	FREDDIE MAC-POOL #004012		12/01/2018	PAYDOWN		39,166	39,166	43,488	43,935		(4,769)		(4,769)		39,166				810	10/01/2041
3132GK-EN-2	FREDDIE MAC-POOL #004041		12/01/2018	PAYDOWN		141,787	141,787	157,436	156,422		(14,635)		(14,635)		141,787				3,188	10/01/2041
3132J6-SB-6	FREDDIE MAC-POOL #015841		12/01/2018	PAYDOWN		126,230	126,230	121,434	121,613		4,617		4,617		126,230				1,996	02/01/2043
313356-C4-5	FREDDIE MAC-POOL #C80091		12/01/2018	PAYDOWN		111	111	128	123		(12)		(12)		111				4	01/01/2024
313356-G0-2	FREDDIE MAC-POOL #C80207		12/01/2018	PAYDOWN		19	19	20	20		(1)		(1)		19					09/01/2024
313356-HK-4	FREDDIE MAC-POOL #C80234		12/01/2018	PAYDOWN		754	754	848	826		(72)		(72)		754				32	09/01/2024
313398-SD-2	FREDDIE MAC-SERIES 2335 CLASS CZ		12/01/2018	PAYDOWN		74,692	74,692	79,177	76,102		(1,410)		(1,410)		74,692				3,165	07/01/2031
313398-TZ-2	FREDDIE MAC-SERIES 2337 CLASS PZ		12/01/2018	PAYDOWN		59,124	59,124	64,093	60,943		(1,819)		(1,819)		59,124				2,312	07/01/2031
313370-LJ-8	FREDDIE MAC-SERIES 1585 CLASS K		12/01/2018	PAYDOWN		142,572	142,572	143,346	142,467		105		105		142,572				4,575	09/01/2023
313374-2F-2	FHLMC-GNMA-SERIES 30 CLASS I		12/01/2018	PAYDOWN		32,080	32,080	32,666	32,104		(24)		(24)		32,080				1,288	04/01/2024
313374-EL-6	FREDDIE MAC-SERIES 1686 CLASS PJ		12/01/2018	PAYDOWN		40,447	40,447	29,548	38,709		1,738		1,738		40,447				1,534	02/01/2024
313374-IV-4	FREDDIE MAC-SERIES 1711 CLASS PG		12/01/2018	PAYDOWN		65,005	65,005	71,663	66,011		(1,005)		(1,005)		65,005				2,328	03/01/2024
313375-J2-0	FREDDIE MAC-SERIES 1754 CLASS Z		12/01/2018	PAYDOWN		72,875	72,875	77,956	74,451		(1,576)		(1,576)		72,875				3,357	09/01/2024
313377-BC-2	FREDDIE MAC-SERIES 1856 CLASS ZG		12/01/2018	PAYDOWN		21,423	21,423	21,464	21,402		21		21		21,423				846	06/01/2026
31337A-A2-8	FREDDIE MAC-SERIES 1963 CLASS Z		12/01/2018	PAYDOWN		11,415	11,415	10,985	11,196		218		218		11,415				495	01/01/2027
31337B-BH-2	FREDDIE MAC-SERIES 1988 CLASS GZ		12/01/2018	PAYDOWN		15,350	15,350	17,133	16,342		(993)		(993)		15,350				448	09/01/2027
31337C-FX-1	FREDDIE MAC-SERIES 2024 CLASS Z		12/01/2018	PAYDOWN		33,405	33,405	31,713	32,487		918		918		33,405				1,123	01/01/2028
31337C-LJ-5	FREDDIE MAC-SERIES 2022 CLASS PE		12/01/2018	PAYDOWN		31,035	31,035	32,732	31,760		(726)		(726)		31,035				1,152	01/01/2028
31337C-V7-0	FREDDIE MAC-SERIES 2034 CLASS Z		12/01/2018	PAYDOWN		709	709	725	714		(6)		(6)		709				26	02/01/2028
31337D-CL-8	FREDDIE MAC-SERIES 2046 CLASS G		12/01/2018	PAYDOWN		4,501	4,501	4,585	4,543		(42)		(42)		4,501				175	04/01/2028
31337D-E6-9	FREDDIE MAC-SERIES 2053 CLASS Z		12/01/2018	PAYDOWN		538	538	548	542		(3)		(3)		538				21	04/01/2028
31337D-HP-4	FREDDIE MAC-SERIES 2044 CLASS PL		12/01/2018	PAYDOWN		104,673	104,673	118,421	113,647		(8,974)		(8,974)		104,673				3,338	04/01/2028
31337D-PP-5	FREDDIE MAC-SERIES 2043 CLASS ZP		12/01/2018	PAYDOWN		24,689	24,689	25,245	24,887		(197)		(197)		24,689				827	04/01/2028
31337D-XT-8	FREDDIE MAC-SERIES 2055 CLASS ZM		12/01/2018	PAYDOWN		790	790	807	797		(7)		(7)		790				27	05/01/2028
31337E-R5-5	FREDDIE MAC-SERIES 2073 CLASS PH		12/01/2018	PAYDOWN		59,562	59,562	60,847	60,276		(714)		(714)		59,562				2,049	07/01/2028
31337G-3U-1	FREDDIE MAC-SERIES 2080 CLASS Z		12/01/2018	PAYDOWN		430	430	438	433		(3)		(3)		430				15	08/01/2028
31337G-BL-2	FREDDIE MAC-SERIES 2075 CLASS D		12/01/2018	PAYDOWN		2,100	2,100	2,140	2,117		(17)		(17)		2,100				81	08/01/2028
31337H-QV-2	FREDDIE MAC-SERIES 2117 CLASS HG		12/01/2018	PAYDOWN		8,707	8,707	9,094	8,933		(226)		(226)		8,707				290	01/01/2029
31337J-9F-4	FREDDIE MAC-SERIES 2129 CLASS S		11/15/2018	PAYDOWN		9,128	9,128	5,510	6,088						9,128				896	02/15/2029
31337J-PC-1	FREDDIE MAC-SERIES 2130 CLASS SC		11/15/2018	PAYDOWN		103	103	49	59						103				12	03/15/2029
31337L-4H-8	FREDDIE MAC-SERIES 2155 CLASS SE		11/15/2018	PAYDOWN		9,092	9,092	6,080	6,120						9,092				1,045	05/15/2029
31337L-H6-2	FREDDIE MAC-SERIES 2173 CLASS Z		12/01/2018	PAYDOWN		2,744	2,744	2,751	2,745						2,744				83	07/01/2029
31337L-PR-3	FREDDIE MAC-SERIES 2177 CLASS PB		12/01/2018	PAYDOWN		188,117	188,117	189,793	191,000		(2,883)		(2,883)		188,117				4,365	08/01/2029
31337L-UH-9	FREDDIE MAC-SERIES 2178 CLASS PB		12/01/2018	PAYDOWN		72,872	72,872	79,825	76,121		(3,249)		(3,249)		72,872				2,929	08/01/2029
31337M-7G-5	FREDDIE MAC-SERIES 2182 CLASS ZC		12/01/2018	PAYDOWN		151,055	151,055	164,305	156,322		(5,268)		(5,268)		151,055				6,432	09/01/2029
31337N-HW-7	FREDDIE MAC-SERIES 2215 CLASS PH		12/01/2018	PAYDOWN		89,869	89,869	98,070	92,247		(2,377)		(2,377)		89,869				3,249	02/01/2030
31337N-XQ-2	FREDDIE MAC-SERIES 2234 CLASS ZB		12/01/2018	PAYDOWN		59,369	59,369	61,870	60,105		(736)		(736)		59,369				1,182	05/01/2030
31337P-4V-8	FREDDIE MAC-SERIES 2240 CLASS Z		12/01/2018	PAYDOWN		53,839	53,839	55,521	54,702		(863)		(863)		53,839				2,184	06/01/2030
31337P-NT-2	FREDDIE MAC-SERIES 2253 CLASS PH		12/01/2018	PAYDOWN		25,044	25,044	29,567	27,801		(2,757)		(2,757)		25,044				939	09/01/2030
31337T-X3-0	FREDDIE MAC-SERIES 2326 CLASS ZP		12/01/2018	PAYDOWN		498	498	504	501		(3)		(3)		498				18	06/01/2031
31337U-S4-1	FREDDIE MAC-SERIES 2357 CLASS PZ		12/01/2018	PAYDOWN		151,321	151,321	164,520	156,318		(4,997)		(4,997)		151,321				4,770	09/01/2031
31337V-2Q-8	FREDDIE MAC-SERIES 2353 CLASS KZ		12/01/2018	PAYDOWN		32,221	32,221	34,838	33,082		(861)		(861)		32,221				1,223	09/01/2031
31340Y-S2-6	FREDDIE MAC-SERIES 81 CLASS E		11/15/2018	PAYDOWN		3	3								3				23	11/15/2020
31340Y-S4-2	FREDDIE MAC-SERIES 81 CLASS A		11/15/2018	PAYDOWN		7,010	7,010	7,700	7,184		(174)		(174)		7,010				325	11/15/2020
31345J-KP-1	FREDDIE MAC-POOL #306602		07/01/2018	PAYDOWN		326	326	357	334		(8)		(8)		326				8	11/01/2018
31345J-T3-1	FREDDIE MAC-POOL #306870		07/01/2018	PAYDOWN		11,565	11,565	12,068	11,597		(31)		(31)		11,565				279	09/01/2018
31351B-N3-5	FREDDIE MAC STRIP-SERIES 192 CLASS PO		12/01/2018	PAYDOWN		210	210	173	193		17		17		210					02/01/2028
31356A-SB-9	FREDDIE MAC-POOL #D49514		09/01/2018	PAYDOWN		280	280	324	325		(44)		(44)		280				6	02/01/2024
31356E-AA-2	FREDDIE MAC-POOL #D51801		02/01/2018	PAYDOWN		5,286	5,286	5,933	5,717		(431)		(431)		5,286				30	04/01/2024
31356F-N7-2	FREDDIE MAC-POOL #D53114		12/01/2018	PAYDOWN		1,269	1,269	1,480	1,402		(133)		(133)		1,269				49	05/01/2024
31356G-DV-8	FREDDIE MAC-POOL #D53716		12/01/2018	PAYDOWN		134	134	150	144		(11)		(11)		134				6	06/01/2024
31356G-JE-0	FREDDIE MAC-POOL #D53861		12/01/2018	PAYDOWN		97	97	109	109		(12)		(12)		97				4	06/01/2024
31356G-JF-7	FREDDIE MAC-POOL #D53862		12/01/2018	PAYDOWN		2,036	2,036	2,296	2,202		(166)		(166)		2,036				78	06/01/2024
31356J-V7-5	FREDDIE MAC-POOL #D56038		12/01/2018	PAYDOWN		674	674	779	740		(66)		(66)		674				24	07/01/2024

E14.27

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
31356L-N9-5	FREDDIE MAC-POOL #D57616		12/01/2018	PAYDOWN		835	835	934	900		(65)		(65)		835				32	11/01/2024
31356F-HF-9	FANNIE MAE-SERIES 1990-128 CLASS J		12/01/2018	PAYDOWN		5,429	5,429	5,700	5,477		(49)		(49)		5,429				253	10/01/2020
31356G-5J-2	FANNIE MAE-SERIES 1991-65 CLASS Z		12/01/2018	PAYDOWN		7,944	7,944	7,968	7,931		13		13		7,944				296	06/01/2021
31356G-SM-0	FANNIE MAE-SERIES 1991-42 CLASS M		12/01/2018	PAYDOWN		32	32	773	325		(293)		(293)		32				150	05/01/2021
31356G-WN-3	FANNIE MAE-SERIES G-12 CLASS G		12/01/2018	PAYDOWN		43	43	972	88		(45)		(45)		43				188	05/01/2021
31356H-M2-8	FANNIE MAE-SERIES 1991-100 CLASS M		12/01/2018	PAYDOWN		3,129	3,129	2,491	3,011		118		118		3,129				125	08/01/2021
31358J-E0-0	FANNIE MAE-SERIES 1991-122 CLASS N		12/01/2018	PAYDOWN		28,437	28,437	24,611	27,785		652		652		28,437				918	09/01/2021
31358J-VC-2	FANNIE MAE-SERIES 1991-135 CLASS K		12/01/2018	PAYDOWN		51,071	51,071	35,326	48,262		2,809		2,809		51,071				1,636	10/01/2021
31358K-CE-6	FANNIE MAE-SERIES 1991-152 CLASS O		12/01/2018	PAYDOWN		25	25	607	265		(240)		(240)		25				109	11/01/2021
31358K-CR-7	FANNIE MAE-SERIES 1991-148 CLASS L		12/01/2018	PAYDOWN		24,633	24,633	17,040	23,293		1,339		1,339		24,633				708	11/01/2021
31358K-FJ-2	FANNIE MAE-SERIES 1991-154 CLASS PK		12/01/2018	PAYDOWN		20,212	20,212	16,643	19,492		720		720		20,212				659	11/01/2021
31358M-HN-7	FANNIE MAE-SERIES G92-21 CLASS S		12/25/2018	PAYDOWN		519	519	1,198	519						519				418	04/25/2022
31358N-TD-4	FANNIE MAE-SERIES 1992-103 CLASS Z		12/01/2018	PAYDOWN		17,644	17,644	16,490	17,322		322		322		17,644				624	06/01/2022
31358P-V4-6	FANNIE MAE-SERIES 1992-148 CLASS D		12/01/2018	PAYDOWN		110,458	110,458	122,076	112,479		(2,021)		(2,021)		110,458				5,028	08/01/2022
31358Q-D9-3	FANNIE MAE-SERIES 1992-177 CLASS S		12/25/2018	PAYDOWN		71,942	71,942	35,521	46,182		25,759		25,759		71,942				7,404	10/25/2022
31358Q-EU-5	FANNIE MAE-SERIES 1992-162 CLASS D		12/01/2018	PAYDOWN		10,209	10,209	10,209	10,209						10,209				351	09/01/2022
31358Q-MX-0	FANNIE MAE-SERIES 1992-172 CLASS Z		12/01/2018	PAYDOWN		70,479	70,479	62,812	68,528		1,951		1,951		70,479				2,759	09/01/2022
31358Q-TG-0	FANNIE MAE-SERIES G92-52 CLASS Z		12/01/2018	PAYDOWN		44,823	44,823	40,939	43,762		1,060		1,060		44,823				1,780	09/01/2022
31358R-AZ-6	FANNIE MAE-SERIES G92-58 CLASS B		12/01/2018	PAYDOWN		9,456	9,456	7,047	8,991		465		465		9,456				1,780	09/01/2022
31358R-D9-1	FANNIE MAE-SERIES 1992-210 CLASS Z		12/01/2018	PAYDOWN		203,103	203,103	196,744	201,191		1,912		1,912		203,103				2,700	12/01/2022
31358R-FR-9	FANNIE MAE-SERIES 1992-206 CLASS Z		12/01/2018	PAYDOWN		47,088	47,088	44,013	46,317		771		771		47,088				365	11/01/2022
31359A-YN-3	FANNIE MAE-SERIES 1993-87CLASS Z		12/01/2018	PAYDOWN		1,616	1,616	1,657	1,628		(12)		(12)		1,616				56	06/01/2023
31359D-KG-7	FANNIE MAE-SERIES 2006-33CLASS QN		12/01/2018	PAYDOWN		750	750	608	712		38		38		750					09/01/2023
31359E-XH-9	FANNIE MAE-SERIES 1993-189 CLASS SC		12/25/2018	PAYDOWN		153,502	153,502	96,611	115,175		38,327		38,327		153,502				11,599	10/25/2023
31359F-V7-0	FANNIE MAE-SERIES 1993-251 CLASS PJ		12/01/2018	PAYDOWN		32,227	32,227	34,624	32,543		(316)		(316)		32,227				1,237	12/01/2023
31359G-P3-4	FANNIE MAE-SERIES 1994-37 CLASS L		12/01/2018	PAYDOWN		220,016	220,016	222,801	219,860		156		156		220,016				7,155	03/01/2024
31359K-QT-7	FANNIE MAE-SERIES 1996-35CLASS Z		12/01/2018	PAYDOWN		2,154	2,154	2,245	2,187		(33)		(33)		2,154				84	07/01/2026
31359L-HP-3	FANNIE MAE-SERIES 1994-107 CLASS FY		12/25/2018	PAYDOWN		61,591	61,591	59,288	60,284		1,307		1,307		61,591				765	05/25/2023
31359L-ZC-2	FANNIE MAE-SERIES 1995-19 CLASS EA		12/01/2018	PAYDOWN		38,380	38,380	42,781	39,486		(1,106)		(1,106)		38,380				1,754	01/01/2022
31359N-J7-7	FANNIE MAE-SERIES 1997-13 CLASS GG		12/01/2018	PAYDOWN		200,073	200,073	200,175	199,709		365		365		200,073				6,591	04/01/2027
31359P-B4-7	FANNIE MAE-SERIES 1997-49 CLASS E		12/01/2018	PAYDOWN		33,663	33,663	33,126	33,309		354		354		33,663				2,341	06/01/2027
31359P-GG-5	FANNIEMAE WHOLE LOAN-SERIES 1997-W1 CLAS		12/01/2018	PAYDOWN		20,381	20,381	19,919	20,173		209		209		20,381				695	04/01/2027
31359S-J3-5	FANNIE MAE-SERIES 2001-19 CLASS PE		12/01/2018	PAYDOWN		90,895	90,895	104,402	100,767		(9,872)		(9,872)		90,895				4,725	05/01/2031
31359U-T2-1	FANNIE MAE-SERIES 1998-61CLASS LH		12/01/2018	PAYDOWN		7,647	7,647	7,699	7,662		(15)		(15)		7,647				180	11/01/2028
31359X-CD-9	FANNIE MAE-SERIES 1999-54CLASS PL		12/01/2018	PAYDOWN		9,172	9,172	9,186	9,164		8		8		9,172				275	11/01/2029
31359X-CL-1	FANNIE MAE-SERIES 1999-54 PO		12/01/2018	PAYDOWN		61,096	61,096	45,430	50,196		10,899		10,899		61,096					11/01/2029
313602-DP-6	FANNIE MAE-SERIES 1988-14 CLASS I		06/01/2018	PAYDOWN		266	266	297	267		(1)		(1)		266				3	06/01/2018
313602-HB-3	FANNIE MAE-SERIES 1988-27 CLASS B		10/01/2018	PAYDOWN		791	791	743	786		5		5		791					11/01/2018
313602-LK-8	FANNIE MAE-SERIES 1989-63 CLASS Z		12/01/2018	PAYDOWN		5,806	5,806	5,828	5,800		7		7		5,806				269	06/01/2019
313603-B4-3	FANNIE MAE-SERIES 1990-18 CLASS J		12/01/2018	PAYDOWN		4,907	4,907	4,476	4,831		75		75		4,907				176	03/01/2020
313603-G7-1	FANNIE MAE-SERIES G-3 CLASS B		12/01/2018	PAYDOWN		4,117	4,117	1,783	3,754		363		363		4,117					03/01/2020
313615-TX-4	FANNIE MAE-POOL #50966		12/01/2018	PAYDOWN		1,037	1,037	1,008	1,017		20		20		1,037				39	01/01/2024
31362S-2N-4	FANNIE MAE-POOL #70081		08/01/2018	VARIOUS		976	976	895	964		12		12		976				22	08/01/2018
31363W-HM-0	FANNIE MAE-POOL #100235		12/01/2018	PAYDOWN		2,540	2,540	2,655	2,572		(32)		(32)		2,540				109	04/01/2021
31363W-HX-6	FANNIE MAE-POOL #100245		12/01/2018	PAYDOWN		855	855	866	857		(2)		(2)		855				35	12/01/2020
31363W-JS-5	FANNIE MAE-POOL #100272		12/01/2018	PAYDOWN		1,361	1,361	1,404	1,378		(18)		(18)		1,361				49	09/01/2022
31363W-JZ-9	FANNIE MAE-POOL #100279		10/01/2018	PAYDOWN		1,086	1,086	1,143	1,095		(9)		(9)		1,086				33	04/01/2020
31364H-C6-2	FANNIEMAE STRIP-SERIES 240 CLASS 2		12/01/2018	PAYDOWN		628	628	526	406						628				110	09/01/2023
31364H-EB-6	FANNIEMAE STRIP-SERIES 249 CLASS 2 10		12/01/2018	PAYDOWN		7,679	7,679	9,041	8,831						7,679				1,411	10/01/2023
31364H-F6-9	FANNIEMAE STRIP-SERIES 252 CLASS 2		12/01/2018	PAYDOWN		1,067	1,067	947	765						1,067				183	11/01/2023
31364H-L8-8	FANNIEMAE STRIP-SERIES 273 CLASS 2		12/01/2018	PAYDOWN		131	131	97	96						131				20	08/01/2026
31364H-NV-5	FANNIEMAE STRIP-SERIES 142 CLASS 2 10		12/01/2018	PAYDOWN		1,219	1,219	2,712	3,527						1,219				680	06/01/2022
31364H-TG-2	FANNIEMAE STRIP-SERIES 191 CLASS 2 10		12/01/2018	PAYDOWN		2,391	2,391	2,799	1,636						2,391				727	12/01/2022
31364H-TU-1	Federal National Mortgage-SERIES 197 CLAS		12/01/2018	PAYDOWN		4,466	4,466	6,058	3,133						4,466				1,184	01/01/2023
31364H-VU-8	FANNIEMAE STRIP-SERIES 221 CLASS 2		12/01/2018	PAYDOWN		619	619	525	388						619				113	05/01/2023
31364H-VW-4	FANNIEMAE STRIP-SERIES 222 CLASS 2		12/01/2018	PAYDOWN		403	403	298	233						403				56	06/01/2023
31368H-EA-7	FANNIE MAE-POOL #190129		12/01/2018	PAYDOWN		86,154	86,154	75,581	79,073		7,080</									

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
3136A0-FK-8	FANNIEMAE-ACES-SERIES 2011-104 CLASS A2 R		12/01/2018	PAYDOWN		897,726	897,726	1,008,484	944,011		(46,285)		(46,285)		897,726				22,202	06/01/2021
3136FA-2A-7	FANNIEMAE STRIP-SERIES 339 CLASS 8		12/01/2018	PAYDOWN		1,064	1,064	260	712						1,064				42	11/01/2033
3136FA-2E-9	FANNIEMAE STRIP-SERIES 339 CLASS 12		12/01/2018	PAYDOWN		4,562	4,562	2,166	3,185						4,562				376	06/01/2033
3136FA-2H-2	FANNIEMAE STRIP-SERIES 339 CLASS 15		12/01/2018	PAYDOWN		29,201	29,201	14,991	23,256						29,201				2,893	10/01/2033
3136FA-6K-1	FANNIEMAE STRIP-SERIES 343 CLASS 13		12/01/2018	PAYDOWN		10,383	10,383	2,131	7,138						10,383				404	09/01/2033
3136FA-A6-7	FANNIEMAE STRIP-SERIES 334 CLASS 10		12/01/2018	PAYDOWN		43,208	43,208	18,839	33,415						43,208				3,267	02/01/2033
3136FA-B2-5	FANNIEMAE STRIP-SERIES 334 CLASS 14		12/01/2018	PAYDOWN		13,740	13,740	5,960	11,058						13,740				1,598	02/01/2033
3136FA-B5-8	FANNIEMAE STRIP-SERIES 334 CLASS 17		12/01/2018	PAYDOWN		209	209	120	150						209				19	02/01/2033
3136FA-C6-5	FANNIEMAE STRIP-SERIES 333CLASS 2		12/01/2018	PAYDOWN		11,690	11,690	2,199	7,691						11,690				335	04/01/2033
3136FA-HB-9	FANNIEMAE STRIP-SERIES 319 CLASS 2		12/01/2018	PAYDOWN		99	99	40	72						99				8	02/01/2032
3136FA-KM-1	FANNIEMAE STRIP-SERIES 321 CLASS 2		12/01/2018	PAYDOWN		1,782	1,782	608	1,062						1,782				98	04/01/2032
3136FA-LQ-1	FANNIEMAE STRIP-SERIES 322CLASS 1		12/01/2018	PAYDOWN		614	614	476	525		88		88		614					04/01/2032
3136FA-LR-9	FANNIEMAE STRIP-SERIES 322 CLASS 2		12/01/2018	PAYDOWN		423	423	116	281						423				21	04/01/2032
3136FA-14-8	FANNIEMAE STRIP-SERIES 338 CLASS 2		12/01/2018	PAYDOWN		49	49	9	34						49				2	07/01/2033
3136FA-XH-8	FANNIEMAE STRIP-SERIES 331 CLASS 4		12/01/2018	PAYDOWN		30,170	30,170	16,796	27,855						30,170				2,960	02/01/2033
3136FA-XN-5	FANNIEMAE STRIP-SERIES 331 CLASS 9		12/01/2018	PAYDOWN		343	343	156	270						343				36	02/01/2033
3136FA-Z9-4	FANNIEMAE STRIP-SERIES 339CLASS 7		12/01/2018	PAYDOWN		8,969	8,969	2,152	5,899						8,969				360	11/01/2033
3136FA-ZX-1	FANNIEMAE STRIP-SERIES 334 CLASS 3		12/01/2018	PAYDOWN		1,238	1,238	362	865						1,238				60	07/01/2033
3136FA-ZY-9	FANNIEMAE STRIP-SERIES 334 CLASS 4		12/01/2018	PAYDOWN		14,356	14,356	4,245	10,454						14,356				779	07/01/2033
3136FC-AB-2	FANNIEMAE STRIP-SERIES 344 CLASS 2		12/01/2018	PAYDOWN		266	266	153	213						266				24	12/01/2033
3136FC-BD-7	FANNIEMAE STRIP-SERIES 346 CLASS 2		12/01/2018	PAYDOWN		55	55	9	35						55				2	12/01/2033
3136FC-HX-7	FANNIEMAE STRIP-SERIES 351 CLASS 8		12/01/2018	PAYDOWN		4,065	4,065	846	2,603						4,065				123	04/01/2034
3136FC-HZ-2	FANNIEMAE STRIP-SERIES 351 CLASS 10		12/01/2018	PAYDOWN		2,638	2,638	514	1,643						2,638				68	04/01/2034
3136FC-JA-5	FANNIEMAE STRIP-SERIES 351 CLASS 11		12/01/2018	PAYDOWN		1,658	1,658	246	916						1,658				36	11/01/2034
3136FC-PK-6	FANNIEMAE STRIP-SERIES 355 CLASS 34		11/01/2018	VARIOUS		177	177	2,051	183						177				(16)	11/01/2018
3136FC-PL-4	FANNIEMAE STRIP-SERIES 355 CLASS 35		11/01/2018	VARIOUS		100	100	901	108						100				(24)	11/01/2018
3136FC-QE-9	FANNIEMAE STRIP-SERIES 356 CLASS 10		12/01/2018	PAYDOWN		3,016	3,016	688	2,085						3,016				106	06/01/2035
3136FC-QG-4	FANNIEMAE STRIP-SERIES 356 CLASS 12		12/01/2018	PAYDOWN		1,274	1,274	314	895						1,274				50	02/01/2035
3136FC-11C-6	FANNIEMAE STRIP-SERIES 362 CLASS 12		12/01/2018	PAYDOWN		1,150	1,150	605	929						1,150				104	08/01/2035
3136FC-11D-4	FANNIEMAE STRIP-SERIES 362 CLASS 13		12/01/2018	PAYDOWN		575	575	333	479						575				58	08/01/2035
3136FC-11Z-3	FANNIEMAE STRIP-SERIES 364 CLASS 16		12/01/2018	PAYDOWN		3,132	3,132	1,739	2,408						3,132				334	09/01/2035
31370Y-ZS-4	FANNIE MAE-POOL #254653		12/01/2018	PAYDOWN		3,975	3,975	3,503	3,690		285		285		3,975				131	11/01/2023
31371G-4U-1	FANNIE MAE-POOL #252035		12/01/2018	PAYDOWN		5,362	5,362	5,509	5,454		(92)		(92)		5,362				220	08/01/2028
31371H-D9-6	FANNIE MAE-POOL #252228		12/01/2018	PAYDOWN		17,911	17,911	18,291	18,209		(298)		(298)		17,911				677	12/01/2028
31371H-E2-0	FANNIE MAE-POOL #252253		12/01/2018	PAYDOWN		155	155	150	151		3		3		155				6	12/01/2028
31371H-F2-9	FANNIE MAE-POOL #252285 FHA/VA		12/01/2018	PAYDOWN		18,091	18,091	18,458	18,390		(299)		(299)		18,091				861	12/01/2028
31371H-HL-5	FANNIE MAE-POOL #252335 FHA/VA		12/01/2018	PAYDOWN		37,948	37,948	38,719	38,472		(524)		(524)		37,948				1,691	02/01/2029
31371H-PH-5	FANNIE MAE-POOL #252524		12/01/2018	PAYDOWN		3,138	3,138	3,268	3,226		(88)		(88)		3,138				138	04/01/2029
31371H-VM-7	FANNIE MAE-POOL #252720 FHA/VA		12/01/2018	PAYDOWN		16,034	16,034	16,009	16,006		28		28		16,034				620	08/01/2029
31371H-XN-3	FANNIE MAE-POOL #252785		12/01/2018	PAYDOWN		960	960	977	977		(17)		(17)		960				42	08/01/2029
31371H-XT-0	FANNIE MAE-POOL #252790 FHA/VA		12/01/2018	PAYDOWN		5,278	5,278	5,317	5,305		(27)		(27)		5,278				217	09/01/2029
31371H-Y9-3	FANNIE MAE-POOL #252836		12/01/2018	PAYDOWN		2,481	2,481	2,524	2,508		(27)		(27)		2,481				109	09/01/2029
31371J-7F-5	FANNIE MAE-POOL #253894		12/01/2018	PAYDOWN		4,021	4,021	4,602	4,536		(515)		(515)		4,021				136	08/01/2031
31371J-KP-8	FANNIE MAE-POOL #253302		12/01/2018	PAYDOWN		1,238	1,238	1,275	1,275		(37)		(37)		1,238				59	04/01/2030
31371J-M8-4	FANNIE MAE-POOL #253383		08/01/2018	PAYDOWN		2,212	2,212	2,248	2,224		(12)		(12)		2,212				48	05/01/2020
31371J-MX-9	FANNIE MAE-POOL #253374		12/01/2018	PAYDOWN		2,273	2,273	2,341	2,324		(51)		(51)		2,273				113	05/01/2030
31371J-NQ-3	FANNIE MAE-POOL #253399		12/01/2018	PAYDOWN		24	24	26	26		(2)		(2)		24					08/01/2030
31371J-NZ-3	FANNIE MAE-POOL #253408		12/01/2018	PAYDOWN		939	939	967	961		(21)		(21)		939				58	07/01/2030
31371J-P4-0	FANNIE MAE-POOL #253443		12/01/2018	PAYDOWN		1,037	1,037	1,068	1,059		(22)		(22)		1,037				74	08/01/2030
31371J-QN-7	FANNIE MAE-POOL #253461		12/01/2018	PAYDOWN		2,465	2,465	2,505	2,477		(12)		(12)		2,465				115	07/01/2020
31371J-TE-4	FANNIE MAE-POOL #253549		12/01/2018	PAYDOWN		54,643	54,643	55,249	55,129		(486)		(486)		54,643				3,179	10/01/2030
31371K-AG-6	FANNIE MAE-POOL #253907		12/01/2018	PAYDOWN		3,724	3,724	4,450	4,335		(611)		(611)		3,724				121	07/01/2031
31371K-EX-5	FANNIE MAE-POOL #254050		12/01/2018	PAYDOWN		29,255	29,255	33,483	32,936		(3,681)		(3,681)		29,255				790	11/01/2031
31371L-CD-9	FANNIE MAE-POOL # 254868		12/01/2018	PAYDOWN		9,025	9,025	9,832	9,775		(750)		(750)		9,025				232	09/01/2033
31371L-DH-9	FANNIE MAE-POOL #254904		12/01/2018	PAYDOWN		119,828	119,828	131,694	130,454		(10,626)		(10,626)		119,828				3,425	10/01/2033
31371L-EG-0	FANNIE MAE-POOL #254935		12/01/2018	PAYDOWN		7,793	7,793	7,153	7,305		488		488		7,793				191	08/01/2033
31371L-EI-5	FANNIE MAE-POOL #254949		12/01/2018	PAYDOWN		127,036	127,036	138,406	137,343		(10,307)		(10,307)		127,036				3,312	11/01/2033
31371L-S7-5	FANNIE MAE-POOL #255342		12/01/2018	PAYDOWN		64,828	64,828	64,865	64,831		(3)		(3)		64,828				1,974	07/01/2024

E14.29

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Con- tractual Maturity Date
31371L-SA-8	FANNIE MAE-POOL #255313		12/01/2018	PAYDOWN		80,265	80,265	87,813	86,899		(6,634)		(6,634)		80,265				2,142	08/01/2034
31371L-UT-4	FANNIE MAE-POOL #255394		12/01/2018	PAYDOWN		87,897	87,897	88,035	88,036		(139)		(139)		87,897				3,168	07/01/2034
31371L-VJ-5	FANNIE MAE-POOL #255417		12/01/2018	PAYDOWN		7,659	7,659	7,664	7,660		(1)		(1)		7,659				241	09/01/2024
31371M-DL-8	FANNIE MAE-POOL #255807		12/01/2018	PAYDOWN		16,990	16,990	17,181	17,034		(44)		(44)		16,990				414	08/01/2020
31371N-YD-1	FANNIE MAE-POOL #257308		12/01/2018	PAYDOWN		219	219	224	223		(4)		(4)		219				7	08/01/2038
313730-CG-9	FANNIE MAE-POOL #299871		12/01/2018	PAYDOWN		1,417	1,417	1,460	1,441		(24)		(24)		1,417				72	12/01/2024
31373U-G8-4	FANNIE MAE-POOL #303623		12/01/2018	PAYDOWN		1,324	1,324	1,389	1,378		(53)		(53)		1,324				68	05/01/2025
31373U-JT-5	FANNIE MAE-POOL #303674		12/01/2018	PAYDOWN		2,293	2,293	2,375	2,345		(52)		(52)		2,293				99	01/01/2026
31373X-RE-3	FANNIE MAE-POOL #306585		12/01/2018	PAYDOWN		709	709	750	730		(22)		(22)		709				39	03/01/2025
31374S-3M-1	FANNIE MAE-POOL #323104		12/01/2018	PAYDOWN		4,911	4,911	5,163	5,098		(187)		(187)		4,911				219	07/01/2022
31374T-E3-9	FANNIE MAE-POOL #323354		12/01/2018	PAYDOWN		18,979	18,979	18,718	18,755		224		224		18,979				611	11/01/2028
31374T-G9-4	FANNIE MAE-POOL #323424		12/01/2018	PAYDOWN		368	368	358	360		8		8		368				14	12/01/2028
31376S-R9-2	FANNIE MAE-POOL #364212		12/01/2018	PAYDOWN		2,582	2,582	2,672	2,646		(64)		(64)		2,582				120	06/01/2026
31378Q-DF-5	FANNIE MAE-POOL #405202		12/01/2018	PAYDOWN		4,011	4,011	4,023	4,019		(9)		(9)		4,011				132	03/01/2028
31378T-QG-3	FANNIE MAE-POOL #408255		12/01/2018	PAYDOWN		4,503	4,503	4,372	4,402		102		102		4,503				198	03/01/2028
31378X-AG-1	FANNIE MAE-POOL #411407		12/01/2018	PAYDOWN		116	116	113	114		2		2		116				5	05/01/2028
31378Y-M7-6	FANNIE MAE-POOL #412682		12/01/2018	PAYDOWN		5,504	5,504	5,344	5,385		120		120		5,504				140	03/01/2028
31379A-H3-6	FANNIE MAE-POOL #413578		12/01/2018	PAYDOWN		634	634	617	622		12		12		634				26	01/01/2028
31379B-F3-2	FANNIE MAE-POOL #414286		12/01/2018	PAYDOWN		641	641	624	629		13		13		641				17	02/01/2028
31379D-CM-9	FANNIE MAE-POOL #415976		12/01/2018	PAYDOWN		5,676	5,676	5,572	5,584		93		93		5,676				122	12/01/2028
31379J-VR-4	FANNIE MAE-POOL #421024		12/01/2018	PAYDOWN		7,541	7,541	7,652	7,610		(69)		(69)		7,541				352	06/01/2027
31379R-EN-4	FANNIE MAE-POOL #426841		12/01/2018	PAYDOWN		187	187	221	201		(14)		(14)		187				10	04/01/2021
31379V-G8-6	FANNIE MAE-POOL #430523		12/01/2018	PAYDOWN		25,783	25,783	24,872	24,917		866		866		25,783				1,010	06/01/2028
31379X-LH-6	FANNIE MAE-POOL #432428		12/01/2018	PAYDOWN		945	945	919	926		19		19		945				39	06/01/2028
3137A2-B3-4	FHLMC MULTIFAMILY STRUCT-SERIES K009 CLA		12/01/2018	PAYDOWN		545,452	545,452	89,267	30,496						545,452				5,001	08/01/2020
3137A7-NU-0	FHLMC MULTIFAMILY STRUCT-SERIES K011 CLA		12/01/2018	PAYDOWN		60,639	60,639	69,786	64,036		(3,397)		(3,397)		60,639				2,031	11/01/2020
3137AH-6D-5	FHLMC MULTIFAMILY STRUCT-SERIES K015 CLA		12/01/2018	PAYDOWN		701,152	701,152	114,647	47,763						701,152				4,237	07/01/2021
3137AN-MP-7	FHLMC MULTIFAMILY STRUCT-SERIES K707 CLA		11/01/2018	PAYDOWN		358,916	358,916	3,018,519	358,922						358,916				69,012	12/01/2018
3137AP-PA-2	FHLMC MULTIFAMILY STRUCT-SERIES K018 CLA		12/01/2018	PAYDOWN		627,423	627,423	119,147	52,278						627,423				7,092	01/01/2022
3137AS-NK-6	FHLMC MULTIFAMILY STRUCT-SERIES K019 CLA		12/01/2018	PAYDOWN		26,280	26,280	12,130	5,631						26,280				699	03/01/2022
31380G-2S-7	FANNIE MAE-POOL #440085		12/01/2018	PAYDOWN		1,790	1,790	1,766	1,773		17		17		1,790				59	12/01/2028
31380G-GN-3	FANNIE MAE-POOL #439505		12/01/2018	PAYDOWN		155	155	151	152		3		3		155				6	08/01/2028
31380H-QK-6	FANNIE MAE-POOL #440658		12/01/2018	PAYDOWN		7,936	7,936	7,832	7,858		77		77		7,936				217	10/01/2028
31380H-SA-6	FANNIE MAE-POOL #440713		12/01/2018	PAYDOWN		579	579	590	586		(7)		(7)		579				22	11/01/2028
31380J-LH-4	FANNIE MAE-POOL #441428		05/01/2018	PAYDOWN		8,083	8,083	7,854	7,869		213		213		8,083				148	08/01/2028
31380J-UJ-5	FANNIE MAE-POOL #441695		12/01/2018	PAYDOWN		2,132	2,132	2,057	2,022		110		110		2,132				88	09/01/2028
31380P-Y7-8	FANNIE MAE-POOL #446334		12/01/2018	PAYDOWN		24,368	24,368	24,973	24,753		(385)		(385)		24,368				1,377	08/01/2026
31380S-5S-8	FANNIE MAE-POOL #449157		12/01/2018	PAYDOWN		64,263	64,263	63,666	63,721		542		542		64,263				2,865	12/01/2028
31380S-5I-9	FANNIE MAE-POOL #449161		12/01/2018	PAYDOWN		17,088	17,088	16,767	16,857		230		230		17,088				624	12/01/2028
31380S-7J-6	FANNIE MAE-POOL #449197		12/01/2018	PAYDOWN		894	894	877	874		20		20		894				29	12/01/2028
31380T-NA-5	FANNIE MAE-POOL #449585		12/01/2018	PAYDOWN		188	188	183	184		4		4		188				8	11/01/2028
31380T-V8-1	FANNIE MAE-POOL #449839		12/01/2018	PAYDOWN		1,502	1,502	1,509	1,507		(4)		(4)		1,502				54	11/01/2028
31380T-WJ-1	FANNIE MAE-POOL #449859		12/01/2018	PAYDOWN		779	779	812	802		(23)		(23)		779				26	11/01/2028
31380U-ZE-1	FANNIE MAE-POOL #450841		12/01/2018	PAYDOWN		1,185	1,185	1,163	1,166		19		19		1,185				39	12/01/2028
31380W-LK-8	FANNIE MAE-POOL #452486		12/01/2018	PAYDOWN		151	151	154	154		(3)		(3)		151				6	11/01/2028
31380W-UP-7	FANNIE MAE-POOL #452490		12/01/2018	PAYDOWN		483	483	493	490		(6)		(6)		483				19	11/01/2028
31380X-HC-9	FANNIE MAE-POOL #453027		12/01/2018	PAYDOWN		26,161	26,161	25,811	25,891		269		269		26,161				863	12/01/2028
31380X-KT-8	FANNIE MAE-POOL #453106		12/01/2018	PAYDOWN		3,322	3,322	3,258	3,273		50		50		3,322				85	01/01/2029
31381A-RG-8	FANNIE MAE-POOL #455087		12/01/2018	PAYDOWN		2,763	2,763	2,715	2,724		39		39		2,763				81	12/01/2028
31381B-V2-2	FANNIE MAE-POOL #456133		12/01/2018	PAYDOWN		680	680	668	668		11		11		680				22	12/01/2028
31381C-5I-9	FANNIE MAE-POOL #457263		12/01/2018	PAYDOWN		391	391	392	391						391				18	12/01/2023
31381C-6D-4	FANNIE MAE-POOL #457268		12/01/2018	PAYDOWN		956	956	1,002	995		(39)		(39)		956				50	07/01/2028
31381C-QV-2	FANNIE MAE-POOL #456866		12/01/2018	PAYDOWN		1,370	1,370	1,340	1,349		21		21		1,370				43	03/01/2029
31381D-YG-4	FANNIE MAE-POOL #458011		12/01/2018	PAYDOWN		8,823	8,823	9,320	8,931		(107)		(107)		8,823				492	12/01/2020
31381N-KY-8	FANNIE MAE-FNMA		12/01/2018	PAYDOWN		22,071	22,071	24,698	23,737		(1,667)		(1,667)		22,071				570	08/01/2028
31381S-DB-2	FANNIE MAE-POOL #469127		12/01/2018	PAYDOWN		12,517	12,517	13,286	12,756		(239)		(239)		12,517				235	09/01/2021
31382H-D6-9	FANNIE MAE-POOL #482625		12/01/2018	PAYDOWN		8,022	8,022	7,882	7,917		105		105		8,022				122	02/01/2029
31382K-NV-6	FANNIE MAE-POOL #484704		12/01/2018	PAYDOWN		2,387	2,387	2,342	2,346		40		40		2,387				59	02/01/2029

E14.30

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/Adjusted Carrying Value	Unrealized Valuation Increase/Decrease	Current Year's (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Book/Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/Stock Dividends Received During Year	Stated Contractual Maturity Date
31382K-NH-4	FANNIE MAE-POOL #484705		12/01/2018	PAYDOWN		337	337	331	332		5		5		337				12	02/01/2029
31382S-GP-0	FANNIE MAE-POOL #490806		12/01/2018	PAYDOWN		1,650	1,650	1,854	1,801		(151)		(151)		1,650				59	04/01/2029
31383M-OB-2	FANNIE MAE-POOL #507250		12/01/2018	PAYDOWN		8,837	8,837	10,558	10,106		(1,269)		(1,269)		8,837				363	12/01/2028
31383S-BM-1	FANNIE MAE-POOL #511344		12/01/2018	PAYDOWN		1,367	1,367	1,407	1,413		(46)		(46)		1,367				68	11/01/2029
31384T-S7-3	FANNIE MAE-POOL #533442		12/01/2018	PAYDOWN		6,417	6,417	6,618	6,570		(153)		(153)		6,417				306	01/01/2030
31384V-T3-6	FANNIE MAE-POOL #535270		12/01/2018	PAYDOWN		648	648	702	685		(37)		(37)		648				31	04/01/2030
31384V-Z8-8	FANNIE MAE-POOL #535467		12/01/2018	PAYDOWN		61,214	61,214	61,683	61,531		(317)		(317)		61,214				2,373	12/01/2029
31384W-DH-0	FANNIE MAE-POOL #535704		12/01/2018	PAYDOWN		43,184	43,184	41,855	42,076		1,108		1,108		43,184				1,150	12/01/2030
31384W-NM-8	FANNIE MAE-POOL #535996		12/01/2018	PAYDOWN		24	24	26	26		(1)		(1)		24					06/01/2031
31384X-QC-5	FANNIE MAE-POOL #536951		12/01/2018	PAYDOWN		520	520	535	535		(16)		(16)		520				33	05/01/2030
31384X-XK-9	FANNIE MAE-POOL #537182		12/01/2018	PAYDOWN		906	906	933	926		(20)		(20)		906				31	05/01/2030
31384Y-VL-7	FANNIE MAE-POOL #538019		12/01/2018	PAYDOWN		3,790	3,790	3,859	3,833		(43)		(43)		3,790				177	12/01/2027
31385A-T7-2	FANNIE MAE-POOL #538874		12/01/2018	PAYDOWN		33	33	34	33		(1)		(1)		33				2	06/01/2030
31385D-HK-0	FANNIE MAE-POOL #541234		12/01/2018	PAYDOWN		197	197	203	201		(4)		(4)		197				10	06/01/2030
31385E-GJ-2	FANNIE MAE-POOL #542101		12/01/2018	PAYDOWN		1,454	1,454	1,495	1,481		(27)		(27)		1,454				121	05/01/2030
31385E-PE-3	FANNIE MAE-POOL #542321		12/01/2018	PAYDOWN		72	72	74	73		(1)		(1)		72				4	06/01/2030
31385H-Y6-3	FANNIE MAE-POOL #545333		12/01/2018	PAYDOWN		4,685	4,685	5,276	5,276		(591)		(591)		4,685				163	12/01/2031
31385J-EK-0	FANNIE MAE-POOL #545638		12/01/2018	PAYDOWN		17,045	17,045	20,168	19,891		(2,845)		(2,845)		17,045				523	05/01/2032
31385J-ER-5	FANNIE MAE-POOL #545644		12/01/2018	PAYDOWN		7,744	7,744	8,134	8,080		(335)		(335)		7,744				307	04/01/2029
31385P-5A-8	FANNIE MAE-POOL #549041		12/01/2018	PAYDOWN		2,780	2,780	2,875	2,841		(61)		(61)		2,780				137	10/01/2024
31385X-AW-7	FANNIE MAE-POOL #555421		12/01/2018	PAYDOWN		413,518	413,518	450,527	447,186		(33,667)		(33,667)		413,518				11,103	05/01/2033
31385X-LZ-8	FANNIE MAE-POOL #555744		12/01/2018	PAYDOWN		5,571	5,571	5,864	5,821		(250)		(250)		5,571				214	04/01/2033
31386G-YB-3	FANNIE MAE-POOL #563306		12/01/2018	PAYDOWN		6,699	6,699	7,034	6,965		(266)		(266)		6,699				320	10/01/2030
31386M-ZB-9	FANNIE MAE-POOL #567838		12/01/2018	PAYDOWN		5,123	5,123	5,826	5,723		(600)		(600)		5,123				165	10/01/2030
31386W-MA-7	FANNIE MAE-POOL #575579		12/01/2018	PAYDOWN		366	366	389	383		(17)		(17)		366				21	04/01/2031
31387N-WC-7	FANNIE MAE-POOL #589343		12/01/2018	PAYDOWN		4,534	4,534	5,417	5,208		(675)		(675)		4,534				174	06/01/2031
31387S-U6-1	FANNIE MAE-POOL #592905		12/01/2018	PAYDOWN		2,677	2,677	2,634	2,643		34		34		2,677				88	01/01/2029
31388S-W2-7	FANNIE MAE-POOL #613665		12/01/2018	PAYDOWN		45,268	45,268	44,957	45,031		237		237		45,268				2,164	10/01/2029
31388S-WZ-4	FANNIE MAE-POOL #613664		12/01/2018	PAYDOWN		8,810	8,810	8,518	8,562		248		248		8,810				264	10/01/2029
31388W-QJ-8	FANNIE MAE-POOL #617057		12/01/2018	PAYDOWN		1,911	1,911	2,258	2,176		(265)		(265)		1,911				68	11/01/2031
31389A-6A-6	FANNIE MAE-POOL #620165		12/01/2018	PAYDOWN		3,923	3,923	4,636	4,652		(729)		(729)		3,923				139	12/01/2031
31389C-HA-0	FANNIE MAE-POOL #621325		12/01/2018	PAYDOWN		1,376	1,376	1,565	1,521		(144)		(144)		1,376				49	12/01/2031
3138A2-BL-2	FANNIE MAE-POOL #AH0942		12/01/2018	PAYDOWN		21,085	21,085	23,489	23,350		(2,264)		(2,264)		21,085				464	12/01/2040
3138A5-BP-6	FANNIE MAE-FNMA		12/01/2018	PAYDOWN		53,724	53,724	56,934	56,344		(2,621)		(2,621)		53,724				991	02/01/2041
3138AK-SA-8	FANNIE MAE-POOL #A15912		12/01/2018	PAYDOWN		17,317	17,317	19,291	19,342		(2,026)		(2,026)		17,317				483	08/01/2041
3138AR-X3-3	FANNIE MAE-POOL #AJ0697		12/01/2018	PAYDOWN		24,489	24,489	27,281	27,013		(2,524)		(2,524)		24,489				581	09/01/2041
3138AV-P7-4	FANNIE MAE-POOL #AJ4045		12/01/2018	PAYDOWN		28,788	28,788	32,070	31,987		(3,199)		(3,199)		28,788				613	10/01/2041
3138EO-M3-0	FANNIE MAE-POOL #AJ7577		12/01/2018	PAYDOWN		51,370	51,370	54,811	54,696		(3,326)		(3,326)		51,370				795	11/01/2041
3138EO-O9-3	FANNIE MAE-POOL #AJ7679		12/01/2018	PAYDOWN		4,998	4,998	5,427	5,412		(414)		(414)		4,998				90	12/01/2041
3138E4-FF-3	FANNIE MAE-POOL #AK0165		12/01/2018	PAYDOWN		384,512	384,512	406,393	404,873		(20,361)		(20,361)		384,512				6,174	04/01/2027
3138EB-PJ-8	FANNIE MAE-POOL #AK6724		12/01/2018	PAYDOWN		21,750	21,750	21,462	21,504		246		246		21,750				345	03/01/2042
3138EG-EI-0	FANNIE MAE-POOL #AL0148		12/01/2018	PAYDOWN		62,926	62,926	70,100	69,689		(6,763)		(6,763)		62,926				1,239	11/01/2040
3138EH-G9-7	FANNIE MAE-POOL #AL1123		12/01/2018	PAYDOWN		518,314	518,314	550,152	540,851		(22,537)		(22,537)		518,314				7,885	11/01/2026
3138EH-P3-0	FANNIE MAE-POOL #AL1341		12/01/2018	PAYDOWN		81,490	81,490	88,477	88,340		(6,850)		(6,850)		81,490				1,659	01/01/2042
3138EM-UX-7	FANNIE MAE-FNMA		12/01/2018	PAYDOWN		54,550	54,550	58,965	58,163		(3,613)		(3,613)		54,550				1,244	09/01/2043
3138LO-WN-7	FANNIE MAE-POOL #AM0652		12/01/2018	PAYDOWN		60,210	60,210	61,969	61,565		(1,355)		(1,355)		60,210				1,034	09/01/2032
3138L3-CS-2	FANNIE MAE #AM2791		12/01/2018	PAYDOWN		16,585	16,585	16,405	16,455		130		130		16,585				290	03/01/2028
3138L8-NV-2	FANNIE MAE #AM7603		12/01/2018	PAYDOWN		67,412	67,412	8,332	2,339						67,412				141	01/01/2025
3138L8-RN-6	FANNIE MAE #AM7692		12/01/2018	PAYDOWN		9,692	9,692	9,941	9,831		(139)		(139)		9,692				164	01/01/2025
3138LA-CD-9	FANNIE MAE #AM9067		12/01/2018	PAYDOWN		15,982	15,982	16,011	15,996		(14)		(14)		15,982				312	06/01/2045
3138LA-HD-7	FANNIE MAE #AM9643		12/01/2018	PAYDOWN		145,245	145,245	3,035	1,462						145,245				83	08/01/2025
3138LK-P7-6	Fannie Mae Pool-POOL #AN6745		12/01/2018	PAYDOWN		11,869	11,869	12,232	12,227		(357)		(357)		11,869				205	09/01/2042
3138MO-ST-8	FANNIE MAE-POOL #A08629		12/01/2018	PAYDOWN		84,021	84,021	84,777	84,732		(712)		(712)		84,021				1,701	07/01/2042
3138MB-KB-2	FANNIE MAE-POOL #AP2989		12/01/2018	PAYDOWN		757,546	757,546	809,955	806,194		(48,648)		(48,648)		757,546				14,811	08/01/2042
3138M7-SU-5	FANNIE MAE-POOL #AP4458		12/01/2018	PAYDOWN		62,191	62,191	65,230	64,905		(2,715)		(2,715)		62,191				1,263	08/01/2042
3138MA-KX-5	FANNIE MAE-POOL #AP6609		12/01/2018	PAYDOWN		33,238	33,238	33,537	33,519		(281)		(281)		33,238				603	09/01/2042
3138MB-KA-3	FANNIE MAE #AP7488		12/01/2018	PAYDOWN		49,215	49,215	50,360	47,225		(918)		(918)		49,215				938	09/01/2042
3138NJ-AD-0	FANNIE MAE-POOL #FN0003 MEGA		12/01/2018	PAYDOWN		11,595	11,595	12,896	11,919		(324)		(324)		11,595				362	01/01/2021

E14.31

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
3138WC-H6-3	FANNIE MAE AS2952		12/01/2018	PAYDOWN		66,784	66,784	70,593	69,898		(3,114)		(3,114)		66,784				1,516	07/01/2044
3138WN-CN-7	FANNIE MAE-POOL #AT0976		12/01/2018	PAYDOWN		63,142	63,142	60,174	60,244		2,898		2,898		63,142				1,158	04/01/2043
3138WQ-GV-8	FANNIE MAE-POOL #AT2911		12/01/2018	PAYDOWN		68,991	68,991	65,749	65,982		3,009		3,009		68,991				1,223	04/01/2043
31390P-QK-7	FANNIE MAE-POOL #651902		12/01/2018	PAYDOWN		8,833	8,833	10,059	9,966		(1,133)		(1,133)		8,833				310	08/01/2032
31391A-KD-0	FANNIE MAE-POOL #660992		12/01/2018	PAYDOWN		233	233	250	247		(13)		(13)		233				4	07/01/2032
31391B-N4-5	FANNIE MAE-POOL #662011		12/01/2018	PAYDOWN		937	937	1,107	1,070		(133)		(133)		937				32	02/01/2032
31391S-LS-7	FANNIE MAE-POOL #675437		12/01/2018	PAYDOWN		14,434	14,434	15,863	15,756		(1,323)		(1,323)		14,434				445	02/01/2033
31391S-VE-7	FANNIE MAE-POOL #675713		03/01/2018	PAYDOWN		79	79	79	79						79					03/01/2018
31391U-J2-2	FANNIE MAE-POOL #677181		12/01/2018	PAYDOWN		536	536	634	655		(119)		(119)		536				19	01/01/2033
31391W-SH-0	FANNIE MAE-POOL #679548		12/01/2018	PAYDOWN		17,188	17,188	18,727	18,553		(1,365)		(1,365)		17,188				584	04/01/2033
31391Y-6A-0	FANNIE MAE-POOL #681365		03/01/2018	PAYDOWN		3,692	3,692	4,000	3,698		(6)		(6)		3,692				13	03/01/2018
313920-ZN-3	FANNIE MAE-SERIES 2001-46CLASS ZG		12/01/2018	PAYDOWN		31,949	31,949	32,129	32,005		(56)		(56)		31,949				178	09/01/2031
313921-A6-5	FANNIE MAE-SERIES 2001-65CLASS S		12/25/2018	PAYDOWN		206	206	168	174						206				36	11/25/2031
313921-N6-1	FANNIE MAE-SERIES 2001-61CLASS SE		12/18/2018	PAYDOWN		6,138	6,138	3,053	3,277						6,138				873	11/18/2031
313921-SS-8	FANNIE MAE-SERIES 2001-51CLASS OD		12/01/2018	PAYDOWN		2,950	2,950	3,019	2,972		(22)		(22)		2,950				97	10/01/2031
31392A-6Y-9	FANNIE MAE-SERIES 2001-82CLASS ZA		12/01/2018	PAYDOWN		10,031	10,031	10,337	10,157		(126)		(126)		10,031				63	01/01/2032
31392A-7B-8	FANNIE MAE GRANTOR TRUST-SERIES 2002-T1		12/01/2018	PAYDOWN		3,497	3,497	3,551	3,515		(18)		(18)		3,497				140	11/01/2031
31392B-3D-6	FANNIE MAE-SERIES 2002-7 CLASS SK		12/25/2018	PAYDOWN		269	269	78	185						269				39	01/25/2032
31392B-J9-8	FANNIE MAE-SERIES 2002-9 CLASS M		12/25/2018	PAYDOWN		87	87	65	61						87				12	03/25/2032
31392B-MY-9	FANNIE MAE-SERIES 2001-81CLASS S		12/25/2018	PAYDOWN		51	51	36	32						51				8	01/25/2032
31392D-CP-5	FANNIE MAE-SERIES 2002-38CLASS SO		12/25/2018	PAYDOWN		46	46	40	30						46				12	04/25/2032
31392D-VZ-2	FANNIE MAE-SERIES 2002-47CLASS NS		12/25/2018	PAYDOWN		169	169	100	103						169				20	04/25/2032
31392D-WM-0	FANNIE MAE-SERIES 2002-51CLASS S		12/25/2018	PAYDOWN		153	153	93	93						153				19	08/25/2032
31392E-GP-9	FANNIE MAE-SERIES 2002-52CLASS SD		12/25/2018	PAYDOWN		167	167	136	107						167				29	09/25/2032
31392E-RB-8	FANNIE MAE-SERIES 2002-56 CLASS PE		12/01/2018	PAYDOWN		106,636	106,636	113,834	108,561		(1,925)		(1,925)		106,636				3,219	09/01/2032
31392E-VF-4	FANNIE MAE-SERIES 2002-60CLASS SY		12/25/2018	PAYDOWN		3,555	3,555	1,253	2,687						3,555				426	04/25/2032
31392E-WI-6	FANNIE MAE-SERIES 2002-60CLASS SH		12/25/2018	PAYDOWN		928	928	505	698						928				137	08/25/2032
31392F-6J-1	FANNIE MAE-SERIES 2002-77CLASS SM		12/18/2018	PAYDOWN		125	125	78	87						125				16	12/18/2032
31392F-6L-6	FANNIE MAE-SERIES 2002-77 CLASS SA		12/18/2018	PAYDOWN		1,669	1,669	699	1,245						1,669				155	12/18/2032
31392F-7E-1	FANNIE MAE-SERIES 2002-77CLASS JS		12/18/2018	PAYDOWN		1,030	1,030	615	714						1,030				151	12/18/2032
31392F-7F-8	FANNIE MAE-SERIES 2002-77CLASS BS		12/18/2018	PAYDOWN		661	661	412	460						661				115	12/18/2032
31392F-7G-6	FANNIE MAE-SERIES 2002-77CLASS IS		12/18/2018	PAYDOWN		208	208	123	132						208				25	12/18/2032
31392G-DI-2	FANNIE MAE-SERIES 2002-90CLASS SY		12/25/2018	PAYDOWN		191	191	117	142						191				35	09/25/2032
31392G-EE-1	FANNIE MAE-SERIES 2002-90CLASS SN		12/25/2018	PAYDOWN		469	469	259	358						469				70	08/25/2032
31392G-NE-1	FANNIE MAE-SERIES 2002-96CLASS SK		12/25/2018	PAYDOWN		575	575	383	394						575				106	04/25/2032
31392G-NQ-4	FANNIE MAE-SERIES 2002-89CLASS S		12/25/2018	PAYDOWN		9,718	9,718	9,902	9,641						9,718				2,533	01/25/2033
31392H-GU-1	FANNIE MAE-SERIES 2002-95 CLASS DB		12/01/2018	PAYDOWN		707,213	707,213	743,237	715,038		(7,825)		(7,825)		707,213				22,661	01/01/2033
31392H-MC-4	FANNIE MAE-SERIES 2003-11CLASS FA		12/25/2018	PAYDOWN		2,794	2,794	2,767	2,842		(48)		(48)		2,794				60	09/25/2032
31392H-RF-2	FANNIE MAE-SERIES 2003-4 CLASS S		12/25/2018	PAYDOWN		190	190	83	130						190				19	02/25/2033
31392J-DD-8	FANNIE MAE-SERIES 2003-13CLASS IO		12/01/2018	PAYDOWN		5,947	5,947	3,176	4,362						5,947				576	03/01/2033
31392J-AB-1	FREDDIE MAC-SERIES 2458 CLASS ZB		12/01/2018	PAYDOWN		71,926	71,926	76,517	73,453		(1,527)		(1,527)		71,926				2,535	06/01/2032
31392J-TM-3	FREDDIE MAC-SERIES 2490 CLASS ZO		12/01/2018	PAYDOWN		151,485	151,485	163,003	155,780		(4,295)		(4,295)		151,485				5,447	08/01/2032
31392J-VK-7	FREDDIE MAC-SERIES 2500 CLASS FD		11/15/2018	PAYDOWN		237	237	234	238		(2)		(2)		237				3	03/15/2032
31392J-3S-5	FREDDIE MAC-SERIES 2517 CLASS GS		11/15/2018	PAYDOWN		3,450	3,450	1,877	2,149						3,450				365	02/15/2032
31393A-DJ-3	FANNIE MAE-SERIES 2003-28CLASS KG		12/01/2018	PAYDOWN		6,624	6,624	6,226	6,466		158		158		6,624				189	04/01/2023
31393A-HE-0	FANNIE MAE-SERIES 2003-26CLASS DI		12/01/2018	PAYDOWN		3,044	3,044	1,809	1,699						3,044				467	04/01/2033
31393C-7G-2	Fannie Mae Pool-SERIES 2003-W13 CLASS AV		12/26/2018	PAYDOWN		494	494	494	494						494				5	10/25/2033
31393C-ZK-2	FANNIE MAE-SERIES 2003-46CLASS IH		12/01/2018	PAYDOWN		1,374	1,374	1,003	892						1,374				194	06/01/2023
31393D-DR-9	FANNIE MAE-SERIES 2003-58 CLASS PG		12/01/2018	PAYDOWN		1,665,220	1,665,220	1,541,175	1,629,833		35,387		35,387		1,665,220				46,207	07/01/2033
31393E-HR-3	FANNIE MAE-SERIES 2003-71 CLASS UA		08/01/2018	VARIOUS		3,240	3,240	2,994	3,226		14		14		3,240				29	08/01/2018
31393F-GJ-9	FREDDIE MAC-SERIES 2526 CLASS FE		11/15/2018	PAYDOWN		377	377	371	377						377				4	06/15/2029
31393R-WG-1	FREDDIE MAC-SERIES 2631 CLASS MD		12/01/2018	PAYDOWN		148,947	148,947	137,566	145,314		3,633		3,633		148,947				3,992	06/01/2033
31393U-NH-2	FANNIE MAE-SERIES 2003-118 CLASS S		12/25/2018	PAYDOWN		508	508	258	327						508				58	12/25/2033
31393U-VH-3	FANNIE MAE-SERIES 2003-130 CLASS CS		12/25/2018	PAYDOWN		8,780	8,780	8,313	8,688		93		93		8,780				484	12/25/2033
31393V-ZB-0	FREDDIE MAC-SERIES 2646CLASS HE		12/01/2018	PAYDOWN		771,605	771,605	718,497	756,132		15,473		15,473		771,605				20,693	07/01/2033
31393X-ZK-2	FANNIE MAE-SERIES 2004-32 CLASS AY		12/01/2018	PAYDOWN		731,522	731,522	676,887	728,166		3,356		3,356		731,522				12,479	05/01/2019
31394A-ZL-9	FANNIE MAE-SERIES 2004-73 CLASS MZ		12/01/2018	PAYDOWN		162,549	162,549	138,910	155,127		7,422		7,422		162,549				2,936	10/01/2034
31394A-HA-7	FANNIE MAE-SERIES 2004-54 CLASS DS		12/25/2018	PAYDOWN		150	150	117	113						150				25	11/25/2030

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
31394B-6Z-2	FANNIE MAE-SERIES 2005-6 CLASS SE		12/25/2018	PAYDOWN		488	488	385	323						488				94	02/25/2035
31394B-CE-2	FANNIE MAE-SERIES 2004-81 CLASS JG		12/01/2018	PAYDOWN		62,711	62,711	60,085	62,119		592		592		62,711				1,632	11/01/2024
31394B-CZ-5	FANNIE MAE-SERIES 2004-81 CLASS ML		12/01/2018	PAYDOWN		119,781	119,781	112,482	118,120		1,661		1,661		119,781				3,117	11/01/2024
31394B-L8-5	FANNIE MAE-SERIES 2004-98 CLASS LB		07/01/2018	PAYDOWN		193,624	193,624	178,194	193,272		352		352		193,624				1,371	01/01/2020
31394B-UJ-1	FANNIE MAE-SERIES 2004-90 CLASS LH		12/01/2018	PAYDOWN		99,564	99,564	93,602	99,298		267		267		99,564				2,508	04/01/2034
31394C-A2-8	FANNIE MAE-SERIES 2005-14 CLASS MG		12/01/2018	PAYDOWN		2,554,697	2,554,697	2,364,691	2,500,093		54,604		54,604		2,554,697				62,969	03/01/2035
31394C-JG-8	FANNIE MAE-SERIES 2005-19 CLASS SA		12/25/2018	PAYDOWN		1,017	1,017	944	737						1,017				254	03/25/2035
31394C-TR-3	FANNIE MAE-SERIES 2005-21 CLASS ME		12/01/2018	PAYDOWN		739,445	739,445	687,684	725,463		13,982		13,982		739,445				19,563	03/01/2035
31394C-UC-4	FANNIE MAE-SERIES 2005-21 CLASS PE		12/01/2018	PAYDOWN		1,243,169	1,243,169	1,103,119	1,195,984		47,185		47,185		1,243,169				28,764	03/01/2035
31394C-VS-8	FANNIE MAE-SERIES 2005-20 CLASS QH		12/01/2018	PAYDOWN		2,629,491	2,629,491	2,373,527	2,558,949		70,543		70,543		2,629,491				66,031	03/01/2035
31394D-6T-2	FANNIE MAE-SERIES 2005-56CLASS TG		12/01/2018	PAYDOWN		127,804	127,804	120,833	126,070		1,734		1,734		127,804				3,347	07/01/2025
31394D-G8-7	FANNIE MAE-SERIES 2005-53CLASS LY		12/01/2018	PAYDOWN		108,862	108,862	102,841	107,358		1,504		1,504		108,862				2,867	06/01/2025
31394D-QF-0	FANNIE MAE-SERIES 2005-40 CLASS SA		12/25/2018	PAYDOWN		286	286	235	204						286				51	05/25/2035
31394D-RL-6	FANNIE MAE-SERIES 2005-40 CLASS YG		12/01/2018	PAYDOWN		223,892	223,892	208,715	220,081		3,811		3,811		223,892				5,701	05/01/2025
31394D-TZ-3	FANNIE MAE-SERIES 2005-39 CLASS TE		12/01/2018	PAYDOWN		372,018	372,018	357,051	367,564		4,454		4,454		372,018				9,316	05/01/2035
31394E-TR-9	FANNIE MAE-SERIES 2005-59 CLASS NQ		12/25/2018	PAYDOWN		8,349	8,349	8,249	8,349						8,349				517	05/25/2035
31394E-WB-0	FANNIE MAE-SERIES 2005-71 CLASS SA		12/25/2018	PAYDOWN		294	294	259	208						294				73	08/25/2025
31394F-CS-2	FANNIE MAE-SERIES 2005-81 CLASS PC		12/01/2018	PAYDOWN		577,895	577,895	582,229	577,785		110		110		577,895				16,101	09/01/2035
31394F-TV-7	FANNIE MAE-SERIES 2005-83 CLASS SL		12/25/2018	PAYDOWN		6,705	6,705	4,441	4,764						6,705				1,216	10/25/2035
31394F-U7-8	FANNIE MAE-SERIES 2005-87 CLASS SG		12/25/2018	PAYDOWN		668	668	397	456						668				107	10/25/2035
31394F-UU-7	FANNIE MAE-SERIES 2005-94 CLASS YE		12/01/2018	PAYDOWN		295,334	295,334	250,341	278,275		17,059		17,059		295,334				7,806	10/01/2035
31394F-V6-9	FANNIE MAE-SERIES 2005-87 CLASS SE		12/25/2018	PAYDOWN		14,630	14,630	8,433	9,622						14,630				2,097	10/25/2035
31394H-FZ-9	FREDDIE MAC-SERIES 2660 CLASS PE		12/01/2018	PAYDOWN		977,704	977,704	910,487	959,290		18,414		18,414		977,704				24,633	08/01/2033
31394J-YX-9	FREDDIE MAC-SERIES 2685CLASS AT		12/01/2018	PAYDOWN		37,715	37,715	35,458	37,256						37,715				903	10/01/2023
31394K-K7-8	FREDDIE MAC-SERIES 2682 CLASS LD		12/01/2018	PAYDOWN		3,213,513	3,213,513	2,861,910	3,135,410		78,103		78,103		3,213,513				75,869	10/01/2033
31394L-4D-1	FREDDIE MAC-SERIES 2684 CLASS PG		12/01/2018	PAYDOWN		3,884,583	3,884,583	3,619,861	3,818,626		65,957		65,957		3,884,583				98,722	10/01/2033
31394L-EG-3	FREDDIE MAC-SERIES 2691 CLASS MG		12/01/2018	PAYDOWN		2,177,107	2,177,107	1,943,749	2,119,189		57,918		57,918		2,177,107				50,955	10/01/2033
31394L-KP-6	FREDDIE MAC-SERIES 2694 CLASS LB		12/01/2018	PAYDOWN		80,206	80,206	75,074	79,149		1,056		1,056		80,206				1,918	10/01/2023
31394L-S9-4	FREDDIE MAC-SERIES 2704 CLASS BD		12/01/2018	PAYDOWN		105,013	105,013	96,817	103,534		1,480		1,480		105,013				2,609	11/01/2023
31394N-EZ-7	FREDDIE MAC-SERIES 2718 CLASS TG		12/01/2018	PAYDOWN		546,079	546,079	508,792	535,665		10,414		10,414		546,079				14,587	12/01/2033
31394N-N4-6	FREDDIE MAC-SERIES 2727 CLASS PM		12/01/2018	PAYDOWN		1,421,806	1,421,806	1,227,196	1,374,374		47,432		47,432		1,421,806				33,184	01/01/2034
31394N-ZK-7	FREDDIE MAC-SERIES 2737 CLASS YE		12/01/2018	PAYDOWN		696,302	696,302	642,991	682,135		14,167		14,167		696,302				18,102	01/01/2034
31394P-DZ-3	FREDDIE MAC-SERIES 2738 CLASS OG		12/01/2018	PAYDOWN		2,079,405	2,079,405	1,933,196	2,039,176		40,229		40,229		2,079,405				52,676	01/01/2034
31394U-2V-3	FANNIE MAE-SERIES 2005-104 CLASS MC		12/01/2018	PAYDOWN		18,197	18,197	16,993	17,696		501		501		18,197				525	12/01/2025
31394U-CA-8	FANNIE MAE-SERIES 2005-86 CLASS AI		12/01/2018	PAYDOWN		11,771	11,771	3,986	7,806						11,771				786	10/01/2035
31394U-D9-0	FANNIE MAE-SERIES 2005-105 CLASS S		12/25/2018	PAYDOWN		3,539	3,539	2,034	2,295						3,539				540	12/25/2035
31394U-JU-7	FANNIE MAE-SERIES 2005-102 CLASS HY		12/01/2018	PAYDOWN		125,420	125,420	118,938	123,967		1,453		1,453		125,420				3,191	11/01/2025
31394U-RQ-7	FANNIE MAE-SERIES 2005-100 CLASS BQ		12/01/2018	PAYDOWN		4,906	4,906	4,582	4,792						4,906				145	11/01/2025
31394U-VF-6	FANNIE MAE-SERIES 2005-101 CLASS B		12/01/2018	PAYDOWN		240,296	240,296	223,719	235,191		5,106		5,106		240,296				6,037	11/01/2035
31394U-ZH-8	FANNIE MAE-SERIES 2005-109 CLASS AH		12/01/2018	PAYDOWN		24,013	24,013	22,190	23,400		613		613		24,013				689	12/01/2025
31394V-7G-9	FANNIE MAE-SERIES 2006-11CLASS PS		12/25/2018	PAYDOWN		7,951	7,951	9,113	8,573		(622)		(622)		7,951				640	03/25/2036
31394V-AF-7	FANNIE MAE-SERIES 2005-121 CLASS Z		12/01/2018	PAYDOWN		396,100	396,100	339,452	379,622		16,478		16,478		396,100				5,283	01/01/2036
31394V-BA-7	FANNIE MAE-SERIES 2005-121 CLASS DX		12/01/2018	PAYDOWN		144,021	144,021	142,491	143,377		644		644		144,021				4,241	01/01/2026
31394X-JP-2	FREDDIE MAC-SERIES 2772 CLASS KW		12/01/2018	PAYDOWN		67,169	67,169	64,524	66,609		560		560		67,169				1,796	04/01/2024
31394X-NC-6	FREDDIE MAC-SERIES 2780 CLASS GK		12/01/2018	PAYDOWN		80,773	80,773	76,924	79,984		789		789		80,773				2,094	04/01/2024
31394Y-F7-4	FREDDIE MAC-SERIES 2796 CLASS SD		11/15/2018	PAYDOWN		227	227	163	148						227				31	07/15/2026
31395B-6Z-1	FANNIE MAE-SERIES 2006-38 CLASS AH		12/01/2018	PAYDOWN		65,251	65,251	56,009	63,234		2,017		2,017		65,251				1,687	05/01/2026
31395B-XZ-1	FANNIE MAE-SERIES 2006-25 CLASS B		12/01/2018	PAYDOWN		2,433,645	2,433,645	2,363,678	2,415,708		17,938		17,938		2,433,645				71,512	04/01/2026
31395D-7F-0	FANNIE MAE-SERIES 2006-46 CLASS SW		12/25/2018	PAYDOWN		4,618	4,618	5,204	4,811		(811)		(811)		4,618				430	06/25/2036
31395D-FX-2	FANNIE MAE-SERIES 2006-39 CLASS PH		12/01/2018	PAYDOWN		1,345,514	1,345,514	1,312,928	1,332,907		12,607		12,607		1,345,514				38,145	05/01/2036
31395D-G7-8	FANNIE MAE-SERIES 2006-43 CLASS DG		12/01/2018	PAYDOWN		1,261,920	1,261,920	1,228,006	1,248,979		12,941		12,941		1,261,920				41,538	06/01/2036
31395D-JE-0	FANNIE MAE-SERIES 2006-33CLASS SP		12/25/2018	PAYDOWN		2,882	2,882	793	1,796						2,882				1,570	05/25/2036
31395D-U3-1	FANNIE MAE-SERIES 2006-51CLASS SA		12/25/2018	PAYDOWN		21,974	21,974	6,280	12,533						21,974				1,929	06/25/2036
31395D-VI-6	FANNIE MAE-SERIES 2006-42CLASS CI		12/25/2018	PAYDOWN		6,663	6,663	1,973	4,121						6,663					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
31395H-CS-7	FREDDIE MAC-SERIES 2866 CLASS XG		12/01/2018	PAYDOWN		2,977,015	2,977,015	2,761,298	2,962,013		15,002		15,002		2,977,015				62,515	10/01/2019
31395H-WC-0	FREDDIE MAC-SERIES 2893 CLASS PE		12/01/2018	PAYDOWN		1,602,783	1,602,783	1,495,847	1,573,306		29,477		29,477		1,602,783				43,524	11/01/2034
31395K-L6-8	FREDDIE MAC-SERIES 2907 CLASS AH		09/01/2018	PAYDOWN		240,726	240,726	232,930	240,431		295		295		240,726				2,983	12/01/2019
31395L-4S-7	FREDDIE MAC-SERIES 2914 CLASS JT		12/01/2018	PAYDOWN		492,049	492,049	474,827	491,081		968		968		492,049				10,309	01/01/2020
31395L-CZ-2	FREDDIE MAC-SERIES 2915 CLASS DY		12/01/2018	PAYDOWN		1,161,282	1,161,282	1,125,445	1,158,901		2,381		2,381		1,161,282				23,054	01/01/2020
31395L-MA-6	FREDDIE MAC-SERIES 2920 CLASS S		11/15/2018	PAYDOWN		720	720	360	342						720				72	01/15/2035
31395M-DZ-9	FREDDIE MAC-SERIES 2934 CLASS NG		12/01/2018	PAYDOWN		489,466	489,466	467,975	483,462		6,003		6,003		489,466				13,114	02/01/2035
31395M-FZ-7	FREDDIE MAC-SERIES 2937 CLASS HY		12/01/2018	PAYDOWN		165,965	165,965	165,291	165,901		65		65		165,965				2,159	02/01/2020
31395M-W7-0	FREDDIE MAC-SERIES 2938 CLASS EB		12/01/2018	PAYDOWN		45,589	45,589	42,825	44,879		710		710		45,589				1,137	02/01/2025
31395N-3R-6	FANNIE MAE-SERIES 2006-61CLASS NP		12/01/2018	PAYDOWN		390,901	390,901	392,611	390,852		49		49		390,901				11,683	07/01/2036
31395N-B5-5	FANNIE MAE-SERIES 2006-64 CLASS PD		12/01/2018	PAYDOWN		715,714	715,714	670,395	700,626		15,088		15,088		715,714				19,157	07/01/2036
31395P-D8-2	FREDDIE MAC-SERIES 2943 CLASS CA		12/01/2018	PAYDOWN		28,779	28,779	27,377	28,481		299		299		28,779				713	03/01/2025
31395P-F6-0	FREDDIE MAC-SERIES 2959 CLASS JK		12/01/2018	PAYDOWN		42,802	42,802	41,157	42,412		391		391		42,802				1,153	04/01/2025
31395P-G9-3	FREDDIE MAC-SERIES 2966 CLASS NE		12/01/2018	PAYDOWN		1,293,941	1,293,941	1,188,000	1,261,566		32,376		32,376		1,293,941				34,589	04/01/2035
31395T-LN-2	FREDDIE MAC-SERIES 2957 CLASS ZA		12/01/2018	PAYDOWN		174,779	174,779	157,590	168,680		6,100		6,100		174,779				4,161	03/01/2035
31395T-XR-0	FREDDIE MAC-SERIES 2974 CLASS ZM		12/01/2018	PAYDOWN		378,399	378,399	360,481	371,915		6,484		6,484		378,399				10,732	05/01/2035
31395U-60-9	FREDDIE MAC-SERIES 2981 CLASS NE		12/01/2018	PAYDOWN		128,140	128,140	118,559	124,975		3,165		3,165		128,140				5,061	05/01/2035
31395U-GL-9	FREDDIE MAC-SERIES 2971 CLASS EX		12/01/2018	PAYDOWN		175,799	175,799	165,663	173,658		2,141		2,141		175,799				4,580	05/01/2025
31395U-N5-6	FREDDIE MAC-SERIES 2979 CLASS OK		12/01/2018	PAYDOWN		111,249	111,249	106,694	109,636		1,613		1,613		111,249				2,793	05/01/2035
31395U-QC-8	FREDDIE MAC-SERIES 2982 CLASS NT		12/01/2018	PAYDOWN		73,060	73,060	76,830	75,280		(2,220)		(2,220)		73,060				2,041	05/01/2035
31395V-G6-0	FREDDIE MAC-SERIES 2989 CLASS TG		12/01/2018	PAYDOWN		254,470	254,470	240,185	251,146		3,324		3,324		254,470				6,775	06/01/2025
31395V-QP-7	FREDDIE MAC-SERIES 2986 CLASS CH		12/01/2018	PAYDOWN		38,980	38,980	36,951	38,494		486		486		38,980				994	06/01/2025
31395W-QA-8	FREDDIE MAC-SERIES 3000 CLASS S		11/15/2018	PAYDOWN		456	456	326	282						456				62	07/15/2025
31395W-RA-7	FREDDIE MAC-SERIES 3006 CLASS BK		12/01/2018	PAYDOWN		132,284	132,284	122,797	129,975		2,309		2,309		132,284				3,266	07/01/2025
31395W-XL-6	FREDDIE MAC-SERIES 3016 CLASS HR		12/01/2018	PAYDOWN		309,038	309,038	285,920	304,508		4,530		4,530		309,038				7,896	08/01/2025
31395X-LV-5	FREDDIE MAC-SERIES 3025 CLASS SJ		11/15/2018	PAYDOWN		1,099	1,099	1,257	1,188		(89)		(89)		1,099				79	08/15/2035
31396B-3F-4	FREDDIE MAC-POOL #D30798		12/01/2018	PAYDOWN		17,747	17,747	18,668	18,199		(452)		(452)		17,747				817	02/01/2023
31396A-4P-6	FREDDIE MAC-SERIES 3042 CLASS EX		12/01/2018	PAYDOWN		116,964	116,964	110,225	115,414		1,550		1,550		116,964				2,941	09/01/2025
31396C-7M-6	FREDDIE MAC-SERIES 3057 CLASS DJ		12/01/2018	PAYDOWN		36,694	36,694	33,337	35,963		731		731		36,694				820	10/01/2025
31396C-AR-1	FREDDIE MAC-SERIES 3057 CLASS ME		12/01/2018	PAYDOWN		1,249,278	1,249,278	1,093,070	1,207,480		41,798		41,798		1,249,278				29,378	10/01/2035
31396C-NH-9	FREDDIE MAC-SERIES 3057 CLASS NA		12/01/2018	PAYDOWN		102,882	102,882	94,812	100,973		1,909		1,909		102,882				2,678	10/01/2025
31396C-SU-5	FREDDIE MAC-SERIES 3048 CLASS QJ		12/01/2018	PAYDOWN		121,365	121,365	110,414	118,982		2,383		2,383		121,365				3,338	10/01/2025
31396E-4L-7	FREDDIE MAC-SERIES 3044 CLASS EX		12/01/2018	PAYDOWN		211,565	211,565	199,615	208,786		2,779		2,779		211,565				5,792	10/01/2025
31396E-LG-9	FREDDIE MAC-SERIES 3076 CLASS BM		12/01/2018	PAYDOWN		59,466	59,466	53,429	58,165		1,302		1,302		59,466				1,343	11/01/2025
31396F-FR-9	FREDDIE MAC-SERIES 3068 CLASS OC		12/01/2018	PAYDOWN		75,588	75,588	72,101	74,764		824		824		75,588				2,142	11/01/2025
31396F-ZE-6	FREDDIE MAC-SERIES 3083 CLASS BX		12/01/2018	PAYDOWN		127,163	127,163	121,793	125,749		1,414		1,414		127,163				3,331	12/01/2025
31396G-K4-2	FREDDIE MAC-SERIES 3104 CLASS QE		12/01/2018	PAYDOWN		1,512,134	1,512,134	1,369,427	1,468,723		43,411		43,411		1,512,134				41,474	01/01/2036
31396H-5G-0	FREDDIE MAC-SERIES 3102 CLASS CE		12/01/2018	PAYDOWN		83,923	83,923	83,254	83,689		234		234		83,923				2,502	01/01/2026
31396H-AL-3	FREDDIE MAC REFERENCE RE-SERIES R005 CLA		12/01/2018	PAYDOWN		1,258,457	1,258,457	1,421,095	1,380,516		(122,059)		(122,059)		1,258,457				34,873	02/01/2036
31396H-EG-0	FREDDIE MAC-SERIES 3113 CLASS WB		12/01/2018	PAYDOWN		246,351	246,351	219,445	240,858		5,493		5,493		246,351				4,963	02/01/2036
31396H-NL-9	FREDDIE MAC-SERIES 3110 CLASS SL		11/15/2018	PAYDOWN		1,557	1,557	669	796						1,557				141	02/15/2026
31396J-ND-3	FREDDIE MAC-SERIES 3131 CLASS ME		12/01/2018	PAYDOWN		1,180,503	1,180,503	1,126,090	1,163,256		17,247		17,247		1,180,503				32,160	03/01/2036
31396K-FX-5	FANNIE MAE-SERIES 2006-73 CLASS PE		12/01/2018	PAYDOWN		1,103,805	1,103,805	1,067,587	1,090,572		13,233		13,233		1,103,805				33,661	08/01/2036
31396K-MT-6	FANNIE MAE-SERIES 2006-74CLASS PD		12/01/2018	PAYDOWN		195,701	195,701	203,789	197,748		(2,046)		(2,046)		195,701				7,674	08/01/2036
31396K-RS-3	FANNIE MAE-SERIES 2006-75CLASS SA		12/25/2018	PAYDOWN		11,517	11,517	3,384	7,107						11,517				1,109	08/25/2036
31396L-P8-7	FANNIE MAE-SERIES 2006-119 CLASS MS		12/25/2018	PAYDOWN		5,462	5,462	3,319	3,775						5,462				811	12/25/2036
31396N-ST-9	FREDDIE MAC-SERIES 3138 CLASS GH		12/01/2018	PAYDOWN		210,993	210,993	193,957	207,548		3,445		3,445		210,993				5,594	04/01/2026
31396P-VF-5	FANNIE MAE-SERIES 2007-9 CLASS LE		12/01/2018	PAYDOWN		366,366	366,366	343,104	358,454		7,913		7,913		366,366				12,051	03/01/2037
313970-CA-1	FREDDIE MAC-POOL #D31865		12/01/2018	PAYDOWN		1,316	1,316	1,384	1,346		(30)		(30)		1,316				61	03/01/2037
31397B-OM-1	FREDDIE MAC-SERIES 3212 CLASS PE		12/01/2018	PAYDOWN		557,649	557,649	571,808	561,519		(3,869)		(3,869)		557,649				15,054	09/01/2036
31397H-M8-8	FREDDIE MAC-SERIES 3322 CLASS NG		12/01/2018	PAYDOWN		396,895	396,895	385,857	391,752		5,143		5,143		396,895				11,453	05/01/2037
31397J-K4-5	FREDDIE MAC-SERIES 3326 CLASS PE		12/01/2018	PAYDOWN		379,629	379,629	369,130	375,140		4,488		4,488		379,629				9,036	06/01/2037
31397L-TB-5	FANNIE MAE-SERIES 2008-49 CLASS PA		12/01/2018	PAYDOWN		62,919	62,919	67,842	68,352		(5,433)		(5,433)		62,919				1,823	04/01/2038
31397M-AV-9	FANNIE MAE-SERIES 2008-56CLASS PB		12/01/2018	PAYDOWN		52														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
313987-LK-3	FREDDIE MAC-POOL #D46630		12/01/2018	PAYDOWN		636	636	730	695		(59)		(59)		636					23	01/01/2024
313987-VU-0	FREDDIE MAC-POOL #D46927		12/01/2018	PAYDOWN		1,253	1,253	1,411	1,384		(131)		(131)		1,253					45	01/01/2024
313988-N2-9	FREDDIE MAC-POOL #D47609		12/01/2018	PAYDOWN		736	736	826	794		(58)		(58)		736					28	01/01/2024
313988-QY-6	FREDDIE MAC-POOL #D47671		07/01/2018	PAYDOWN		1,796	1,796	2,064	2,028		(231)		(231)		1,796					29	01/01/2024
313988-RD-1	FREDDIE MAC-POOL #D47684		12/01/2018	PAYDOWN		3,271	3,271	3,779	3,661		(390)		(390)		3,271					29	01/01/2024
313988-VC-8	FREDDIE MAC-POOL #D47811		12/01/2018	PAYDOWN		922	922	1,066	1,012		(89)		(89)		922					33	01/01/2024
31400A-AL-2	FANNIE MAE-POOL #681411		03/01/2018	PAYDOWN		6,204	6,204	6,722	6,216		(12)		(12)		6,204					8	03/01/2018
31400D-CJ-9	FANNIE MAE-POOL #684173		02/01/2018	PAYDOWN		15	15	16	15						15						02/01/2018
31400H-Y2-3	FANNIE MAE-POOL #688429		12/01/2018	PAYDOWN		949	949	1,050	1,085		(136)		(136)		949					29	02/01/2033
31400H-Y3-1	FANNIE MAE-POOL #688430		12/01/2018	PAYDOWN		2,969	2,969	3,278	3,218		(249)		(249)		2,969					90	03/01/2033
31400H-Y6-4	FANNIE MAE-POOL #688433		12/01/2018	PAYDOWN		7,706	7,706	8,524	8,329		(623)		(623)		7,706					349	03/01/2033
31400J-PF-0	FANNIE MAE-POOL #689022		12/01/2018	PAYDOWN		683	683	744	744		(59)		(59)		683					17	05/01/2033
31400J-RY-7	FANNIE MAE-POOL #689103		12/01/2018	PAYDOWN		72,676	72,676	82,599	81,214		(8,538)		(8,538)		72,676					1,607	02/01/2033
31400J-SJ-9	FANNIE MAE-POOL #689121		12/01/2018	PAYDOWN		1,413	1,413	1,539	1,529		(116)		(116)		1,413					39	02/01/2033
31400K-G2-6	FANNIE MAE-POOL #689177		12/01/2018	PAYDOWN		932	932	1,031	1,009		(76)		(76)		932					28	03/01/2033
31400K-GZ-3	FANNIE MAE-POOL #689176		12/01/2018	PAYDOWN		6,510	6,510	7,201	7,127		(617)		(617)		6,510					205	03/01/2033
31400Q-TN-3	FANNIE MAE-POOL #694557		12/01/2018	PAYDOWN		1,996	1,996	2,193	2,190		(195)		(195)		1,996					52	04/01/2033
31400S-Z9-3	FANNIE MAE-POOL #696568		04/01/2018	PAYDOWN		4,237	4,237	4,564	4,254		(16)		(16)		4,237					13	04/01/2018
31400W-CI-8	FANNIE MAE-POOL #699485		12/01/2018	PAYDOWN		1,599	1,599	1,757	1,763		(164)		(164)		1,599					55	04/01/2033
31400W-DP-2	FANNIE MAE-POOL #699510		12/01/2018	PAYDOWN		27	27	28	28						27						05/01/2033
31401K-ZV-0	FANNIE MAE-POOL # 710956		12/01/2018	PAYDOWN		48,702	48,702	50,419	50,470		(1,769)		(1,769)		48,702					1,751	05/01/2033
31401N-4U-0	FANNIE MAE-POOL #713735		12/01/2018	PAYDOWN		49,045	49,045	53,434	53,193		(4,148)		(4,148)		49,045					1,478	09/01/2033
31401P-C7-7	FANNIE MAE-POOL # 713894		12/01/2018	PAYDOWN		3,586	3,586	3,713	3,678		(92)		(92)		3,586					108	06/01/2033
31401W-TK-5	FANNIE MAE-POOL #720654		12/01/2018	PAYDOWN		3,132	3,132	3,186	3,177		(45)		(45)		3,132					41	06/01/2033
31401X-H5-9	FANNIE MAE-POOL #721252		12/01/2018	PAYDOWN		229	229	233	233		(4)		(4)		229					6	06/01/2033
31402C-PL-0	FANNIE MAE-POOL #725027		12/01/2018	PAYDOWN		170,030	170,030	185,247	183,945		(13,916)		(13,916)		170,030					4,322	11/01/2033
31402C-U6-7	FANNIE MAE-POOL #725205		12/01/2018	PAYDOWN		12,968	12,968	14,102	14,009		(1,041)		(1,041)		12,968					329	03/01/2034
31402D-F9-6	FANNIE MAE-POOL #725692		12/01/2018	PAYDOWN		1,614	1,614	1,665	1,644		(30)		(30)		1,614					34	10/01/2033
31402E-AQ-1	FANNIE MAE-POOL #726415		12/01/2018	PAYDOWN		1,554	1,554	1,694	1,702		(148)		(148)		1,554					44	07/01/2033
31402H-KT-7	FANNIE MAE-POOL #729406		12/01/2018	PAYDOWN		7,795	7,795	8,567	8,520		(725)		(725)		7,795					239	08/01/2033
31402K-CE-2	FANNIE MAE-POOL #730969		12/01/2018	PAYDOWN		878	878	957	954		(76)		(76)		878					28	08/01/2033
31402L-PB-2	FANNIE MAE-POOL #732218		12/01/2018	PAYDOWN		6,014	6,014	6,188	6,129		(116)		(116)		6,014					77	06/01/2043
31402Q-R7-8	FANNIE MAE-POOL #735010		12/01/2018	PAYDOWN		2,451	2,451	2,453	2,448		3		3		2,451					60	11/01/2019
31402Q-VN-8	FANNIE MAE-POOL#735121		12/01/2018	PAYDOWN		394,856	394,856	393,375	393,417		1,438		1,438		394,856					11,082	01/01/2035
31402R-LN-7	FANNIE MAE-POOL #735989		12/01/2018	PAYDOWN		302,919	302,919	332,917	330,874		(27,955)		(27,955)		302,919					8,708	02/01/2035
31402W-3A-4	FANNIE MAE-POOL #740693		12/01/2018	PAYDOWN		24,194	24,194	26,590	26,021		(1,827)		(1,827)		24,194					727	10/01/2033
31402W-TC-2	FANNIE MAE-POOL #740447		09/01/2018	VARIOUS		45	45	44	45						45						09/01/2018
31403A-SR-2	FANNIE MAE-POOL #743456		10/01/2018	VARIOUS		51,240	51,240	55,513	51,851		(610)		(610)		51,240					1,042	10/01/2018
31403C-5V-9	FANNIE MAE-POOL #745260		12/01/2018	PAYDOWN		2,629	2,629	2,755	2,738		(110)		(110)		2,629					105	01/01/2033
31403D-D9-7	FANNIE MAE-POOL #745428		12/01/2018	PAYDOWN		77,565	77,565	84,762	84,365		(6,799)		(6,799)		77,565					2,244	01/01/2036
31403D-TF-6	FANNIE MAE-POOL #745850		12/01/2018	VARIOUS		9	9	9	9						9						10/01/2019
31403D-WH-8	FANNIE MAE-POOL #745948		12/01/2018	PAYDOWN		129	129	132	132		(3)		(3)		129					4	10/01/2036
31404H-TF-6	FANNIE MAE-POOL #769250		12/01/2018	PAYDOWN		13,919	13,919	13,765	13,800		119		119		13,919					429	12/01/2033
31404Q-S4-2	FANNIE MAE-POOL #775539		12/01/2018	PAYDOWN		120	120	124	122		(2)		(2)		120					2	05/01/2034
31406A-6R-8	FANNIE MAE-POOL #804680		12/01/2018	PAYDOWN		9,818	9,818	11,109	10,893		(1,076)		(1,076)		9,818					295	12/01/2034
31406B-6L-9	FANNIE MAE-POOL #805575		12/01/2018	PAYDOWN		2,165	2,165	2,406	2,349		(185)		(185)		2,165					65	11/01/2034
31406B-Y4-6	FANNIE MAE-POOL #805431		12/01/2018	PAYDOWN		3,905	3,905	4,298	4,227		(322)		(322)		3,905					116	11/01/2034
31406K-DP-2	FANNIE MAE-POOL #812010		12/01/2018	PAYDOWN		9,773	9,773	11,108	11,107		(1,334)		(1,334)		9,773					306	01/01/2035
31406K-VR-8	FANNIE MAE-POOL #812524		12/01/2018	PAYDOWN		7,513	7,513	8,210	8,579		(1,067)		(1,067)		7,513					226	02/01/2035
31406M-SH-5	Fannie Mae Pool-POOL #814548		12/01/2018	PAYDOWN		478,911	478,911	477,901	456,174		22,737		22,737		478,911					11,899	04/01/2035
31406N-4K-7	FANNIE MAE-POOL #815426		12/01/2018	PAYDOWN		1,761	1,761	1,662	1,671		90		90		1,761					47	02/01/2035
31407J-DD-1	FANNIE MAE-POOL #831800		12/01/2018	PAYDOWN		136	136	139	139		(3)		(3)		136					5	09/01/2036
31407K-KM-0	FANNIE MAE-POOL #832900		12/01/2018	PAYDOWN		3,364	3,364	3,290	3,297		67		67		3,364					61	09/01/2035
31407M-ZX-6	FANNIE MAE-POOL #835158		12/01/2018	PAYDOWN		92,702	92,702	91,601	91,702		1,000		1,000		92,702					2,636	08/01/2035
31407V-WK-7	FANNIE MAE-POOL #842250		03/01/2018	PAYDOWN		3,587	3,587	3,564	3,430		156		156		3,587					36	09/01/2035
31407Y-SU-9	FANNIE MAE-POOL #845159		12/01/2018	PAYDOWN		2,442	2,442	2,385	2,416		26		26		2,442					51	01/01/2021
31408E-G5-5	FANNIE MAE-POOL #849020		12/01/2018	PAYDOWN		11,868	11,868	12,969	12,808		(940)		(940)		11,868					407	01/01/2036
31409F-KM-9	FANNIE MAE-POOL #869800		12/01/2018	PAYDOWN		3,729	3,729	3,642	3,689		41		41		3,729					89	03/01/2021

E14.35

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
31409L-GT-6	FANNIE MAE-FANNIE MAE		12/01/2018	PAYDOWN		11,351	11,351	13,217	12,379		(1,028)		(1,028)		11,351				327	01/01/2025
31409V-K5-1	FANNIE MAE-POOL #879716		12/01/2018	PAYDOWN		327	327	320	324		3		3		327				8	02/01/2021
31409X-AP-4	FANNIE MAE-POOL #881214		12/01/2018	PAYDOWN		69,562	69,562	66,377	68,727		835		835		69,562				1,288	08/01/2019
31409X-AQ-2	FANNIE MAE-POOL #881215		12/01/2018	PAYDOWN		35,335	35,335	34,353	35,086		250		250		35,335				700	02/01/2019
31409X-AR-0	FANNIE MAE-POOL #881216		12/01/2018	PAYDOWN		324,933	324,933	308,991	313,209		11,724		11,724		324,933				8,578	01/01/2031
31409X-AS-8	FANNIE MAE-POOL #881217		04/01/2018	PAYDOWN		2,512	2,512	2,486	2,496		16		16		2,512				24	07/01/2019
31409X-AT-6	FANNIE MAE-POOL #881218		12/01/2018	PAYDOWN		15,987	15,987	15,578	15,678		309		309		15,987				478	05/01/2030
31409X-AU-3	FANNIE MAE-POOL #881219		06/01/2018	PAYDOWN		54,337	54,337	54,575	54,318		19		19		54,337				1,263	04/01/2019
3140EU-E3-9	FANNIE MAE-POOL #BC0153		12/01/2018	PAYDOWN		108,207	108,207	116,256	115,193		(6,986)		(6,986)		108,207				1,844	01/01/2046
3140FO-HF-4	FANNIE MAE-POOL #BC4729		12/01/2018	PAYDOWN		131,490	131,490	130,118	123,841		1,251		1,251		131,490				2,268	10/01/2046
3140GU-MA-2	Fannie Mae Pool-POOL #BH5752		12/01/2018	PAYDOWN		12,106,982	12,106,982	12,465,462	12,463,942		(356,961)		(356,961)		12,106,982				235,742	11/01/2047
3140O9-E2-5	Fannie Mae Pool-POOL #CA1952		12/01/2018	PAYDOWN		976,434	976,434	1,017,627			(41,193)		(41,193)		976,434				11,994	06/01/2048
31410G-CD-3	FANNIE MAE-POOL #888468		12/01/2018	PAYDOWN		17,083	17,083	17,652	17,329		(246)		(246)		17,083				497	09/01/2021
31410G-F3-2	FANNIE MAE-POOL #888586		12/01/2018	PAYDOWN		19,657	19,657	19,794	19,735		(78)		(78)		19,657				439	10/01/2034
31410G-RA-3	FANNIE MAE-POOL #888881		12/01/2018	PAYDOWN		67,553	67,553	75,846	75,244		(7,691)		(7,691)		67,553				2,175	12/01/2037
31410K-FF-6	FANNIE MAE-POOL #889466		12/01/2018	PAYDOWN		649,901	649,901	724,151	718,729		(68,828)		(68,828)		649,901				18,078	05/01/2038
31410K-JR-6	FANNIE MAE-POOL #889572		12/01/2018	PAYDOWN		100,470	100,470	109,179	108,749		(8,279)		(8,279)		100,470				2,741	06/01/2038
31410P-VR-1	FANNIE MAE-POOL #893524		12/01/2018	PAYDOWN		2,385	2,385	2,440	2,430		(45)		(45)		2,385				102	09/01/2036
31410T-UZ-6	FANNIE MAE-POOL #897100		12/01/2018	PAYDOWN		1,502	1,502	1,537	1,530		(28)		(28)		1,502				51	07/01/2036
31410U-RI-4	FANNIE MAE-POOL #897901		12/01/2018	PAYDOWN		312	312	319	318		(6)		(6)		312				13	01/01/2037
31410I-IG-6	FANNIE MAE-POOL #898584		12/01/2018	PAYDOWN		38,440	38,440	42,085	42,347		(3,907)		(3,907)		38,440				1,639	07/01/2037
31411C-C2-5	FANNIE MAE-POOL #903789		12/01/2018	PAYDOWN		65	65	67	67		(1)		(1)		65				2	11/01/2036
31411E-WB-9	FANNIE MAE-POOL #906142		12/01/2018	PAYDOWN		8,001	8,001	8,184	8,149		(149)		(149)		8,001				440	01/01/2037
31411F-5L-4	FANNIE MAE-POOL #907251		12/01/2018	PAYDOWN		38	38	39	39		(1)		(1)		38				2	12/01/2036
31411J-H6-6	FANNIE MAE-POOL #909353		12/01/2018	PAYDOWN		11,117	11,117	11,942	11,477		(360)		(360)		11,117				296	02/01/2022
31412B-2A-9	FANNIE MAE-POOL #920669		12/01/2018	PAYDOWN		9	9	10	10						9					08/01/2037
31412H-5I-5	FANNIE MAE-POOL #926161		12/01/2018	PAYDOWN		95,069	95,069	101,985	100,966		(5,897)		(5,897)		95,069				1,869	08/01/2039
31413F-F5-6	FANNIE MAE-POOL #943988		12/01/2018	PAYDOWN		782	782	800	799		(18)		(18)		782				30	08/01/2037
31413L-2G-3	FANNIE MAE-POOL #949075		12/01/2018	PAYDOWN		33,791	33,791	37,433	36,444		(2,653)		(2,653)		33,791				558	09/01/2037
31413L-QC-6	FANNIE MAE-POOL #948751		12/01/2018	PAYDOWN		30	30	30	30		(1)		(1)		30					09/01/2037
31413U-TQ-2	FANNIE MAE-POOL #956059		12/01/2018	PAYDOWN		39,306	39,306	43,892	43,126		(3,821)		(3,821)		39,306				1,465	12/01/2037
31413Y-HL-8	FANNIE MAE-POOL #959335		12/01/2018	PAYDOWN		7	7	7	7						7					11/01/2037
31414A-OP-0	FANNIE MAE-POOL #960462		12/01/2018	PAYDOWN		178,617	178,617	194,100	193,389		(14,772)		(14,772)		178,617				5,951	01/01/2038
31414C-JU-3	FANNIE MAE-POOL #962075		12/01/2018	PAYDOWN		46,137	46,137	51,775	51,352		(5,215)		(5,215)		46,137				293	03/01/2038
31414C-Z2-7	FANNIE MAE-POOL #962561		12/01/2018	PAYDOWN		98	98	92	92		5		5		98				3	04/01/2038
31414D-CB-0	FANNIE MAE-POOL #962766		12/01/2018	PAYDOWN		313	313	295	294		19		19		313				8	04/01/2038
31414F-HY-0	FANNIE MAE-POOL #964747		12/01/2018	PAYDOWN		2,203	2,203	2,073	2,105		97		97		2,203				18	07/01/2038
31414G-WK-1	FANNIE MAE-POOL #966050		12/01/2018	PAYDOWN		5	5	5	5						5					02/01/2038
31414Q-Y6-8	FANNIE MAE-POOL #973333		12/01/2018	PAYDOWN		1,423	1,423	1,339	1,355		68		68		1,423				17	02/01/2038
31415A-2M-2	FANNIE MAE-POOL #981480		12/01/2018	PAYDOWN		793	793	746	751		42		42		793				19	05/01/2038
31415C-A9-8	FANNIE MAE-POOL #982532		12/01/2018	PAYDOWN		19	19	20	20		(1)		(1)		19					09/01/2038
31415L-K4-8	FANNIE MAE-POOL #983315		12/01/2018	PAYDOWN		1,689	1,689	1,712	1,709		(20)		(20)		1,689				71	07/01/2038
31415T-JF-9	FANNIE MAE-POOL #988662		12/01/2018	PAYDOWN		297	297	304	306		(9)		(9)		297				18	09/01/2038
31415V-BP-9	FANNIE MAE-POOL #990246		12/01/2018	PAYDOWN		238	238	243	245		(7)		(7)		238				10	09/01/2038
31415W-BL-6	FANNIE MAE-POOL #991143		12/01/2018	PAYDOWN		89	89	91	92		(3)		(3)		89				3	10/01/2038
31416B-N6-1	FANNIE MAE-POOL #995113		12/01/2018	PAYDOWN		361,149	361,149	396,914	394,980		(33,831)		(33,831)		361,149				10,199	09/01/2036
31416B-VH-8	FANNIE MAE-POOL #995316		12/01/2018	PAYDOWN		4,654	4,654	5,070	5,038		(385)		(385)		4,654				114	12/01/2034
31416X-OT-0	FANNIE MAE-POOL #AB2265		12/01/2018	PAYDOWN		1,107,949	1,107,949	1,234,250	1,226,511		(118,562)		(118,562)		1,107,949				23,518	02/01/2041
31417B-KU-0	FANNIE MAE-POOL #AB4806		12/01/2018	PAYDOWN		674,011	674,011	712,367	701,713		(27,702)		(27,702)		674,011				11,153	04/01/2027
31417F-YS-3	FANNIE MAE-POOL #AB8756		12/01/2018	PAYDOWN		77,955	77,955	74,299	74,453		3,501		3,501		77,955				1,244	03/01/2043
31417G-6A-9	FANNIE MAE-POOL #AB9864		12/01/2018	PAYDOWN		89,994	89,994	92,455	91,977		(1,983)		(1,983)		89,994				1,671	07/01/2043
31418M-5H-8	FANNIE MAE-POOL #AD0860		12/01/2018	PAYDOWN		15,924	15,924	17,137	16,924		(1,000)		(1,000)		15,924				355	04/01/2025
31418M-PU-0	FANNIE MAE-POOL #AD0430		12/01/2018	PAYDOWN		309,864	309,864	341,422	341,363		(31,499)		(31,499)		309,864				8,723	03/01/2037
31418N-AL-4	FANNIE MAE-POOL #AD0914		12/01/2018	PAYDOWN		18,416	18,416	20,593	18,747		(331)		(331)		18,416				490	04/01/2020
31418P-6N-0	FANNIE MAE-POOL #AD2677		12/01/2018	PAYDOWN		50,634	50,634	54,235	53,139		(2,505)		(2,505)		50,634				1,122	03/01/2025
31418T-XF-9	FANNIE MAE-POOL #AD6077		12/01/2018	PAYDOWN		53,962	53,962	58,230	56,836		(2,874)		(2,874)		53,962				1,316	05/01/2025
31418U-2M-5	FANNIE MAE-POOL #AD7079		12/01/2018	PAYDOWN		109,782	109,782	118,464	115,686		(5,904)		(5,904)		109,782					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
31419A-HL-4	FANNIE MAE-POOL #AE0234		12/01/2018	PAYDOWN		315,011	315,011	339,923	333,066		(18,055)		(18,055)		315,011				7,343	08/01/2025
31419A-VB-0	FANNIE MAE-POOL #AE0609		12/01/2018	PAYDOWN		276,718	276,718	304,121	302,760		(26,043)		(26,043)		276,718				8,096	04/01/2037
31419H-2N-1	FANNIE MAE-POOL #AE7088		12/01/2018	PAYDOWN		225,837	225,837	241,897	237,204		(11,367)		(11,367)		225,837				5,746	12/01/2025
35268N-AN-2	FRANKLIN CNTY GA INDL BLDG AUTH-REVENUE		05/15/2018	CORPORATE ACTION		777,385	2,460,000	1,229,852	1,229,852						1,229,853		(452,468)	(452,468)	(200,900)	11/01/2021
41315R-GV-0	HARRIS CNTY TX HLTH FACS-REVENUE BONDS		01/01/2018	VARIOUS		(1,590,000)	(1,590,000)	(1,590,000)	(1,590,000)						(1,590,000)				(200,900)	12/01/2041
451295-ZA-0	IDAHO HEALTH FACILITIES -REVENUE BONDS		11/15/2018	SINKING PAYMENT		190,000	190,000	190,000	190,000						190,000				6,907	11/15/2019
45201Y-VL-5	ILLINOIS ST HSG DEV AUTH REV PROG SER B		02/01/2018	CALL 100		20,313	20,313	19,349	19,423		2		2		19,424		889	889	91	06/01/2043
45385L-CH-4	INDEP CITIES CA FIN AUTH MOBILE HOME REV		05/15/2018	SINKING PAYMENT		51,539	51,539	50,591	51,102		83		83		51,539				1,482	05/15/2022
48503T-AA-5	KANSAS CITY MO INDL DEV -REVENUE BOND		12/10/2018	SINKING PAYMENT		380,161	380,161	456,701	432,635		(3,197)		(3,197)		380,161				10,881	12/10/2032
52349E-DR-8	Lee County Industrial De-REVENUE BONDS		01/01/2018	DTCYD							10		10						(1,142)	12/01/2052
546282-5L-4	LOUISIANA ST LOCAL GOVT -REVENUE BONDS		02/01/2018	SINKING PAYMENT		150,000	150,000	150,000	150,000						150,000				5,625	02/01/2026
60416Q-GA-6	MINNESOTA ST HSG FIN AGY REVENUE GNMA &		01/02/2018	CALL 100		8,247	8,247	8,247	8,247						8,247				23	09/01/2044
60637B-FA-3	MISSOURI ST HSG DEV COMM-TAXABLE-REF-SPL		09/01/2018	VARIOUS		65,093	65,093	65,093	(63,435)						65,093				(5,476)	08/01/2036
61022C-AC-3	NONONGALIA COUNTY COMMIS-REVENUE BONDS		11/08/2018	DTCYD		548,635	545,000	534,214	534,185		203		203		534,388		14,247	14,247	29,771	06/01/2043
626207-YS-7	MUNI ELEC AUTH OF GEORGIA-BUILD AMERICA		04/01/2018	SINKING PAYMENT		9,298	9,298	10,251	10,172		(3)		(3)		9,298				328	04/01/2057
62719H-HF-7	MURIETA VLY CA UNIF SCH DIST SPECIAL TAX		09/01/2018	CALL 103		103,000	100,000	99,057	99,345		64		64		102,409		591	591	7,167	09/01/2024
62719H-WG-5	MURIETA VLY CA UNIF SCH DIST SPECIAL TAX		09/01/2018	CALL 103		103,000	100,000	99,585	99,690		32		32		102,722		278	278	7,333	09/01/2025
62719H-WL-4	MURIETA VLY CA UNIF SCH DIST SPECIAL TAX		09/01/2018	CALL 103		515,000	500,000	498,935	499,010		102		102		514,112		888	888	40,000	09/01/2034
649083-AA-0	NEW VALLEY GENERATION I-PASS THRU CERTIF		03/15/2018	SINKING PAYMENT		238,491	238,491	273,399	239,122		(631)		(631)		238,491				8,704	03/15/2019
649430-AA-6	NEW YORK CITY NY INDL DE-REVENUE BONDS		03/01/2018	SINKING PAYMENT		442,759	442,759	639,233	578,327		(2,970)		(2,970)		442,759				24,352	03/01/2029
64967B-AA-0	NEW YORK CITY NY INDL DE-REVENUE BONDS		03/01/2018	SINKING PAYMENT		10,258	10,258	8,507	8,671		10		10		10,258				303	03/01/2046
649726-JQ-8	New York City Water & Sewer - Revenue Bo		01/01/2018	DTCYD															(37,944)	06/15/2048
64990B-HM-2	NEW YORK ST DORM AUTH REVENUE ALLIANCE L		12/01/2018	SINKING PAYMENT		250,000	250,000	250,000	250,000						250,000				10,406	12/01/2020
64990C-W9-8	NEW YORK STATE DORMITORY-REVENUE BONDS		10/07/2018	SINKING PAYMENT		95,000	95,000	95,000	95,000						95,000				3,883	10/01/2024
64990C-ZE-4	NEW YORK ST DORM AUTH RE-REVENUE BONDS		09/01/2018	SINKING PAYMENT		325,000	325,000	325,000	325,000						325,000				13,000	09/01/2019
65830T-AG-0	NORTH CAROLINA ST TPK AUTH-BUILD AMERICA		05/24/2018	EXCHANGE OFFER		465,899	450,000	512,154	476,341		(10,443)		(10,443)		465,899				11,976	01/01/2039
678908-Z8-0	OKLAHOMA ST DEV FIN AUTH-REVENUE BONDS		06/06/2018	DTCYD		1,755,000	2,000,000	2,000,000	2,000,000						2,000,000		(245,000)	(245,000)	51,261	08/01/2037
69361F-AA-2	PSCH INC-TXBL REVENUE BONDS SERIES D		12/01/2018	SINKING PAYMENT		325,000	325,000	325,000	325,000						325,000				11,135	12/01/2025
717824-AS-5	PHILADELPHIA AUTHORITY F-REVENUE BONDS		12/04/2018	VARIOUS		1,985,344	2,000,000	2,000,000	2,000,000						2,000,000		(14,656)	(14,656)	90,362	07/01/2022
72177P-BG-4	PIMA CNTY AZ INDL DEV AUTH EDU REVENUE		12/01/2018	SINKING PAYMENT		75,000	75,000	75,000	75,000						75,000				4,688	12/01/2045
72177P-BW-9	Industrial Development A-REVENUE BONDS		11/01/2018	SINKING PAYMENT		80,000	80,000	80,000	80,000						80,000				3,874	11/01/2025
73358W-EK-6	PORT AUTH OF NEW YORK & -REVENUE BONDS		10/17/2018	RAYMOND JAMES		354,653	325,000	360,039	156,475		(186)		(186)		359,616		(4,963)	(4,963)	7,761	10/01/2051
73358W-JA-3	PORT AUTH OF NEW YORK & -REVENUE BONDS		10/17/2018	RAYMOND JAMES		1,272,616	1,275,000	1,345,941			(110)		(110)		1,345,832		(73,216)	(73,216)	31,262	10/01/2062
74442P-CQ-6	PUBLIC FIN AUTH WJ REVEN-REVENUE BONDS		11/30/2018	DTCYD		994,720	1,000,000	1,017,220	1,015,279		(2,138)		(2,138)		1,013,142		(18,422)	(18,422)	47,406	06/01/2048
74442P-CT-0	PUBLIC FINANCE AUTHORITY-REVENUE BONDS		04/25/2018	CALL 100		8,820,000	8,820,000	8,900,000	8,820,000		16,871		16,871		8,836,871		(16,871)	(16,871)	290,106	06/30/2021
74446E-AC-0	PUBLIC FIN AUTH WJ-REVENUE BONDS		11/26/2018	DTCYD		4,832,500	5,000,000	5,000,000	5,000,000						5,000,000		(167,500)	(167,500)	255,469	08/01/2024
745177-EN-1	PUERTO RICO CIMILTH GOVT DEV BK REV SR NT		08/10/2018	DTCYD		2,625,000	6,000,000	1,290,000	1,290,000						1,290,000		1,335,000	1,335,000		08/01/2020
745190-UP-1	PUERTO RICO HIGHWAY & TR-REVENUE BONDS		08/20/2018	DTCYD		1,536,151	1,445,000	1,261,398	1,261,398						1,261,399				48,678	07/01/2035
74526Q-KW-1	PUERTO RICO ELEC PWIR AUTH-REVENUE BOND S		08/10/2018	MORGAN STANLEY AND C		652,500	1,000,000	331,250	328,750	2,500			2,500		331,250					07/01/2032
74526Q-PQ-9	PUERTO RICO ELECTRIC POW-REVENUE BONDS		08/20/2018	DTCYD		3,223,530	3,000,000	2,702,220		6,000			6,000		2,702,220				(60,813)	07/01/2032
74529J-AG-0	PUERTO RICO SALES TAX FI-REVENUE BONDS		07/24/2018	DTCYD		865,933	2,975,000	611,351	621,924	3,124			3,124		625,047					08/01/2041
74529J-AH-8	PUERTO RICO SALES TAX FI-REVENUE BONDS		07/24/2018	DTCYD		750,339	2,720,000	526,181	534,643	2,910			2,910		537,553					08/01/2042
74529J-AK-1	PUERTO RICO SALES TAX FI-REVENUE BONDS		07/24/2018	DTCYD		2,096,219	8,460,000	1,448,741	1,472,125	9,221			9,221		1,481,346					08/01/2044
74529J-HG-3	PUERTO RICO SALES TAX FING CORP REV FIRS		11/29/2018	DTCYD		120,000	250,000	25,000	24,375	625			625		25,000					08/01/2024
74529J-HL-2	PUERTO RICO SALES TAX FI-REVENUE BONDS		11/29/2018	DTCYD		804,000	1,675,000	167,500	163,313	4,188			4,188		167,500					08/01/2037
74529J-HP-3	PUERTO RICO SALES TAX FING REV FIRST SUB		11/29/2018	DTCYD		55,200	115,000	11,500	11,213	288			288		11,500					08/01/2044
74529J-LM-5	PUERTO RICO SALES TAX FING CORP REV FIRS		11/29/2018	DTCYD		93,600	195,000	19,500	19,013	488			488		19,500					08/01/2041
74529J-LX-1	PUERTO RICO SALES TAX FI-REVENUE BONDS		11/29/2018	DTCYD		57,600	120,000	12,000	11,700	300			300		12,000					08/01/2043
75972R-AD-8	RENAISSANCE PUBLIC SCH ACA REVENUE BOND		05/01/2018	SINKING PAYMENT		34,200	34,200	34,200	34,200						34,200					05/01/2021
798147-ZU-1	SAN JOSE CA REDEV AGY REF TAX ALLOCATION		01/08/2018	CALL 100		10,000,000	10,000,000	8,975,000	9,178,447		978		978		9,179,425					08/01/2035
842440-VM-8	STHRN CALIFORNIA ST HOME-REVENUE BONDS		01/02/2018	CALL 100		25,000	25,000	24,633	24,686						24,686					12/01/2049
87172N-AH-1	SYRACUSE NY INDL DEV AGY REVENUE CAROUSE		01/01/2018	SINKING PAYMENT		195,000	195,000	200,910	198,618						195,000				5,551	01/01/2028
88256C-EX-3	TEXAS ST MUNI GAS ACQUIS-REVENUE BONDS		12/15/2018	SINKING PAYMENT		211,140	211,140	248,265	242,837		(5,120)		(5,120)		211,140				13,196	12/15/2026
88275F-NX-3	TEXAS DEPARTMENT OF HOUS-REVENUE BONDS		09/01/2018	CALL 100		60,000	60,000	61,320	61,263		(42)		(42)		61,221					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
928172-VJ-1	VIRGINIA ST PUBLIC BLDG AUTH-BUILD AMERI		01/01/2018	EXCHANGE OFFER		693	693						693		693					36,129	08/01/2030
3199999	Subtotal - Bonds - U.S. Special Revenues					172,865,563	189,899,250	167,442,283	163,331,842	29,644	(321,680)	5,278	(297,314)		168,776,394		4,089,169	4,089,169		3,981,414	XXX
000366-AA-2	AASET 2017-1 TRUST-SERIES 17-1A CLASS A		12/16/2018	PAYDOWN		1,900,571	1,900,571	1,900,217	1,874,909				(1,522)		1,900,571				39,922	05/16/2042	
00101J-AF-3	ADT Corp/The-SENIOR UNSECURED NOTE		06/12/2018	MORGAN		2,509,800	2,670,000	2,548,592	2,587,951				7,393		2,595,344		(85,544)	(85,544)	42,312	07/15/2022	
001055-AN-2	AFLAC INC-SR UNSECURED		11/30/2018	CALL 100		150,000	150,000	150,640	150,340				(140)		150,201		(201)	(201)	3,290	03/16/2020	
001050-AA-4	AES US Generation Holdin Senior Note		11/30/2018	SINKING PAYMENT		423,772	423,772	423,772	423,772						423,772				14,137	11/30/2023	
00116*-AA-9	AFC-Dell Holding Corp. Senior Sub Note		10/01/2018	IN-KIND TRANSFER		2,135,186	2,134,944	2,135,728	2,135,155		241		241		2,135,186				184,727	02/28/2022	
00128P-AA-9	AHFS Finance I LLC Senior Secured		12/15/2018	SINKING PAYMENT		3,071,924	3,071,924	3,071,924	3,071,924						3,071,924				120,167	11/15/2024	
00165C-AB-0	AMC ENTERTAINMENT HOLDIN-AMC ENTERTAINME		08/22/2018	BARCLAYS CAPITAL INC		684,250	700,000	679,000	679,613		1,116		1,116		680,729		3,521	3,521	26,617	11/15/2026	
00187E-AB-3	API Technologies Corp- Sr Sub Nt PIK		04/20/2018	PREPAYMENTS //PENALT		15,870,233	15,870,233	15,874,068	15,873,773		(167)		(167)		15,873,606		(3,373)	(3,373)	736,072	04/22/2023	
00206R-AD-4	AT&T Inc-BOND		01/01/2018	EXCHANGE OFFER															188,945	09/01/2037	
00206R-AG-7	AT&T Inc-SR UNSECURED		01/01/2018	EXCHANGE OFFER															374,648	01/15/2038	
00206R-AS-1	AT&T Inc-SENIOR UNSECURED BOND		01/01/2018	EXCHANGE OFFER															2,625,778	02/15/2039	
00206R-BD-3	AT&T Inc-SENIOR UNSECURED		12/19/2018	MILLENNIUM ADVISORS		368,468	375,000	371,648	372,290		605		605		372,895		(4,427)	(4,427)	10,938	02/15/2022	
00206R-EM-0	AT&T Inc-SENIOR UNSECURED		05/23/2018	CALL 101		232,300	230,000	229,602	229,608		11		11		231,919		381	381	5,838	08/14/2027	
00206R-EP-3	AT&T Inc-SENIOR UNSECURED		05/23/2018	CALL 101		545,400	540,000	538,067	538,086		1		1		543,487		1,913	1,913	16,370	02/14/2050	
00206R-EQ-1	AT&T Inc-SENIOR UNSECURED		05/23/2018	CALL 101		32,825,000	32,500,000	32,423,950	32,422,340		(317)		(317)		32,747,023		77,977	77,977	1,004,431	08/14/2058	
00206R-FM-9	AT&T Inc-SENIOR UNSECURED		01/01/2018	EXCHANGE OFFER															188,945	09/01/2037	
00213R-AA-1	ARL FIRST LLC-SECD RAIL CAR EQUIP NT CLA		06/15/2018	PAYDOWN		3,551,716	3,551,716	3,596,737	3,593,596				(41,879)		3,551,716				53,929	12/15/2042	
00214M-AA-1	ARL SECOND LLC-SECD RAILCAR EQUIP NT CL		06/15/2018	VARIOUS		1,846,505	1,893,244	1,892,485	1,892,523		152		152		1,892,675		(46,170)	(46,170)	24,669	06/15/2044	
00214M-AB-9	ARL SECOND LLC SECD RAILCAR EQUIP NT CL		06/14/2018	CREDIT SUISSE SECURI		488,125	500,000	499,717	499,743		17		17		499,759		(11,634)	(11,634)	9,208	06/15/2044	
002474-A*-5	AZZ incorporated Senior Note		03/31/2018	SINKING PAYMENT		2,192,859	2,192,859	2,192,859	2,192,859						2,192,859				33,829	03/31/2018	
00252F-AJ-0	AMES MORTGAGE INVESTMEN-SERIES 2004-1 C		12/26/2018	PAYDOWN		221,452	221,452	211,675	221,452		(9,040)		(9,040)		221,452				1,531	01/25/2035	
00252F-BB-6	AMES MORTGAGE INVESTMEN-SERIES 2005-1 C		12/26/2018	PAYDOWN		570,080	570,080	525,899	525,899		322		322		569,758				891	06/25/2035	
002824-AZ-3	ABBOTT LABORATORIES-SR UNSECURED		10/28/2018	CALL 100		300,000	300,000	299,225	299,586		152		152		299,738		262	262	4,950	03/15/2020	
002824-BF-6	ABBOTT LABORATORIES-SENIOR UNSECURED		10/28/2018	VARIOUS		314,713	312,000	310,127	188,714		47		47		314,004		709	709	4,612	11/30/2026	
002824-BJ-8	ABBOTT LABORATORIES-SENIOR UNSECURED		09/15/2018	MATURITY		100,000	100,000	99,912	99,957		43		43		100,000				1,411	09/15/2018	
002824-BL-3	ABBOTT LABORATORIES-SENIOR UNSECURED		10/28/2018	CALL 100, 2965934		18,554,870	18,500,000	18,442,660	18,449,010		7,732		7,732		18,511,613		43,257	43,257	550,901	04/15/2023	
00287Y-AN-9	ABBVIE INC-SENIOR UNSECURED		05/14/2018	MATURITY		4,505,000	4,505,000	4,504,117	4,504,738		262		262		4,505,000				29,958	05/14/2018	
00287Y-AQ-2	AbbVie Inc-SR UNSECURED		04/16/2018	MORGAN		127,560	130,000	129,773	129,821		8		8		129,828		(2,268)	(2,268)	2,002	05/14/2025	
00400V-AB-3	ACADEMIC LOAN FUNDING TR-ALFT 2012-1A A2		12/26/2018	PAYDOWN		940,368	940,368	902,753	920,008		20,360		20,360		940,368				16,657	12/27/2044	
00404A-AG-4	ACADIA HEALTHCARE CO INC-SENIOR UNSECURE		11/26/2018	WELLS FARGO		636,744	645,000	632,519	635,316		1,735		1,735		637,051		(307)	(307)	30,026	07/01/2022	
00432C-AR-2	ACCESS GROUP-STUDENT LN REVENUE NT		06/25/2018	CALL 100		449,999	449,999	412,593	417,203		70		70		417,273		32,726	32,726	10,313	09/25/2037	
00432C-AV-3	ACCESS GROUP INC-SERIES 2003-A CLASS A3		12/26/2018	PAYDOWN		2,577,167	2,577,167	2,521,508	2,536,600		40,567		40,567		2,577,167				26,730	07/01/2038	
00432C-BG-5	ACCESS GROUP INC-SERIES 2004-A CLASS A2		01/25/2018	PAYDOWN		52	52	51	52						52					04/25/2029	
00432C-CF-6	ACCESS GROUP INC DEL 2005-1 ASSET BKD CT		12/24/2018	PAYDOWN		912,517	912,517	899,542	912,201		316		316		912,517				12,371	06/22/2022	
00432C-CI-9	ACCESS GROUP INC-SERIES 2005-B CLASS A3		10/25/2018	PAYDOWN		2,706,109	2,706,109	2,460,390	2,569,537		136,572		136,572		2,706,109				36,376	07/25/2035	
00432C-DE-8	ACCESS GROUP INC-SERIES 2006-1 CLASS B		11/26/2018	PAYDOWN		257,358	257,358	208,460	219,443		37,914		37,914		257,358				3,789	08/25/2037	
004375-BD-2	ACCREDITED MORTGAGE LOAN-SERIES 2004-3 C		12/01/2018	PAYDOWN		59,729	59,729	57,519	57,402		2,326		2,326		59,729				1,474	10/01/2034	
004375-CB-5	ACCREDITED MORTGAGE LOAN-SERIES 2004-4 C		12/26/2018	PAYDOWN		261,239	261,239	258,708	263,232		(1,993)		(1,993)		261,239				5,482	01/25/2035	
004375-CE-9	ACCREDITED MORTGAGE LOAN-SERIES 2004-4 C		12/26/2018	PAYDOWN		251,329	251,329	238,763	251,329						251,329				3,647	01/25/2035	
004375-CF-6	ACCREDITED MORTGAGE LOAN-SERIES 2004-4 C		12/26/2018	PAYDOWN		27,893	27,893	27,911	28,007		(114)		(114)		27,893				362	01/25/2035	
004375-CS-8	ACCREDITED MORTGAGE LOAN-SERIES 2005-1 C		12/26/2018	PAYDOWN		335,888	335,888	335,266	336,466		(579)		(579)		335,888				4,581	04/25/2035	
004375-DJ-2	ACCREDITED MORTGAGE LOAN-SERIES 2005-3 C		11/26/2018	PAYDOWN		2,302,817	2,302,817	1,954,053	2,298,157		4,661		4,661		2,302,817				25,096	09/25/2035	
00440E-AV-9	ACE INA HOLDINGS-SR UNSECURED		04/16/2018	MILLENNIUM ADVISORS		59,096	60,000	59,816	59,847		6		6		59,853		(757)	(757)	921	05/03/2026	
004421-TD-5	ACE SECURITIES CORP -SERIES 2005-ASP1 QL		11/26/2018	PAYDOWN		1,866,373	1,866,373	818,031	1,178,279		688,095		688,095		1,866,373				42,751	09/25/2035	
004421-TX-1	ACE SECURITIES CORP -SERIES 2005-HE7 CLA		09/25/2018	PAYDOWN		48,204	48,204	48,012	48,230		(26)		(26)		48,204				505	11/25/2035	
004421-UB-7	ACE SECURITIES CORP -SERIES 2005-HE7 CLA		09/25/2018	PAYDOWN		21,910	21,910	21,150	21,908		3		3		21,910				170	11/25/2035	
00442F-AB-8	ACE SECS CORP HOME EQUITY LN TR 2007-SL1		12/26/2018	PAYDOWN		45,877	45,877	1,562	1,776		44,102		44,102		45,877				261	03/25/2037	
006346-AS-9	ADAMS OUTDOOR ADV SECD REV NT SER 2018-1		12/15/2018	PAYDOWN		22,572	22,572	22,571			1		1		22,572				109	11/15/2048	
007036-GB-6	ADJUSTABLE RATE MORTGAGE-SERIES 2005-1 C		12/31/2018	VARIOUS		24,074	85,859	(198,245)	400		38,768		38,768		24,074				3,621	05/01/2035	
00751Y-AB-2	ADVANCE AUTO PARTS INC-SENIOR UNSECURED		12/03/2018	MITSUBISHI UFJ SEC I		253,060	250,000	269,915	264,764		(3,473)		(3,473)		261,291		(8,231)	(8,231)	10,438	01/15/2022	
00764M-GG-6	AGIS ASSET BACKED SECUR-SERIES 2005-4 C		12/26/2018	PAYDOWN		684,371	684,371	513,025	637,552		46,818		46,818		684,371						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
01126#-AA-1	Alamo 6 LLC Senior Secured		09/30/2018	SINKING PAYMENT		1,053,705	1,053,705	1,053,705	1,053,705						1,053,705				39,571	03/31/2042
013817-AK-7	Alcoa Inc-NOTE		06/11/2018	SUMRIDGE PARTNERS LL		531,053	550,000	473,000	483,413		744		744		484,157		46,896	46,896	14,726	02/01/2037
013817-AV-3	Alcoa Inc-SENIOR UNSECURED NOTE		06/11/2018	RBC CAPITAL MARKETS		14,004,825	13,630,000	14,174,146	13,860,184		(31,924)		(31,924)		13,828,260		176,565	176,565	331,209	04/15/2021
017364-C*-9	Allegheny Generating Co. Senior Note		05/04/2018	CA CASH_CLOSE		11,631,884	11,000,000	11,119,350	11,055,373		(5,526)		(5,526)		11,681,731		(49,847)	(49,847)	822,056	07/15/2021
01741R-AE-2	Allegheny Technologies I-SENIOR NOTE		11/14/2018	VARIOUS		404,028	400,000	442,412	415,782		(3,536)		(3,536)		412,247		(8,219)	(8,219)	15,483	01/15/2021
01741R-AF-9	Allegheny Technologies I-SENIOR UNSECURE		12/13/2018	VARIOUS		4,856,858	4,650,000	4,773,744	4,729,873		(11,809)		(11,809)		4,718,065		138,793	138,793	340,740	08/15/2023
018490-AN-2	ALLERGAN INC-SENIOR UNSECURED NOTE		12/11/2018	CREDIT SUISSE SECURI		14,590,947	14,687,000	15,885,577	15,131,010		(153,022)		(153,022)		14,977,988		(387,041)	(387,041)	616,854	09/15/2020
018536-AB-6	ALLIANCE BANCORP TRUST-SERIES 2007-S1 CL		12/01/2018	PAYDOWN		39,890	39,890	1,537	790		39,100		39,100		39,890				136	05/01/2037
01877K-AB-9	ALLIANCE PIPELINE LP-BOND		06/30/2018	VARIOUS		(3)	(3)	(3)									(3)	(3)		12/31/2019
02005N-BC-3	ALLY FINANCIAL INC-SR UNSECURED		06/11/2018	WELLS FARGO		1,964,625	1,950,000	1,918,547	1,928,980		1,984		1,984		1,930,964		33,661	33,661	40,584	05/19/2022
02155L-AA-0	ALTERNA FUNDING LLC-SERIES 2015-1A CLASS		11/15/2018	PAYDOWN		1,591,558	1,591,558	1,570,171	1,442,278		149,280		149,280		1,591,558				16,628	02/15/2024
023135-BD-7	AMAZON.COM INC-SENIOR UNSECURED		06/11/2018	EXCHANGE OFFER		254,602	250,000	254,602	254,679		(77)		(77)		254,602				4,306	08/22/2037
023135-BK-1	AMAZON.COM INC-SENIOR UNSECURED		06/11/2018	EXCHANGE OFFER		31,341,814	31,600,000	31,341,512	31,340,949		865		865		31,341,814				596,889	08/22/2057
02343*-AB-8	Ancor Finance (USA) Inc. Gtd Senior Note		12/15/2018	MATURITY		17,000,000	17,000,000	18,385,800	17,239,773		(239,773)		(239,773)		17,000,000				924,309	12/15/2018
02376*-AA-0	American Airlines Group Senior Secured		12/15/2018	SINKING PAYMENT		1,367,071	1,367,071	1,367,071							1,367,071				31,914	06/15/2027
023764-AA-1	AMERN AIRLINE 16-2 A PTT-2ND LIEN		07/13/2018	VARIOUS		2,089,907	2,142,800	2,193,820	2,192,859		(2,671)		(2,671)		2,190,188		(100,281)	(100,281)	33,629	06/15/2028
023765-AA-8	AMER AIRLINE 16-2 AA PTT-FIRST LIEN		12/15/2018	SINKING PAYMENT		373,935	373,935	373,935	373,935						373,935				8,759	06/15/2028
023767-AA-4	AMER AIRLS PASS THRU TR 2011-1A CTF		07/31/2018	SINKING PAYMENT		73,240	73,240	89,927	80,750		(1,473)		(1,473)		73,240				2,864	01/31/2021
02376G-AA-4	AMER AIRLINE 16-2 B PTT-2ND LIEN		12/15/2018	SINKING PAYMENT		40,500	40,500	40,854	40,826		(39)		(39)		40,500				1,772	06/15/2024
02376T-AC-2	AMER AIRLN 13-2 B PTT-PASS THRU CERTS		07/15/2018	SINKING PAYMENT		37,945	37,945	39,558	38,900		(194)		(194)		37,945				1,596	07/15/2020
02376U-AA-3	AMER AIRLS INC 2016-1 CL AA CTF		07/15/2018	SINKING PAYMENT		878,239	878,239	881,015	880,558		(85)		(85)		878,239				23,596	01/15/2028
02376X-AA-7	AMER AIRLN 14-1 B PTT-SECURED NOTE		10/01/2018	SINKING PAYMENT		244,144	244,144	249,158	248,846		(735)		(735)		244,144				7,979	10/01/2022
02376Y-AA-5	AMER AIRLINE 16-1 B PTT-3RD LIEN		07/15/2018	SINKING PAYMENT		520,956	520,956	547,779	546,025		(1,885)		(1,885)		520,956				20,382	01/15/2024
02377#-AA-5	American Airlines Group Senior Secured		12/15/2018	SINKING PAYMENT		2,514,421	2,514,421	2,514,421							2,514,421				66,639	12/15/2024
023770-AA-8	AMER AIRLN 15-1 A PTT-SECURED		11/01/2018	SINKING PAYMENT		1,093,359	1,093,359	1,087,230	1,088,287		478		478		1,093,359				27,670	05/01/2027
023770-AB-6	AMER AIRLN 15-1 B PTT-PASS THRU CERTS		11/01/2018	SINKING PAYMENT		34,061	34,061	33,340	33,445		115		115		34,061				946	05/01/2023
023771-S2-5	AMERICAN AIRLINES 2016-3-2ND LIEN		01/01/2018	VARIOUS		73,315	73,315	72,766	72,792		3		3		72,795		520	520	(503)	10/15/2028
023771-S4-1	AMERICAN AIRLINES 2016-3-3RD LIEN		08/21/2018	VARIOUS		4,840,858	5,000,000	5,013,000	5,012,370		(1,486)		(1,486)		5,010,884		(170,026)	(170,026)	117,887	10/15/2025
02377A-AA-6	AMER AIRLN 14-1 A PTT-SECURED NOTE		10/01/2018	SINKING PAYMENT		410,428	410,428	411,251	408,382		(62)		(62)		410,428				11,332	10/01/2026
02377B-AB-2	AMER AIRLN 15-2 AA PTT-FIRST LIEN		01/01/2018	VARIOUS		23,684	23,684	24,252	24,223		9		9		24,232		(548)	(548)	(234)	09/22/2027
02377B-AC-0	AMER AIRLN 15-2 B PTT-3RD LIEN		07/13/2018	VARIOUS		3,982,597	3,994,497	4,125,485	4,117,194		(14,112)		(14,112)		4,103,082		(120,485)	(120,485)	89,898	09/22/2023
02377D-AA-0	AMERICAN AIRLINES 2017-2-3RD LIEN		10/15/2018	SINKING PAYMENT		758,297	758,297	758,297	758,297						758,297				28,836	10/15/2025
02378*-AA-8	American Airlines Group Series 2017-2C P		10/15/2018	SINKING PAYMENT		3,074,545	3,074,545	3,074,545							3,074,545				35,834	10/15/2023
02378W-AA-7	AMER AIRLINE 17-1B PTT-3RD LIEN		08/15/2018	SINKING PAYMENT		152,513	152,513	159,508	158,990		(514)		(514)		152,513				5,508	02/15/2025
025644-AA-3	Ascent Resources - Utica LLC Subordinate		12/13/2018	SEAPORT GROUP		2,364,075	1,710,000	1,093,806	276,654						1,093,806		1,270,269	1,270,269	20,140	03/01/2021
025816-BG-3	AMERICAN EXPRESS CO-SR UNSECURED		05/22/2018	MATURITY		200,000	200,000	199,462	199,745		255		255		200,000				1,214	05/22/2018
02639M-AK-2	AMERICAN GENERAL MORTGAG-SERIES 2006-1 C		12/01/2018	PAYDOWN		3,340,929	3,340,929	2,762,247	2,966,421		374,508		374,508		3,340,929				120,377	12/01/2035
02639M-AM-8	AMERICAN GENERAL MORTGAG-SERIES 2006-1 C		12/01/2018	PAYDOWN		461,093	461,093	72,375	143,274		317,819		317,819		461,093				20,017	12/01/2035
02660T-CZ-4	AMERICAN HOME MORTGAGE I-SERIES 2005-1 C		12/26/2018	PAYDOWN		1,058,282	1,058,282	1,058,282	1,058,282						1,058,282				3,654	06/25/2045
02660T-HL-0	AMERICAN HOME MORTGAGE I-SERIES 2005-SD1		12/26/2018	PAYDOWN		101,349	103,652	64,603	72,530		30,635		30,635		101,349				(46,473)	09/25/2035
02665U-AA-3	AMERICAN HOMES 4 RENT-SERIES 2014-SFR2 C		12/01/2018	PAYDOWN		164,418	164,418	164,410	164,411		7		7		164,418				3,299	10/01/2036
02665W-AC-5	AMERICAN HONDA FINANCE-SR UNSECURED		10/10/2018	MATURITY		400,000	400,000	403,700	401,039		(1,039)		(1,039)		400,000				6,588	10/10/2018
02665W-AT-8	AMERICAN HONDA FINANCE-SR UNSECURED		03/13/2018	MATURITY		150,000	150,000	149,115	149,918		82		82		150,000				450	03/13/2018
02666B-AA-4	AMERICAN HOMES 4 RENT-SERIES 2015-SFR2 C		12/01/2018	PAYDOWN		30,139	30,139	30,138	30,134		5		5		30,139				628	10/01/2045
026929-AD-1	AMERICAN HOME MORTGAGE I-SERIES 2006-3 C		12/26/2018	PAYDOWN		675,463	761,951	513,555	614,458		103,455		103,455		675,463				6,727	12/25/2046
02752#-AA-0	American Midstream Midla Senior Secured		12/31/2018	SINKING PAYMENT		739,336	739,336	739,336	739,336						739,336				17,934	06/30/2031
03040#-AD-4	American Water Capital C Senior Note Ser		12/21/2018	VARIOUS		7,308,000	7,308,000	7,308,000	7,308,000						7,308,000				399,301	12/21/2018
03072S-KJ-3	AMERIQUEST MORTGAGE SECU-SERIES 2003-10		01/25/2018	PAYDOWN		3,093	3,093	3,099	3,093						3,093				6	11/25/2033
03072S-LN-3	AMERIQUEST MORTGAGE SECU-SERIES 2003-11		12/26/2018	PAYDOWN		3,097	3,097	3,129	3,129		(42)		(42)		3,097				4	12/25/2033
03072S-PO-1	AMERIQUEST MORTGAGE SECU-SERIES 2004-R2		12/26/2018	PAYDOWN		26,354	26,354	24,836	26,458		(103)		(103)		26,354				279	04/25/2034
03072S-SH-9	AMERIQUEST MORTGAGE SECU-SERIES 2004-R6		06/25/2018	PAYDOWN		121,810	121,810	109,629	121,744		66		66		121,810				676	07/25/2034
03073E-AG-0	AmerisourceBergen Corp-SENIOR UNSECURED		01/01/2018	VARIOUS		925,934	925,934							925,934					925,934	11/15/2019
031100-C8-7	Ametek, Inc. Senior Note Ser		09/17/2018	MATURITY																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
034628-AA-1	Angel Solar LLC Senior Secured		10/05/2018	SINKING PAYMENT		213,491	213,491	213,491	213,491						213,491						10/05/2030
035223-CF-8	ANHEUSER-BUSCH COS LLC-SR UNSECURED		01/01/2018	EXCHANGE OFFER		923,935	735,000	1,038,617	918,509		4,188		4,188		922,698		1,237	1,237	(38,536)		10/01/2030
035231-AB-4	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE		03/19/2018	CALL 103.936		51,968	50,000	57,484	53,207		(666)		(666)		54,509			(2,541)	2,808		01/15/2019
035231-AN-8	ANHEUSER-BUSCH INBEV WORLDWIDE GTD NT		04/23/2018	CALL 104.375		5,218,750	5,000,000	6,085,170	5,330,465		(49,670)		(49,670)		5,499,545		(280,795)	(280,795)	302,361		01/15/2020
035231-BP-2	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE		08/03/2018	SUMRIDGE PARTNERS LL		145,368	150,000	138,738	143,681		778		778		144,459		909	909	3,979		07/15/2022
035240-AH-3	ANHEUSER-BUSCH INBEV WOR-SENIOR UNSECURE		01/01/2018	EXCHANGE OFFER		922,785	948,000	922,698			88		88		922,785				12,698		10/06/2048
035242-AE-6	ANHEUSER-BUSCH INBEV FIN-SR UNSECURED		04/23/2018	CALL 100		350,000	350,000	350,210	350,073		(24)		(24)		350,049		(49)	(49)			02/01/2019
035242-AG-1	ANHEUSER-BUSCH INBEV FIN-SENIOR UNSECURE		04/23/2018	CALL 100		565,000	565,000	566,033	565,908		(263)		(263)		565,646		(646)	(646)	3,340		02/01/2019
035242-AJ-5	ANHEUSER-BUSCH INBEV FIN GTD NT		04/16/2018	MORGAN		203,422	205,000	204,358	204,593		36		36		204,629		(1,207)	(1,207)	1,615		02/01/2021
035242-AM-8	ANHEUSER-BUSCH INBEV FIN-SENIOR UNSECURE		11/13/2018	EXCHANGE OFFER		4,041,141	3,610,000	4,075,939	4,057,134		(15,993)		(15,993)		4,041,141				167,500		02/01/2036
035242-AN-6	ANHEUSER-BUSCH INBEV FIN GTD NT		11/13/2018	EXCHANGE OFFER		89,335,329	83,035,000	89,621,880	89,449,543		(114,214)		(114,214)		89,335,329				3,565,487		02/01/2046
035242-AP-1	ANHEUSER-BUSCH INBEV FIN GTD NT		11/13/2018	EXCHANGE OFFER		38,088,381	38,115,000	38,078,841	38,086,613		1,769		1,769		38,088,381				1,209,841		02/01/2026
03674P-AL-7	ANTERO RESOURCES CORP-SENIOR UNSECURED N		10/31/2018	CREDIT SUISSE SECURI		2,355,000	2,355,000	2,355,000	2,355,000						2,355,000				126,933		11/01/2021
037411-AV-7	Apache Corp-SENIOR UNSECURED		09/15/2018	MATURITY		7,755,000	7,755,000	7,152,747	7,693,554		61,446		61,446		7,755,000				377,539		09/15/2018
037833-AJ-9	APPLE INC-SENIOR UNSECURED NOTE		05/03/2018	MATURITY		150,000	150,000	148,704	149,811		189		189		150,000				508		05/03/2018
037833-AK-6	APPLE INC-SENIOR UNSECURED NOTE		08/03/2018	MILLENNIUM ADVISORS		67,683	70,000	69,907	69,946		5		5		69,952			(2,269)	1,279		05/03/2023
037833-BZ-2	APPLE INC-SENIOR UNSECURED		04/16/2018	GOLDMAN		301,743	325,000	311,951	312,767		371		371		313,138		(11,395)	(11,395)	5,618		08/04/2026
03784-AA-4	Apple One LLC Senior Secured		10/05/2018	SINKING PAYMENT		223,117	223,117	223,117	223,117						223,117						10/05/2030
038222-AF-2	APPLIED MATERIALS INC-NOTE		04/16/2018	MILLENNIUM ADVISORS		72,740	70,000	69,852	69,941		2		2		69,943		2,797	2,797	1,028		06/15/2021
03834L-AA-7	APPLYON INC-SECURED NOTE		08/25/2018	EXCHANGE OFFER			6,300,000		945,000	989,100			1,934,100	(945,000)							06/01/2020
038779-AA-2	ARBYS FUNDING LLC 2015-1A A2		10/30/2018	PAYDOWN		191,400	191,400	191,400	191,400						191,400				5,944		10/30/2045
03927R-AA-2	ARCAP REIT INC-SERIES 2006-RR7 CLASS AD		08/01/2018	PAYDOWN		340,472	340,472	55,533	55,705		284,767		284,767		340,472				7,838		09/01/2045
03927R-AB-0	ARCAP REIT INC-SERIES 2006-RR7 CLASS A R		08/01/2018	PAYDOWN		99,793	99,793	13,777	13,772	52	85,969		86,021		99,793				2,458		09/01/2045
040104-CX-7	ARGENT SECURITIES INC -SERIES 2003-W7 CL		12/26/2018	PAYDOWN		7,686	7,686	7,724	7,766		(80)		(80)		7,686				101		03/25/2034
040104-JJ-1	ARGENT SECURITIES INC -SERIES 2004-W8 CL		12/26/2018	PAYDOWN		10,946	10,946	9,395	10,782		163		163		10,946				168		05/25/2034
040104-QN-4	ARGENT SECURITIES INC -SERIES 2005-W5 CL		12/26/2018	PAYDOWN		111,867	111,867	71,302	75,380		36,487		36,487		111,867				1,252		01/25/2036
040104-RV-5	ARGENT SECURITIES INC -SERIES 2006-W2 CL		12/26/2018	PAYDOWN		141,998	141,998	54,378	62,925		79,073		79,073		141,998				924		03/25/2036
040104-TF-8	ARGENT SECURITIES INC -SERIES 2006-W4 CL		12/26/2018	PAYDOWN		6,159	6,159	2,150	2,018		4,141		4,141		6,159				91		05/25/2036
040104-TG-6	ARGENT SECURITIES INC -SERIES 2006-W4 CL		12/26/2018	PAYDOWN		79,721	79,721	24,983	24,400		55,321		55,321		79,721				978		05/25/2036
04010L-AP-8	ARES CAPITAL CORP-UNSECURED NOTE		10/15/2018	SOUTHWEST SEC.		2,511,750	2,500,000	2,567,750	2,559,873		(24,005)		(24,005)		2,535,868		(24,118)	(24,118)	121,632		01/15/2020
04010L-AU-7	ARES CAPITAL CORP-SENIOR UNSECURED		05/04/2018	STIFEL NICOLAUS		76,662	80,000	79,937	79,939		3		3		79,942		(3,280)	(3,280)	988		02/10/2023
04012X-AC-9	ARGENT SECURITIES INC -SERIES 2006-W5CLA		12/26/2018	PAYDOWN		11,861	11,861	4,361	4,050		7,811		7,811		11,861				69		06/25/2036
04542B-CJ-9	ASSET BACKED FUNDING CER-SERIES 2003-AHL		12/01/2018	PAYDOWN		65,560	65,560	51,301	60,898		4,662		4,662		65,560				1,278		03/01/2033
04544T-AB-7	ASSET BACKED SECURITIES -SERIES 2007-HE2		12/26/2018	PAYDOWN		5,361	5,361	1,002	1,953		3,407		3,407		5,361				43		05/25/2037
04546K-AA-6	AASET 2018-2 US LTD-AASET 2018-2A A		12/16/2018	PAYDOWN		105,770	105,770	105,767			3		3		105,770						11/16/2038
045487-AA-3	ASSOC BANC-CORP-SR UNSECURED		08/08/2018	MILLENNIUM ADVISORS		139,292	140,000	139,811	139,924		23		23		139,947		(655)	(655)	2,834		11/15/2019
046003-JJ-4	ASSOCIATES CORP NA-DEBENTURE		11/01/2018	MATURITY		11,000,000	11,000,000	13,250,600	11,346,119		(346,119)		(346,119)		11,000,000				637,083		11/01/2018
05329W-AM-4	AutoNation Inc-SR UNSECURED		12/11/2018	VARIOUS		1,117,277	1,165,000	1,161,074	1,161,757		328		328		1,162,086		(44,809)	(44,809)	61,735		10/01/2025
05330K-AA-3	AUTO METRO PUERTO RICO-SECURED BOND		12/31/2018	SINKING PAYMENT		170,000	170,000	161,233	162,856		320		320		170,000				9,197		06/30/2035
05348E-AN-9	AVALONBAY COMMUNITIES IN-SENIOR UNSECURE		12/31/2018	CALL 103.431654		10,255,249	9,915,000	11,169,842	10,250,061		(148,233)		(148,233)		10,442,077		(186,828)	(186,828)	945,064		03/15/2020
053611-AG-4	AVERY DENNISON CORP-SENIOR UNSECURED NOT		08/09/2018	MARKETAXESS FINANCI		284,986	290,000	294,930	293,765		(430)		(430)		293,335		(8,349)	(8,349)	8,042		04/15/2023
05367A-AG-8	AVIATION CAPITAL GROUP-UNSECURED		08/17/2018	CALL 100		295,000	295,000	293,681	294,669		289		289		294,957		43	43	5,324		09/17/2018
05377R-BF-0	AVIS BUDGET RENTAL CAR F-SERIES 2013-2A		12/20/2018	PAYDOWN		6,666,667	6,666,667	6,665,533	6,666,359		307		307		6,666,667				173,250		02/20/2020
053807-AQ-6	Avnet Inc-SENIOR UNSECURED NOTE		11/14/2018	J.P. MORGAN SECURITIES		5,166,700	5,000,000	5,294,250	5,088,454		(30,425)		(30,425)		5,058,028		108,672	108,672	257,031		06/15/2020
053807-AR-4	Avnet Inc-SENIOR UNSECURED NOTE		11/27/2018	SEAPORT GROUP		9,121,174	9,012,000	9,007,311	9,009,146		749		749		9,009,896				111,278		12/01/2022
05502F-AA-6	AZUL INVESTMENTS LLP-SENIOR UNSECURED		12/12/2018	DTCYID		280,500	300,000	297,882	297,896		247		247		298,143		(17,643)	(17,643)	19,975		10/26/2024
055294-AA-0	BCAP LLC TRUST-SERIES 2006-AA1 CLASS A1		12/26/2018	PAYDOWN		289,646	353,330	197,178	251,834		71,189		71,189		289,646				4,668		10/25/2036
05531F-AN-3	BB&T CORPORATION-SR UNSECURED		05/15/2018	CALL 100		350,000	350,000	351,051	350,168		(168)		(168)		350,000						06/19/2018
05535D-AN-4	BLACKROCK CAPITAL FINANC-SERIES 1997-R1C		12/01/2018	PAYDOWN		172,177	267,556	171,503	203,282		27,243		27,243		172,177				11,557		03/01/2037
05535D-CF-9	BLACKROCK CAPITAL FINANC-SERIES 1997-R3		12/01/2018	PAYDOWN		595,534	595,534	445,613	402,295		206,774	13,536	193,238		595,534				2,344		11/01/2028
05577E-AG-5	BTMU Capital Corp. Equipment Note		08/26/2018	SINKING PAYMENT		458,965	458,965	539,733	488,721		(5,191)		(5,191)		458,9						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
055770-AR-1	BTMU CAP CORP EQUIP NT UPRR 2011-A SER B		11/05/2018	SINKING PAYMENT		481,772	481,772	481,772	481,772						481,772				12,168	05/05/2026	
05582*-AA-3	BG Stewart Solar Farm LL Senior Secured		10/05/2018	SINKING PAYMENT		212,739	212,739	212,739	212,739						212,739					10/05/2030	
05588#-AA-3	BCC Software, Inc. Senior Sub Note		10/01/2018	IN-KIND TRANSFER		2,486,975	2,487,314	2,487,321	2,487,321		(1)		(1)		2,486,975				206,027	04/11/2023	
056059-AN-8	BX Trust-BX 2018-IND E		12/15/2018	PAYDOWN		35,431	35,431	35,431							35,431				177	11/15/2035	
05723K-AC-4	Baker Hughes a GE Co LLC-SENIOR UNSECURE		02/05/2018	EXCHANGE OFFER		22,900,000	22,900,000	22,900,000	22,900,000						22,900,000				88,241	12/15/2047	
05946X-RZ-8	BANC OF AMERICA FUNDING -SERIES 2005-B C		05/21/2018	PAYDOWN		72,653	72,653	66,659	72,653						72,653				335	04/20/2035	
05946X-YP-2	BANC OF AMERICA FUNDING -SERIES 2005-F C		12/20/2018	PAYDOWN		103,539	115,433	79,276	79,636		31,552		31,552		103,539				1,629	09/20/2035	
05947U-DW-5	BANK OF AMERICA-FIRST UN-SERIES 2001-3 C		12/01/2018	PAYDOWN				.61											216	04/01/2037	
05947U-S8-2	BANC OF AMERICA COMMERCIAL-SERIES 2005-3 C		10/01/2018	PAYDOWN		92,818	92,818	60,846	92,818						92,818				(41,055)	07/01/2043	
05947U-SV-1	BANC OF AMERICA COMMERCIAL-SERIES 2004-3 C		12/01/2018	PAYDOWN				11,006												06/01/2039	
05948J-AA-0	BANC OF AMERICA MORTGAGE-SERIES 2002-L C		12/01/2018	PAYDOWN		5,590	5,590	4,927	5,288		302		302		5,590				119	12/01/2032	
05948X-R5-2	BANC OF AMERICA MORTGAGE-SERIES 2003 - L		12/01/2018	PAYDOWN		5,382	102,997	3,099	37						5,382				1,348	01/01/2034	
05948X-XII-6	BANC OF AMERICA MORTGAGE-SERIES 2003-J C		12/01/2018	PAYDOWN		5,310	5,310	5,280	5,176		134		134		5,310				56	11/01/2033	
05949A-GR-5	BANC OF AMERICA MORTGAGE-SERIES 2004-E C		12/01/2018	PAYDOWN		24,944	24,944	25,275	25,515		(571)		(571)		24,944				541	06/01/2034	
05949A-LH-1	BANC OF AMERICA MORTGAGE-SERIES 2004-G C		12/01/2018	PAYDOWN		157,806	157,806	137,509	142,953		14,852		14,852		157,806				3,111	08/01/2034	
05949A-ZG-8	BANC OF AMERICA MORTGAGE-SERIES 2004-L C		12/01/2018	PAYDOWN		51,247	51,247	46,613	48,739		2,508		2,508		51,247				1,026	01/01/2035	
05949C-CB-0	BANC OF AMERICA MORTGAGE-SERIES 2005-F C		12/01/2018	PAYDOWN		59,997	64,370	50,538	54,109		8,325		8,325		59,997				523	07/01/2035	
059500-BK-3	BANC OF AMERICA COMMERCIAL-SERIES 2006-3 C		05/01/2018	PAYDOWN		2,172	2,172	6,120	(4)						2,172				665	07/01/2044	
059500-AJ-7	BANC OF AMERICA COMMERCIAL-SERIES 2006-4 C		02/01/2018	PAYDOWN		465,096	465,096	442,009	465,096						465,096				(7,093)	07/01/2046	
06050H-KX-5	BANC OF AMERICA MORTGAGE-SERIES 2002-G C		12/01/2018	PAYDOWN		22,832	22,832	7,074	11,931		10,901		10,901		22,832				424	07/01/2032	
06050H-KY-3	BANC OF AMERICA MORTGAGE-SERIES 2002-G C		12/01/2018	PAYDOWN		8,588	8,588		2,845		5,744		5,744		8,588				160	07/01/2032	
06051G-BD-0	BANC OF AMERICA FUNDING -SERIES 2004-A C		12/01/2018	PAYDOWN		65,321	65,321	63,230	63,022		2,298		2,298		65,321				671	06/01/2032	
06051G-BR-9	BANC OF AMERICA FUNDING -SERIES 2004-2 C		12/01/2018	PAYDOWN		619	619	588	607		12		12		619				16	07/01/2032	
06051G-DX-4	Bank of America Corp-SENIOR NOTE		05/01/2018	MATURITY		300,000	300,000	320,736	304,001		(4,001)		(4,001)		300,000				5,650	05/01/2018	
06051G-DZ-9	Bank of America Corp-SENIOR NOTE		01/08/2018	EXCHANGE OFFER		1,437,104	1,400,000	1,597,870	1,437,620		(516)		(516)		1,437,104				2,076	06/01/2019	
06051G-EC-9	Bank of America Corp-SENIOR NOTE		01/08/2018	EXCHANGE OFFER		109,153	110,000	107,812	109,142		11		11		109,153				6,563	07/01/2020	
06051G-EE-5	Bank of America Corp-SENIOR UNSECURED NO		01/08/2018	EXCHANGE OFFER		487,687	450,000	506,871	487,922		(236)		(236)		487,687				1,056	01/05/2021	
06051G-EH-8	BANK OF AMERICA CORP-SENIOR UNSECURED		01/08/2018	EXCHANGE OFFER		92,564	85,000	95,630	92,606		(43)		(43)		92,564				83	05/13/2021	
06051G-EM-7	Bank of America Corp-SENIOR NOTE		01/08/2018	EXCHANGE OFFER		160,357	150,000	169,442	160,401		(45)		(45)		160,357				166	01/24/2022	
06051G-ET-2	BANK OF AMERICA CORP-SR UNSECURED		01/11/2018	MATURITY		1,945,000	1,945,000	1,948,699	1,945,046		(46)		(46)		1,945,000				1,081	01/11/2018	
06051G-FS-3	BANK OF AMERICA CORP-SENIOR UNSECURED		01/08/2018	EXCHANGE OFFER		2,315,846	2,200,000	2,331,325	2,316,101		(256)		(256)		2,315,846				37,178	08/01/2025	
06051G-GV-5	Bank of America Corp-SENIOR UNSECURED		05/30/2018	EXCHANGE OFFER		2,039,407	2,127,000	2,033,944			5,463		5,463		2,039,407				16,914	12/20/2023	
06051G-GW-3	Bank of America Corp-SENIOR UNSECURED		05/30/2018	EXCHANGE OFFER		2,568,959	2,576,000	2,568,766			193		193		2,568,959				(2,579)	12/20/2028	
06406H-CJ-6	BANK OF NEW YORK MELLON-SR UNSECURED		03/06/2018	MATURITY		200,000	200,000	198,658	199,887		113		113		200,000				488	03/06/2018	
066520-AA-7	BANKUNITED TRUST-SERIES 2005-1 CLASS 1A1		12/26/2018	PAYDOWN		883,299	883,299	624,737	690,412		192,887		192,887		883,299				9,569	09/25/2045	
067383-AC-3	CR Bard Inc-SENIOR UNSECURED NOTE		01/05/2018	EXCHANGE OFFER		10,524,642	10,000,000	11,385,920	10,526,644		(2,002)		(2,002)		10,524,642				230,333	01/15/2021	
067383-AD-1	CR Bard Inc-SENIOR UNSECURED NOTE		01/15/2018	MATURITY		22,500,000	22,500,000	22,618,823	22,500,914		(914)		(914)		22,500,000				12,031	01/15/2018	
070101-CF-5	Basin Electric Power Coo First Mtg Bond		12/17/2018	SINKING PAYMENT		457,500	457,500	457,500	457,500						457,500				52,773	12/17/2028	
07177M-AD-5	BAXALTA INC-SENIOR UNSECURED		09/11/2018	TENDERED		1,396,492	1,443,000	1,467,242	1,464,899		(6,253)		(6,253)		1,458,647				(62,155)	06/23/2020	
07177M-AL-7	BAXALTA INC-SENIOR UNSECURED		09/11/2018	TENDERED		23,379	24,000	23,981			1		1		23,987				619	06/23/2022	
073010-AA-7	Bayonne Water Joint Vent Senior Secured		12/31/2018	SINKING PAYMENT		277,500	277,500	277,500	277,500						277,500				14,069	06/30/2037	
07324N-AA-1	BAYVIEW COMMERCIAL ASSET-SERIES 2006-3A		12/26/2018	PAYDOWN		453,121	453,121	274,285	338,043		115,078		115,078		453,121				4,819	10/27/2036	
07324N-AB-9	BAYVIEW COMMERCIAL ASSET-SERIES 2006-3A		12/26/2018	PAYDOWN		636,297	636,297	368,941	462,411		173,887		173,887		636,297				6,932	10/27/2036	
07324S-AY-8	BAYVIEW COMMERCIAL ASSET-SERIES 2004-3 C		12/26/2018	PAYDOWN		42,485	42,485	33,557	37,728		4,758		4,758		42,485				574	01/25/2035	
07324S-AZ-5	BAYVIEW COMMERCIAL ASSET-SERIES 2004-3 C		12/26/2018	PAYDOWN		106,214	106,214	63,518	81,669		24,545		24,545		106,214				1,230	01/25/2035	
07324S-BQ-4	BAYVIEW COMMERCIAL ASSET-SERIES 2005-2A		12/26/2018	PAYDOWN		132,090	132,090	56,799	75,049		57,042		57,042		132,090				1,428	08/27/2035	
07324S-BS-0	BAYVIEW COMMERCIAL ASSET-SERIES 2005-2A		12/26/2018	PAYDOWN		114,807	114,807	40,182	50,877		63,929		63,929		114,807				1,472	08/25/2035	
07324S-BT-8	BAYVIEW COMMERCIAL ASSET-SERIES 2005-2A		12/26/2018	PAYDOWN		104,370	104,370	31,311	83,626		20,744		20,744		104,370				1,402	08/25/2035	
07324S-BU-5	BAYVIEW COMMERCIAL ASSET-SERIES 2005-2A		12/26/2018	PAYDOWN		39,723	39,723	9,534	19,314		20,409		20,409		39,723				543	08/25/2035	
07324S-CE-0	BAYVIEW COMMERCIAL ASSET-SERIES 2005-3A		12/26/2018	PAYDOWN		63,415	63,415	34,868	43,096		20,319		20,319		63,415				840	11/25/2035	
07324S-CF-7	BAYVIEW COMMERCIAL ASSET-SERIES 2005-3A		12/26/2018	PAYDOWN		126,830	126,830	66,635	84,362		42,467		42,467		126,830				1,522	11/25/2035	
07325B-AE-8	BAYVIEW COMMERCIAL ASSET-SERIES 2006-4A		12/26/2018	PAYDOWN		120,740	120,740	41,052	62,378		58,363		58,363		120,740				1,260	12/25/2036	
07325B-AF-5	BAYVIEW COMMERCIAL ASSET-SERIES 2006-4A		12/26/2018	PAYDOWN		120,371	120,371	18,056	43,797		76,573		76,573		120,371				1,274	12/25/2036	
07325B-AG-3	BAYVIEW COMMERCIAL ASSET-SERIES 2006-4A		12/26/2018	PAYDOWN		86,645	34,661	6,239	7,838		48,228		48,228		85,876			769	769	1,707	12/25/2036
07325M-AA-6	BAYVIEW COMMERCIAL																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
07325V-AG-9	BAYVIEW FINANCIAL ACQUIS-SERIES 2007-A C		12/28/2018	PAYDOWN		148,560	148,560	84,158	93,201		55,359		55,359		148,560				1,679	05/28/2037	
07325V-AB-4	BAYVIEW COMMERCIAL ASSET-SERIES 2007-3 C		12/26/2018	PAYDOWN		241,195	241,195	211,060	230,957		(1,468)		(1,468)		241,195				3,284	07/25/2037	
07383F-4F-2	BEAR STEARNS COMMERCIAL -SERIES 2005-PWR		12/01/2018	PAYDOWN		1,109,572	1,109,572	9,687	55	31,380			31,380		1,109,572				1,339	02/01/2041	
07383F-SR-5	BEAR STEARNS COMMERCIAL -SERIES 2005-T18		12/01/2018	PAYDOWN		9,579	9,579	16,387	2,530		11,596		11,596		9,579				1,207	02/01/2042	
07384M-2X-9	BEAR STEARNS ADJUSTABLE -SERIES 2004-9 C		12/01/2018	PAYDOWN		84,744	84,744	76,473	79,302		5,442		5,442		84,744				1,366	11/01/2042	
07384M-4M-1	BEAR STEARNS ADJUSTABLE -SERIES 2004-10		12/01/2018	PAYDOWN		415,662	415,662	367,027	372,235		43,427		43,427		415,662				6,832	01/01/2035	
07384M-S6-0	BEAR STEARNS ADJUSTABLE -SERIES 2004-5 C		12/01/2018	PAYDOWN		123,970	123,970	104,095	108,892		15,078		15,078		123,970				943	07/01/2034	
07384M-V3-3	BEAR STEARNS ADJUSTABLE -SERIES 2004-4 C		06/01/2018	PAYDOWN		274,394	274,394	11,040	72,284		202,110		202,110		274,394				3,866	06/01/2034	
07384M-W4-0	BEAR STEARNS ADJUSTABLE -SERIES 2004-6 C		12/01/2018	PAYDOWN		12,340	12,340	10,110	10,518		1,822		1,822		12,340				213	09/01/2034	
07384M-WF-5	BEAR STEARNS ADJUSTABLE -SERIES 2003-5 C		12/01/2018	PAYDOWN		189,617	189,617	180,553	186,770		2,847		2,847		189,617				3,979	08/01/2033	
07384Y-CD-6	BEAR STEARNS ASSET BACKE-SERIES 2002-AC1		12/01/2018	PAYDOWN		643,105	643,105	623,474	629,619		13,486		13,486		643,105				23,523	01/01/2032	
07384Y-JQ-0	BEAR STEARNS ASSET BACKE-SERIES 2003-2CL		09/25/2018	PAYDOWN		422,476	422,476	408,333	416,497		5,979		5,979		422,476				5,172	03/25/2043	
07384Y-NJ-1	BEAR STEARNS ASSET BACKE-SERIES 2003-AC6		12/01/2018	PAYDOWN		58,348	58,348	45,760	31,507		26,840		26,840		58,348				1,595	11/01/2033	
07384Y-PP-5	BEAR STEARNS ASSET BACKE-SERIES 2003-AC7		12/25/2018	PAYDOWN		131,445	131,445	271,732	53,175		68,203	9,979	89,068		131,445				7,850	01/25/2034	
073860-AB-4	BEAR STEARNS ASSET BACKE-SERIES 2007-1 C		12/26/2018	PAYDOWN		948,310	948,310	468,830	845,129		103,182		103,182		948,310				9,841	01/25/2037	
07386H-OM-1	BEAR STEARNS ALT-A TRUST-SERIES 2003-3 C		12/01/2018	PAYDOWN		170,734	170,734	42,215	57,596		109,613		109,613		170,734				1,590	10/01/2033	
07386H-OP-4	BEAR STEARNS ALT-A TRUST-SERIES 2003-3 C		11/01/2018	PAYDOWN		372	61,298	(12,579)	1,386		(5,829)	8,418	(14,247)		372				(7)	10/01/2033	
07386H-EN-7	BEAR STEARNS ALT-A TRUST-SERIES 2003-6 C		05/01/2018	PAYDOWN		67,442	67,442	(40,323)	1,234	41,811	(4,507)	41,377	(4,073)		67,442				481	01/01/2034	
07386H-GG-0	BEAR STEARNS ALT-A TRUST-SERIES 2004-3 C		12/26/2018	PAYDOWN		100,595	100,595	93,345	97,886		2,710		2,710		100,595				1,260	04/25/2034	
07386H-HW-4	BEAR STEARNS ALT-A TRUST-SERIES 2004-4 C		03/26/2018	PAYDOWN		(1)	(54)	(1)	(1)		(1)		(1)		(1)				(1)	06/25/2034	
07386H-KS-9	BEAR STEARNS ALT-A TRUST-SERIES 2004-8 C		12/26/2018	PAYDOWN		32,184	32,184	31,814	32,807		(623)		(623)		32,184				383	09/25/2034	
07386H-LU-3	BEAR STEARNS ALT-A TRUST-SERIES 2004-8 C		05/25/2018	PAYDOWN		17,202	41,287	4,609	295		22,828		22,828		17,202				175	09/25/2034	
07386H-MB-4	BEAR STEARNS ALT-A TRUST-SERIES 2004-10		02/26/2018	PAYDOWN		34,313	34,313	27,980	34,313						34,313				111	09/25/2034	
07386H-MP-3	BEAR STEARNS ALT-A TRUST-SERIES 2004-11		12/26/2018	PAYDOWN		125,923	125,923	124,447	126,936		(1,012)		(1,012)		125,923				1,608	11/25/2034	
07386H-NQ-0	BEAR STEARNS ALT-A TRUST-SERIES 2004-12C		12/26/2018	PAYDOWN		127,480	127,480	92,802	117,444		10,037		10,037		127,480				1,585	01/25/2035	
07386H-SP-7	BEAR STEARNS ALT-A TRUST-SERIES 2005-4 C		12/26/2018	PAYDOWN		556,064	556,064	503,966	548,739		7,325		7,325		556,064				5,484	04/25/2035	
073879-SQ-7	BEAR STEARNS ASSET BACKE-SERIES 2005-CLA		01/25/2018	PAYDOWN		2,027,331	2,027,331	1,982,033	2,027,331						2,027,331				2,747	12/25/2035	
073879-GX-0	BEAR STEARNS ASSET BACKE-SERIES 2004-2 C		05/25/2018	PAYDOWN		22,074	22,074	22,208	22,074						22,074				104	08/25/2034	
073879-QF-8	BEAR STEARNS ASSET BACKE-SERIES 2005-AC1		12/25/2018	PAYDOWN		61,413	69,750	28,135	20,838		58,399		58,399		61,413					104	02/25/2035
07387A-FX-8	BEAR STEARNS ADJUSTABLE -SERIES 2005-12		12/01/2018	PAYDOWN		57,603	48,448	29,288	35,379		16,561		16,561		57,603				478	02/01/2036	
07387B-AR-4	BEAR STEARNS COMMERCIAL -SERIES 2005-PWR		12/01/2018	PAYDOWN		32,563	32,563	23,041	9,233	4,286			4,286		32,563				4,289	09/01/2042	
07387B-FW-8	BEAR STEARNS COMMERCIAL -SERIES 2006-T22		02/01/2018	PAYDOWN		1,372,973	1,372,973	1,359,693	1,373,044		(71)		(71)		1,372,973				5,931	04/01/2038	
073882-AC-6	BEAR STEARNS ADJUSTABLE -SERIES 2006-4 C		12/01/2018	PAYDOWN		107,135	91,046	46,057	61,556		38,583		38,583		107,135				793	10/01/2036	
07388E-AA-4	BEAR STEARNS ASSET BACKE-SERIES 2006-SD2		12/26/2018	PAYDOWN		182,139	182,139	106,261	168,106		14,034		14,034		182,139				2,085	06/25/2036	
07388U-AB-6	BEAR STEARNS ASSET BACKE-SERIES 2006-HE6		12/26/2018	PAYDOWN		124,602	124,602	96,616	113,450		11,152		11,152		124,602				1,209	07/25/2036	
07389V-AG-3	BEAR STEARNS COMMERCIAL -SERIES 2007-T26		12/01/2018	PAYDOWN		24,686	24,686	26,649	24,714		(28)		(28)		24,686				871	01/01/2045	
07389P-AY-6	BEAR STEARNS ASSET BACKE-SERIES 2006-AQ1		10/25/2018	PAYDOWN		(4,039)	8,718	795	1,879		(13,388)		(13,388)		(4,039)				(28)	10/25/2036	
073945-AJ-6	BEAR STEARNS COMMERCIAL -SERIES 2007-T28		09/01/2018	PAYDOWN		1,747,043	1,747,043	1,498,348	1,747,043						1,747,043				23,155	09/01/2042	
07400X-AB-4	BEAR STEARNS MORTGAGE FU-SERIES 2006-AC1		12/01/2018	PAYDOWN		(3,894)	(214,278)	(85,027)	(102,597)		(9,565)		(9,565)		(3,894)				(1,732)	08/01/2036	
075887-AT-6	BECTON DICKINSON & CO-SENIOR UNSECURED N		04/15/2018	MATURITY		15,000,000	15,000,000	17,377,440	15,135,222		(135,222)		(135,222)		15,000,000				212,333	04/15/2018	
07820C-BL-8	BELLA VISTA MORTGAGE TRU-SERIES 2005-1 C		12/24/2018	PAYDOWN		155,242	155,242	145,775	152,888		2,354		2,354		155,242				1,797	01/22/2045	
084664-BE-0	BERKSHIRE HATHAWAY FIN-SR UNSECURED		05/15/2018	MATURITY		150,000	150,000	163,016	152,053		(2,053)		(2,053)		150,000				3,015	05/15/2018	
09256B-AB-3	BLACKSTONE HOLDINGS FINA-SENIOR UNSECURE		12/18/2018	TORONTO DOMINION SEC		209,926	200,000	225,680	212,233		(3,548)		(3,548)		208,685		1,241	1,241	11,391	03/15/2021	
09628E-AA-0	BLUE VIRGO-SERIES 15-1A CLASS NOTE		12/15/2018	PAYDOWN		2,320,546	2,320,546	2,310,135	2,314,980		5,565		5,565		2,320,546				35,567	12/15/2022	
10112R-AS-3	BOSTON PROPERTIES LP-SENIOR UNSECURED NO		08/08/2018	CITIGROUP GLOBAL MAR		91,749	90,000	87,728	89,115		148		148		89,263		2,486	2,486	2,733	05/15/2021	
10510K-AC-1	BRAMBLES USA INC-SR UNSECURED		04/17/2018	CITIGROUP GLOBAL MAR		70,291	70,000	69,830	69,858		8		8		69,866		425	425	1,412	10/23/2025	
10620N-AX-6	BRAZOS HIGHER EDUCATION -SER 2006-2 STUD		12/26/2018	PAYDOWN		633,686	633,686	583,387	609,718		23,968		23,968		633,686				12,502	06/25/2026	
11042T-AA-1	BRITISH AIRWAYS 2018-1 C-FIRST LIEN		12/20/2018	SINKING PAYMENT		29,696	29,696	29,695							29,696				432	09/20/2031	
11133T-AB-9	BROADRIDGE FINANCIAL SOL-SENIOR UNSECURE		08/08/2018	MILLENNIUM ADVISORS		30,356	30,000	29,961	29,983		4		4		29,987		369	369	1,116	09/01/2020	
11134L-AG-4	BROADCOM CORP / CAYMAN FI-SENIOR UNSECURE		03/29/2018	EXCHANGE OFFER		21,010,417	21,045,000	21,004,460	21,010,363		53		53		21,010,417				199,343	01/15/2027	
11777L-AB-7	BEAR STEARNS DEUTSCHE BA-SERIES 2005-AFR		12/15/2018	PAYDOWN		154,294	154,294	174,475	161,645		(7,351)		(7,351)		154,294				9,417	09/15/2027	
120568-AT-7	BUNGE LTD FINANCE CORP-SENIOR UNSECURED		10/11/2018	CALL 103.6533005		9,998,397	9,646,000	11,885,890	10,321,400		(357,399)		(357,399)		10,316,397		(318,000)	(318,000)	990,105	06/	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
12479R-AD-9	CAPITAL AUTOMOTIVE REIT-SERIES 17-1A CLA		12/15/2018	PAYDOWN		123,500	123,500	123,464	123,439		.61		.61		123,500				3,477	04/15/2047
12479R-AE-7	CAPITAL AUTOMOTIVE REIT-SERIES 17-1A CLA		12/15/2018	PAYDOWN		95,500	95,500	95,487	95,462		.38		.38		95,500				2,911	04/15/2047
124857-AG-8	CBS CORPORATION-SENIOR UNSECURED NOTE		04/10/2018	VARIOUS		17,173,455	17,250,000	17,129,960	17,194,529		3,581		3,581		17,198,110		(24,655)	(24,655)	153,196	03/01/2022
124857-AJ-2	CBS CORPORATION-SENIOR UNSECURED BOND		01/31/2018	MARKETAXESS FINANCIA		77,302	75,000	73,028	73,193						73,194		4,108	4,108	2,132	07/01/2042
124860-CB-1	CREDIT-BASED ASSET SERVI-SERIES 1999-3 C		11/01/2018	PAYDOWN		10,537	10,537	6,019	6,019		4,518		4,518		10,537				854	02/01/2029
12489W-GJ-7	CREDIT-BASED ASSET SERVICING-SER 2003-CB		12/01/2018	PAYDOWN		202,242	202,242	147,637	176,475		25,767		25,767		202,242				2,714	12/01/2032
12489W-HF-4	CREDIT-BASED ASSET SERVI-SERIES 2003-CB6		12/26/2018	PAYDOWN		8,985	8,985	1,975	3,445		5,541		5,541		8,985				182	12/25/2033
12489W-QE-7	CREDIT-BASED ASSET SERVI-SERIES 2005-CB8		12/01/2018	PAYDOWN		136,338	136,338	87,279	106,913		29,426		29,426		136,338				2,573	12/01/2035
1248EP-AY-9	CCO HLDGS LLC/CAP CORP-SENIOR UNSECURED		08/22/2018	VARIOUS		10,173,812	10,090,000	9,991,723	10,036,868		6,555		6,555		10,043,423		130,389	130,389	337,817	09/30/2022
1248EP-BT-9	CCO HLDGS LLC/CAP CORP-SENIOR UNSECURED		12/18/2018	VARIOUS		6,250,945	6,602,000	6,635,010	6,633,978		(3,557)		(3,557)		6,630,421		(379,476)	(379,476)	382,524	05/01/2027
1248MA-AD-9	CREDIT-BASED ASSET SERVI-SERIES 2007-SP1		12/01/2018	PAYDOWN		487,888	487,888	248,316	401,040		86,848		86,848		487,888				6,407	12/01/2037
1248ME-AA-7	CREDIT-BASED ASSET SERVI-SERIES 2007-CB4		12/26/2018	PAYDOWN		482,738	482,738	438,743	475,373		7,365		7,365		482,738				3,422	04/25/2037
1248ME-AE-9	CREDIT-BASED ASSET SERVI-SERIES 2007-CB4		12/01/2018	PAYDOWN		260,045	260,045	153,656	231,332		28,712		28,712		260,045				1,214	04/01/2037
1248ME-AG-4	CREDIT-BASED ASSET SERVI-SERIES 2007-CB4		12/01/2018	PAYDOWN		108,955	108,955	60,830	94,959		13,996		13,996		108,955				409	04/01/2037
1248MG-AJ-3	CREDIT-BASED ASSET SERVI-SERIES 2007-CB1		12/26/2018	PAYDOWN		7,305	7,305	2,116	2,324		4,982		4,982		7,305				9	01/25/2037
1248MP-AB-0	CREDIT-BASED ASSET SERVI-SERIES 2007-MIX1		06/13/2018	VARIOUS		2,289,666	2,287,131	2,184,841	2,251,440		24,601		24,601		2,276,041		13,625	13,625	59,749	12/01/2036
1248MP-AC-8	CREDIT-BASED ASSET SERVI-SERIES 2007-MIX1		06/13/2018	CREDIT SUISSE SECURI		10,595,000	10,400,000	8,881,455	9,572,043		105,506		105,506		9,677,549		917,451	917,451	322,376	12/01/2036
1248MP-AH-7	CREDIT-BASED ASSET SERVI-SERIES 2007-MIX1		12/01/2018	PAYDOWN		(396,467)	640,373		7,882	688	(469,240)		(468,552)		(396,467)				(607)	12/01/2036
1248RH-AD-9	CREDIT-BASED ASSET SERVI-SERIES 2007-CB6		12/26/2018	PAYDOWN		524,232	524,232	265,773	298,796		225,436		225,436		524,232				4,552	07/25/2037
12498N-AB-9	CREDIT-BASED ASSET SERVI-SERIES 2006-CB2		12/01/2018	PAYDOWN		65,755	65,755	39,386	35,177		30,578		30,578		65,755					12/01/2036
12505F-AA-9	CHM Property Holdings L Senior Secured		12/31/2018	SINKING PAYMENT		1,153,759	1,153,759	1,153,759	1,153,759						1,153,759				62,587	12/31/2031
12513Y-BD-1	CD COMMERCIAL MORTGAGE T-SERIES 2007-CD4		12/01/2018	PAYDOWN				21,013	(168)		63		63						4,378	12/01/2049
12519F-AA-3	CD California Holdings Senior Secured		12/31/2018	SINKING PAYMENT		751,411	751,411	751,411	751,411						751,411				30,582	06/30/2036
12524E-AA-8	CD Wind Holdings, LLC Senior Secured No		12/31/2018	SINKING PAYMENT		291,386	291,386	291,386	291,386						291,386					12/31/2018
12527E-AD-0	CFRE COMMERCIAL MORTGAG-SERIES 2011-C1		12/01/2018	PAYDOWN		691,733	691,733	814,339	735,502		(43,768)		(43,768)		691,733				10,128	04/01/2044
12527G-AB-9	CF INDUSTRIES INC-SENIOR UNSECURED NOTE		06/14/2018	VARIOUS		9,270,313	8,725,000	10,708,126	9,403,414		(127,613)		(127,613)		9,275,802		(5,489)	(5,489)	282,438	05/01/2020
12527G-AC-7	CF INDUSTRIES INC-SENIOR UNSECURED NOTE		06/19/2018	VARIOUS		8,686,729	9,165,000	9,016,860	9,059,530		8,311		8,311		9,067,841		(381,112)	(381,112)	147,998	06/01/2023
12543S-AA-5	COUNTRYWIDE HOME LOANS-SERIES 2006-R2 CL		12/25/2018	PAYDOWN		525,889	525,889	499,611	499,611		26,278		26,278		525,889				6,040	07/25/2036
12543D-AU-4	CHS/COMMUNITY HEALTH SYS-FIRST LIEN		06/11/2018	VARIOUS		7,346,440	7,788,000	7,654,391	7,676,396		12,367		12,367		7,688,762		(342,322)	(342,322)	175,847	08/01/2021
12543D-AY-6	CHS/COMMUNITY HEALTH SYS-SECURED		06/05/2018	DEUTSCHE BANK SECURI		2,555,050	2,740,000	2,740,000	2,740,000						2,740,000		(184,950)	(184,950)	74,208	03/31/2023
125581-GO-5	CIT Group Inc-SENIOR UNSECURED NOTE		06/12/2018	CITIGROUP GLOBAL MAR		4,198,320	4,116,000	4,116,000	4,116,000						4,116,000		82,320	82,320	93,182	08/15/2022
12558M-BK-7	CIT GROUP HOME EQUITY LO-SERIES 2003-1 C		12/01/2018	PAYDOWN		2,468,563	2,468,563	2,136,601	2,408,533		60,030		60,030		2,468,563				70,762	07/01/2034
125634-AN-5	CLI FUNDING LLC-SERIES 2014-1A CLASS A		12/18/2018	PAYDOWN		948,599	948,599	904,097	918,999		29,600		29,600		948,599				17,274	06/18/2029
125634-AQ-8	CLI FUNDING LLC-SERIES 2014-2A CLASS A		12/18/2018	PAYDOWN		352,173	352,173	350,212	351,096		1,078		1,078		352,173				6,347	10/18/2029
12563L-AA-5	CLI FUNDING LLC-SERIES 16-1A CLASS A		12/18/2018	PAYDOWN		1,494,456	1,494,456	1,494,303	1,494,352		104		104		1,494,456				33,584	02/18/2041
12563L-AE-7	CLI FUNDING LLC-SERIES 17-1A CLASS A		12/18/2018	PAYDOWN		3,279,409	3,279,409	3,279,409	3,276,611		2,798		2,798		3,279,409				77,183	05/18/2042
12621E-AK-9	CNO Financial Group Inc-SR UNSECURED		12/14/2018	VARIOUS		2,854,860	2,882,000	2,871,193	2,872,643		783		783		2,873,426		(18,566)	(18,566)	120,305	05/30/2025
12623E-AF-8	CNH CAPITAL LLC-NOTE		04/15/2018	MATURITY		95,000	95,000	95,600	95,040		(40)		(40)		95,000				995	04/15/2018
12624B-AC-0	COMM MORTGAGE TRUST-SERIES 2012-CR1 CLAS		05/01/2018	PAYDOWN		171,973	171,973	175,409	173,740		(1,767)		(1,767)		171,973				486	05/01/2045
12626P-AJ-2	CRH AMERICA INC-NOTE		04/27/2018	CALL 101.2423026		86,056	85,000	106,081	87,228		(1,333)		(1,333)		86,950		(894)	(894)	3,281	07/15/2018
12635J-AB-2	CPS AUTO TRUST-SERIES 15-C CLASS B		09/15/2018	PAYDOWN		7,120,443	7,120,443	7,119,147	7,120,340		103		103		7,120,443				59,971	02/18/2020
12649F-AA-6	CTL 2009-14 Trust Ser 2009 Lease		12/15/2018	SINKING PAYMENT		718,052	718,052	718,052	718,052						718,052				23,774	07/15/2030
12656F-AA-0	CSLB Holdings, Inc. Gtd Senior Note		11/08/2018	MATURITY		32,000,000	32,000,000	34,720,640	32,413,991		(413,991)		(413,991)		32,000,000				911,449	11/08/2018
126634-AC-8	CVR REF LLC/COFF FIN INC-SECURED NOTE		12/14/2018	VARIOUS		4,054,387	4,015,000	3,916,171	3,954,446		9,773		9,773		3,964,219		90,168	90,168	270,781	11/01/2022
126650-BC-3	CVS PASS-THROUGH TRUST-FIRST LIEN		12/10/2018	SINKING PAYMENT		5,410	5,410	6,120	6,017		(63)		(63)		5,410				174	01/10/2028
126650-BP-4	CVS PASS-THROUGH TRUST-SECURED NOTE		12/10/2018	SINKING PAYMENT		1,050,059	1,050,059	1,318,098	1,194,246		(13,550)		(13,550)		1,050,059				34,647	12/10/2028
126650-BO-2	CVS HEALTH CORP PASS THRU CTF 30/360		12/10/2018	SINKING PAYMENT		25,659	25,659	31,425	28,267		(336)		(336)		25,659				952	01/10/2030
126650-BS-8	CVS PASS-THROUGH TRUST-NOTE		12/10/2018	SINKING PAYMENT		298,313	298,313	301,868	301,524		(200)		(200)		298,313				10,183	01/10/2032
126650-BV-1	CVS Pass-Through Trust-FIRST LIEN		01/10/2018	CALL 100		11,513	11,513	13,297	13,226		1		1		13,227		(1,714)	(1,714)	362	01/10/2033
126650-BY-5	CVS PASS-THROUGH TRUST-SENIOR SECURED NO		12/10/2018	SINKING PAYMENT		36,679	36,679	41,025	40,586		(206)		(206)		36,679				1,188	01/10/2034
12665U-AA-2	CVS PASS-THROUGH TRUST-1ST LIEN		10/10/2018	SINKING PAYMENT		1,590	1,590	1,642	1,636		(3)		(3)		1,590				51	01/10/2036
126670-JD-1	COUNTRYWIDE ASSET-BACKED-SERIES 2005-1M3		12/26/2018	PAYDOWN		99,257	110,359	72,821	88,490		17,475									

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
126671-UJ-3	COUNTRYWIDE ASSET-BACKED-SERIES 2002-6 C		12/26/2018	PAYDOWN		10,615	10,615	10,609	10,615						10,615				209	05/25/2033
126671-UJ-8	COUNTRYWIDE ASSET-BACKED-SERIES 2003-BC1		12/26/2018	PAYDOWN		3,929	3,929	3,811	3,861		68		68		3,929				50	03/25/2033
12667F-U2-2	COUNTRYWIDE ALTERNATIVE -SERIES 2005-2 C		12/01/2018	PAYDOWN		1,574	490,267		38,047		(36,473)		(36,473)		1,574				5,476	03/01/2035
12667F-U2-9	COUNTRYWIDE ALTERNATIVE -SERIES 2005-J1C		12/01/2018	PAYDOWN		3,446	3,446	3,011	2,949		497		497		3,446				148	08/01/2032
12667F-VN-2	COUNTRYWIDE ALTERNATIVE -SERIES 2004-24C		12/01/2018	PAYDOWN		33,538	33,538	27,034	27,353		6,184		6,184		33,538				1,054	11/01/2034
12667F-YL-3	COUNTRYWIDE ALTERNATIVE -SERIES 2004-28C		12/01/2018	PAYDOWN		75,326	75,326	61,055	60,913		14,413		14,413		75,326				2,718	01/01/2035
12667F-YS-8	COUNTRYWIDE ALTERNATIVE -SERIES 2004-28C		12/01/2018	PAYDOWN		22,492	22,492	17,198	17,301		5,191		5,191		22,492				800	01/01/2035
12667G-CB-7	COUNTRYWIDE ALTERNATIVE -SERIES 2005-14		12/26/2018	PAYDOWN		73,366	73,366	50,162	52,331		21,035		21,035		73,366				894	05/25/2035
12667G-EC-3	COUNTRYWIDE ALTERNATIVE -SERIES 2005-J3C		12/01/2018	PAYDOWN		795	795	530	592		203		203		795				16	09/01/2034
12667G-KG-7	COUNTRYWIDE ALTERNATIVE -SERIES 2005-21C		12/01/2018	PAYDOWN		27,522	31,894	21,900	25,189		5,155		5,155		27,522				946	06/01/2035
12667G-YX-5	COUNTRYWIDE ALTERNATIVE -SERIES 2005-31		12/26/2018	PAYDOWN		123,777	123,777	49,936	58,217		65,560		65,560		123,777				1,139	08/25/2035
12667N-AC-2	COUNTRYWIDE ASSET-BACKED-SERIES 2006-BC4		12/26/2018	PAYDOWN		22,276	22,276	17,162	21,645		631		631		22,276				292	11/25/2036
12668A-BP-9	COUNTRYWIDE ALTERNATIVE -SERIES 2005-J10		12/01/2018	PAYDOWN		67,430	83,786	60,588	61,249		17,311		17,311		67,430				2,192	10/01/2035
12668A-CY-9	COUNTRYWIDE ALTERNATIVE -SERIES 2005-51C		12/01/2018	PAYDOWN		84,655	84,655	45,295	51,242		33,414		33,414		84,655				1,274	11/01/2035
12668A-CZ-6	COUNTRYWIDE ALTERNATIVE -SERIES 2005-51		12/20/2018	PAYDOWN		283,868	283,868	204,612	205,149		78,720		78,720		283,868				2,528	11/20/2035
12668A-GH-9	COUNTRYWIDE ALTERNATIVE -SERIES 2005-56		11/26/2018	PAYDOWN		243,325	243,325	109,467	132,745		110,580		110,580		243,325				2,701	11/25/2035
12668A-VP-7	COUNTRYWIDE ALTERNATIVE -SERIES 2005-61		12/26/2018	PAYDOWN		267,600	267,600	245,175	260,753		6,847		6,847		267,600				2,962	12/25/2035
12668B-DC-4	COUNTRYWIDE ALTERNATIVE -SERIES 2005-76		12/01/2018	PAYDOWN		402,344	402,344	313,940	347,265		55,079		55,079		402,344				4,436	01/01/2036
126694-YM-4	COUNTRYWIDE HOME LOANS-SERIES 2006-3 CLA		11/26/2018	PAYDOWN		193,821	193,821	160,096	167,663		26,159		26,159		193,821				2,793	03/25/2036
12669B-3B-6	COUNTRYWIDE HOME LOANS-SERIES 2001-HYB1		12/01/2018	PAYDOWN		1,504	1,504	785	1,116		388		388		1,504				24	07/01/2031
12669E-6K-7	COUNTRYWIDE HOME LOANS-SERIES 2003-58 CL		12/01/2018	PAYDOWN		170,098	170,098	42,900	53,604		116,494		116,494		170,098				1,628	02/01/2034
12669E-H3-3	COUNTRYWIDE HOME LOANS-SERIES 2003-42 CL		12/01/2018	PAYDOWN		31,839	31,839	23,514	27,767		4,071		4,071		31,839				591	09/01/2033
12669F-KR-3	COUNTRYWIDE HOME LOANS-SERIES 2004-2 CLA		12/01/2018	PAYDOWN		1,119	1,119	843	923		196		196		1,119				31	02/01/2034
12669F-VD-2	COUNTRYWIDE HOME LOANS-SERIES 2004-6 CLA		12/01/2018	PAYDOWN		28,328	28,328	23,043	25,470		2,858		2,858		28,328				370	05/01/2034
12669F-XR-9	COUNTRYWIDE HOME LOANS-SERIES 2004-7 CLA		12/25/2018	PAYDOWN		9,262	9,262	6,842	7,472		1,790		1,790		9,262				27	05/25/2034
12669G-5U-1	COUNTRYWIDE HOME LOANS-SERIES 2005-17 CL		12/01/2018	PAYDOWN		32,737	32,737	26,467	28,010		4,727		4,727		32,737				988	09/01/2035
12669G-LO-2	COUNTRYWIDE HOME LOANS-SERIES 2005-HYB1		12/01/2018	PAYDOWN		58,309	58,309	43,193	44,451		13,857		13,857		58,309				810	03/01/2035
12669G-MS-7	COUNTRYWIDE HOME LOANS-SERIES 2005-4 CLA		06/25/2018	PAYDOWN		26,408	26,408	18,499	21,923		4,485		4,485		26,408				123	02/25/2035
12669G-RM-5	COUNTRYWIDE HOME LOANS-SERIES 2005-1 CLA		12/26/2018	PAYDOWN		238,248	238,248	150,263	149,262		88,986		88,986		238,248				3,247	03/25/2035
12669G-TE-1	COUNTRYWIDE HOME LOANS-SERIES 2005-6 CLA		12/01/2018	PAYDOWN		3,100	3,100	2,322	2,539		560		560		3,100				170	04/01/2035
12669G-TV-3	COUNTRYWIDE HOME LOANS-SERIES 2005-3 CLA		11/26/2018	PAYDOWN		7,890	7,890	5,748	6,141		1,750		1,750		7,890				99	04/25/2035
12669G-UR-0	COUNTRYWIDE HOME LOANS-SERIES 2005-11 CL		12/25/2018	PAYDOWN		252,497	252,497	177,632	183,898		68,598		68,598		252,497				2,329	04/25/2035
12669G-IN-7	COUNTRYWIDE HOME LOANS-SERIES 2005-R1 CL		12/25/2018	PAYDOWN		341,473	343,737	281,865	313,165		27,875		27,875		341,473				2,474	03/25/2035
12669G-XI-6	COUNTRYWIDE HOME LOANS-SERIES 2005-12 CL		12/01/2018	PAYDOWN		113,014	113,014	32,178	38,872		74,142		74,142		113,014				2,742	05/01/2035
12669U-BB-5	COUNTRYWIDE HOME LOANS-SERIES 2002-R3 CL		12/01/2018	PAYDOWN		752,945	140,675	23,844		1	1,401,307		(151,450)		1,249,857					08/01/2043
12673P-AC-9	CA INC-NOTE		12/11/2018	MORGAN		11,298,021	11,145,000	12,029,467	11,358,614		(103,662)		(103,662)		11,254,952		43,069	43,069	619,012	12/01/2019
12673P-AD-7	CA Inc-SENIOR UNSECURED NOTE		08/15/2018	MATURITY		35,000	35,000	34,934	34,991		9		9		35,000				626	08/15/2018
12674E-AA-6	CVS Lease Backed Trust 2 Pass Thru Ctf		12/10/2018	SINKING PAYMENT		522,549	522,549	522,549	522,549						522,549				9,831	08/10/2035
12684#-AA-2	CSCC LLC Senior Secured		12/31/2018	SINKING PAYMENT		2,513,983	2,513,983	2,513,983	2,513,983						2,513,983				77,482	06/30/2032
12695#-AA-3	CVS Caremark Corporation Pass-Through Ce		12/10/2018	SINKING PAYMENT		1,127,919	1,127,919	1,127,919	1,127,919						1,127,919				20,979	10/10/2038
12707E-AA-7	CVS 2018 - 08 Trust (CVS Senior Secured		12/01/2018	SINKING PAYMENT		69,225	69,225	69,225	69,225						69,225					07/15/2041
128195-AP-9	CALATLANTIC GROUP INC-SENIOR UNSECURED		02/22/2018	EXCHANGE OFFER		1,812,000	1,812,000	1,812,000	1,812,000						1,812,000				12,835	06/15/2027
13342B-AC-9	CAMERON INTL CORP-SENIOR UNSECURED NOTE		07/15/2018	MATURITY		9,075,000	9,075,000	10,644,274	9,901,823		(826,823)		(826,823)		9,075,000				311,764	07/15/2018
13342B-AF-2	Cameron International Co-SENIOR UNSECURE		08/09/2018	WELLS FARGO		5,658	5,000	5,627	5,598		(9)		(9)		5,589				208	06/01/2041
14040H-BP-9	CAPITAL ONE FINANCIAL CO-SENIOR UNSECURE		08/03/2018	MILLENNIUM ADVISORS		113,637	115,000	114,818	114,854		35		35		114,889		(1,252)	(1,252)	2,116	05/12/2020
14155#-AB-6	Cardinals Ballpark LLC Senior Secured		09/30/2018	SINKING PAYMENT		738,979	738,979	738,979	738,979						738,979				32,130	09/30/2027
14161H-AG-3	Cardtronics Inc-SENIOR UNSECURED NOTE		08/16/2018	VARIOUS		6,802,515	7,075,000	6,878,984	6,982,503		19,627		19,627		7,002,129		(199,614)	(199,614)	44,489	12/01/2020
141781-JF-2	Cargill Inc. Note		08/20/2018	VARIOUS		5,718,952	5,718,952	7,179,941	5,886,574		(167,623)		(167,623)		5,718,952				305,625	08/20/2018
144531-CL-2	CARRINGTON MORTGAGE LOAN-SERIES 2005-OPT		12/26/2018	PAYDOWN		584,251	584,251	457,970	583,519		732		732		584,251				8,129	05/25/2035
144531-EE-6	CARRINGTON MORTGAGE LOAN-SERIES 2005-FR1		12/26/2018	PAYDOWN		440,789	440,789	442,014	440,789						440,789				5,055	12/25/2035
144531-FL-9	CARRINGTON MORTGAGE LOAN-SERIES 2006-OPT		12/26/2018	PAYDOWN		440,238	440,238	429,427	440,238						440,238				4,757	02/25/2036
14453M-AB-0	CARRINGTON MORTGAGE LOAN-SERIES 2006-NC4		02/26/2018	PAYDOWN		216,450	216,450	179,476	216,450						216,450				356	10/25/2036
14454A-AB-5	CARRINGTON MORTGAGE LOAN-SERIES 2006-FRE		12/26/2018	PAYDOWN		168,727	235,187	132,870	138,618		67,055		67,055		168,727				439	10/25/2036
14856C-AB-5	Castlelake Aircraft Secu-SERIES 2018-1 C		12/15/2018	PAYDOWN		440,00														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
14987K-AA-1	CD&R WATERWORKS MERGER S-SENIOR UNSECURE		06/15/2018	VARIOUS		5,455,835	5,698,000	5,698,000	5,698,000						5,698,000		(242,165)	(242,165)	162,158	08/15/2025
15005F-AA-7	CED Upton County Solar, Senior Secured		12/31/2018	SINKING PAYMENT		674,402	674,402	674,402	674,402						674,402				38,764	06/30/2042
15080B-AE-6	CEDC FINANCE CORP INTERM-SECURED		06/26/2018	DIRECT		774,200	980,000	950,600	951,492		2,143		2,143		953,634		(179,434)	(179,434)	47,639	12/31/2022
152314-FZ-8	CENTEX HOME EQUITY-SERIES 2002-D CLASS A		04/01/2018	PAYDOWN		176,044	176,044	161,961	175,053		991		991		176,044				2,151	11/01/2028
152314-GZ-7	CENTEX HOME EQUITY-SERIES 2003-B CLASS A		04/01/2018	PAYDOWN		76,771	76,771	36,082	41,142		35,630		35,630		76,771				697	02/01/2032
156504-AF-9	CENTURY COMMUNITIES-SENIOR UNSECURED		01/03/2018	EXCHANGE OFFER		1,182,544	1,184,000	1,182,520	1,182,539		6		6		1,182,544				386	07/15/2025
15723F-AA-8	CGA Lease-Backed Pass Th Pass Thru Ctf		12/10/2018	SINKING PAYMENT		304,431	304,431	304,431	304,431						304,431				7,444	03/10/2045
161505-CY-6	CHASE COMMERCIAL MORTGAG-SERIES 1998-2 C		05/01/2018	PAYDOWN				1,467	(42)										1,581	11/01/2030
161542-DN-2	CHASE FUNDING LOAN ACQU-SERIES 2004-AQ1		12/26/2018	PAYDOWN		163,245	163,245	149,161	161,932		1,313		1,313		163,245				2,261	05/25/2034
161546-DQ-6	CHASE FUNDING MORTGAGE L-SERIES 2002-4 C		01/25/2018	PAYDOWN		1,231	1,231	1,231	1,231						1,231				2	10/25/2032
16412X-AE-5	CHENIERE CORP CHRISTI HD-SECURED		01/01/2018	EXCHANGE OFFER		1,215,000	1,215,000	1,215,000	1,215,000						1,215,000				(692)	06/30/2027
165167-CQ-8	CHESAPEAKE ENERGY CORP-2ND LIEN		11/28/2018	VARIOUS		2,816,673	2,702,000	1,195,503	1,410,173		137,500		137,500		1,662,346		1,154,327	1,154,327	311,018	12/15/2022
166764-AE-0	CHEVRON CORP-SR UNSECURED		06/24/2018	MATURITY		350,000	350,000	349,160	349,835		165		165		350,000				2,890	06/24/2018
166764-AV-2	CHEVRON CORP-SR UNSECURED		03/02/2018	MATURITY		550,000	550,000	548,310	549,865		135		135		550,000				1,272	03/02/2018
16724*-AB-7	CHICAGO BASEBALL HOLDING SENIOR SECURED		01/15/2018	CA CASH CLOSE		4,678,961	4,300,000	4,300,000	4,300,000						4,678,961				390,700	01/15/2020
16724*-AC-5	CHICAGO BASEBALL HOLDING SENIOR SECURED		01/15/2018	CA CASH CLOSE		12,202,179	10,450,000	10,450,000	10,450,000						12,202,179				1,781,317	01/15/2022
16725*-AA-8	Chicago Bridge & Iron Co Senior Note Ser		05/10/2018	CA CASH_CLOSE		5,556,010	5,501,000	5,501,000	5,060,920	440,080			440,080		5,556,010				866,604	08/31/2018
16725*-AB-6	Chicago Bridge & Iron Co Senior Note Ser		05/10/2018	CA CASH_CLOSE		6,055,159	5,990,000	5,990,000	5,990,000						6,055,159				227,643	12/27/2019
16725*-AC-4	Chicago Bridge & Iron Co Senior Note Ser		05/10/2018	CA CASH_CLOSE		6,472,665	6,235,000	6,235,000	6,235,000						6,472,665				419,753	12/27/2022
17025R-AA-3	COUNTRYWIDE HOME LOANS-SERIES 2007-HY4 C		12/01/2018	PAYDOWN		310,233	313,664	196,888	210,520		82,722		82,722		310,233				4,934	09/01/2047
171265-AB-0	Chugach Electric Associa First Mortgage		03/15/2018	SINKING PAYMENT		933,333	933,333	933,333	933,333						933,333				22,167	03/15/2041
171265-B*-1	Chugach Electric Associa First Mtg Bond		03/15/2018	SINKING PAYMENT		683,200	683,200	683,200	683,200						683,200				15,065	03/15/2042
171340-AN-2	Church & Dwight Co Inc-SENIOR UNSECURED		04/16/2018	WELLS FARGO		61,032	65,000	64,933	64,935		1		1		64,936		(3,904)	(3,904)	1,496	08/01/2027
17275R-AU-6	CISCO SYSTEMS INC-SR UNSECURED		06/15/2018	MATURITY		200,000	200,000	200,418	200,078		(78)		(78)		200,000				1,503	06/15/2018
17284L-AB-0	CIT EDUCATION LOAN TRUST-SERIES 2007-1 C		09/25/2018	PAYDOWN		114,665	114,665	94,885	97,507		17,158		17,158		114,665				1,206	06/25/2042
172958-2F-6	CITIFUNDS INSTL TR/LEGG MASON PTNRS LIQU		12/01/2018	PAYDOWN		355,224	355,224	355,224	355,224						355,224				1,206	09/16/2019
172967-FF-3	CITIGROUP INC-SR UNSECURED		04/16/2018	GOLDMAN		168,110	160,000	173,961	165,553		(611)		(611)		164,942		3,168	3,168	2,556	08/09/2020
172967-GS-4	CITIGROUP INC-SR UNSECURED		05/01/2018	MATURITY		200,000	200,000	198,478	199,779		221		221		200,000				1,167	05/01/2018
172967-HC-8	CITIGROUP INC-SR UNSECURED		09/26/2018	MATURITY		1,260,000	1,260,000	1,276,236	1,264,377		(4,377)		(4,377)		1,260,000				23,188	09/26/2018
172967-JH-5	CITIGROUP INC-SR UNSECURED		02/05/2018	MATURITY		150,000	150,000	149,056	149,956		44		44		150,000				255	02/05/2018
172967-JN-2	CITIGROUP INC-SR UNSECURED		04/27/2018	MATURITY		200,000	200,000	198,276	199,757		243		243		200,000				1,096	04/27/2018
173076-OP-7	CITIGROUP MORTGAGE LOAN -SERIES 2004-HE1		09/25/2018	PAYDOWN		31,631	31,631	31,877	31,651		(20)		(20)		31,631				318	09/25/2033
173076-H7-6	CITIGROUP MORTGAGE LOAN -SERIES 2005-8 C		12/01/2018	PAYDOWN		301,944	142,300	14,759	15		36,247		36,247		301,944				3,083	09/01/2035
173076-KY-3	CITIGROUP MORTGAGE LOAN -SERIES 2004-UST		07/01/2018	PAYDOWN		3,392	3,392	3,263	3,384		8		8		3,392				24	08/01/2034
173076-KZ-0	CITIGROUP MORTGAGE LOAN -SERIES 2004-UST		12/01/2018	PAYDOWN		1,803	1,803	1,782	1,797		6		6		1,803				53	08/01/2034
173076-PE-2	CITIGROUP MORTGAGE LOAN -SERIES 2005-WF1		12/01/2018	PAYDOWN		2,463,626	2,463,626	1,617,048	2,056,780		406,845		406,845		2,463,626				48,489	11/01/2034
173076-RU-4	CITIGROUP MORTGAGE LOAN -SERIES 2005-2 C		12/01/2018	PAYDOWN		138,690	138,690	17,541	24,672		112,787		112,787		138,690				3,715	05/01/2035
17309A-AH-2	CITIMORTGAGE ALTERNATIVE-SERIES 2006-A1		10/01/2018	PAYDOWN		19,338	19,338	14,537	19,006		332		332		19,338				336	03/01/2021
17309F-AE-8	CITIGROUP MORTGAGE LOAN -SERIES 2006-ARS		12/01/2018	PAYDOWN		82,759	82,601	47,395	62,150		13,541		13,541		82,759				1,816	07/01/2036
17309M-AB-9	CITIGROUP MORTGAGE LOAN -SERIES 2006-WFH		12/26/2018	PAYDOWN		949,427	949,427	716,121	928,423		21,004		21,004		949,427				9,237	08/25/2036
17311Y-AC-7	CREDIT-BASED ASSET SERVI-SERIES 2007-CB3		12/01/2018	PAYDOWN		298,350	298,350	125,648	106,262		210,527		210,527		298,350				9,024	03/01/2037
17313K-AH-4	CREDIT-BASED ASSET SERVI-SERIES 2007-CB3		08/01/2018	PAYDOWN		990,399	990,399	690,415	990,399						990,399				13,276	12/01/2049
18051*-AA-8	Clarion Brands LLC Senior Sub Note		09/21/2018	PREPAYMENTS W/O PENA		5,277,344	5,277,344	5,277,402	5,277,430		(24)		(24)		5,277,406		(62)	(62)	478,083	04/01/2021
18051*-AB-6	Clarion Brands LLC Senior Sub Note		09/21/2018	PREPAYMENTS W/O PENA		6,662,170	6,662,170	6,661,785	6,661,821		(168)		(168)		6,661,652		518	518	670,703	04/01/2021
18451Q-AM-0	CLEAR CHANNEL WORLDWIDE-SENIOR UNSECURED		08/27/2018	VARIOUS		5,314,338	5,200,000	5,200,000	5,200,000						5,200,000		114,338	114,338	218,486	11/15/2022
18905A-AT-6	CLOROX CO/THE-SENIOR UNSECURED		08/03/2018	MILLENNIUM ADVISORS		198,114	200,000	208,322	206,197		(797)		(797)		205,401		(7,287)	(7,287)	5,456	09/15/2022
18974B-AA-7	CITIMORTGAGE ALTERNATIVE-SERIES 2006-A5		12/25/2018	PAYDOWN		54,657	68,354	47,586	51,978		11,656		11,656		54,657				503	10/25/2036
18974B-AN-9	CITIMORTGAGE ALTERNATIVE-SERIES 2006-A5		12/25/2018	PAYDOWN		28,231	35,904	23,634	26,112		6,619		6,619		28,231				323	10/25/2036
191216-AY-6	COCA-COLA CO/THE-SR UNSECURED		03/14/2018	MATURITY		150,000	150,000	151,065	150,097		(97)		(97)		150,000				502	03/14/2018
191216-BA-7	COCA-COLA CO/THE-SR UNSECURED		04/01/2018	MATURITY		400,000	400,000	398,715	399,855		145		145		400,000				1,150	04/01/2018
191216-BF-6	COCA-COLA CO/THE-SR UNSECURED		11/01/2018	MATURITY		200,000	200,000	201,693	200,499		(499)		(499)		200,000				2,750	11/01/2018
19122T-AB-5	Coca-Cola Enterprises In-SENIOR UNSECURE		04/16/2018	EXCHANGE OFFER		3,692,650	3,500,000	3,984,698	3,709,813		(17,163)		(17,163)		3,692,650				69,125	09/01/2021
193906-AD-6	COLLEGE & UNIVERSITY FAC-SERIES 2 CLASS		06/01/2018	PAYDOWN		90,917	90,917	51,323	90,323		594		594		90,917				1,515	06/01/2018
19390N-AF																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
194266-AE-2	COLLEGE LOAN CORPORATION-SERIES 2005-2 C		10/15/2018	PAYDOWN		604,255	604,255	526,079	543,455		60,800		60,800		604,255				8,391	01/15/2037	
19458L-BD-1	COLLEGIATE FUNDING SERVI-SERIES 2005-A C		12/28/2018	PAYDOWN		199,901	199,901	183,222	187,492		12,410		12,410		199,901				1,270	12/28/2037	
19458L-BH-2	COLLEGIATE FUNDING SERVI-SERIES 2005-B C		12/28/2018	PAYDOWN		596,589	596,589	561,540	580,388		16,201		16,201		596,589				5,426	03/28/2035	
19624L-AA-7	COLONY AMERICAN HOMES-SERIES 2014-1A CLA		02/17/2018	PAYDOWN		8,095,917	8,095,917	8,076,593	8,095,917						8,095,917				9,532	05/17/2031	
20162R-AB-8	Marine Corps Community S-UNSECURED BOND		12/01/2018	SINKING PAYMENT		1,690,288	1,690,288	1,913,148	1,761,681		(28,459)		(28,459)		1,690,288				109,285	06/01/2022	
20267V-AC-1	COMMONBOND STUDENT LOAN -SERIES 17-AGS C		11/25/2018	PAYDOWN		389,817	389,817	389,797	391,382		(1,564)		(1,564)		389,817				12,443	05/25/2041	
202795-HU-7	COMMONWEALTH EDISON CO-SENIOR SECURED BO		03/15/2018	MATURITY		5,250,000	5,250,000	6,337,457	5,295,202		(45,202)		(45,202)		5,250,000				62,592	03/15/2018	
204012-AE-8	COMMUNITY PROGRAM LOAN T-SERIES 1987-A C		10/01/2018	PAYDOWN		1,967,897	1,967,897	1,161,193	1,851,008		116,889		116,889		1,967,897				60,315	04/01/2029	
20605P-AH-4	CONCHO RESOURCES INC-SENIOR UNSECURED		04/24/2018	SG COWEN SECURITIES		292,007	305,000	305,614	305,587		(9)		(9)		305,578				3,654	10/01/2027	
207597-ED-3	CONNECTICUT LIGHT & PWR-FIRST MORTGAGE B		05/01/2018	MATURITY		4,700,000	4,700,000	4,688,579	4,699,082		918		918		4,700,000				88,517	05/01/2018	
20826F-AA-4	CONOCOPHILLIPS COMPANY-SR UNSECURED		06/11/2018	TENDERED		437,571	450,000	403,401	415,579		2,814		2,814		418,392				4,800	12/15/2022	
20826F-AD-8	CONOCOPHILLIPS COMPANY-SENIOR UNSECURED		06/11/2018	TENDERED		120,268	120,000	117,125	117,625		137		137		117,763				1,787	11/15/2024	
20826F-AE-6	CONOCOPHILLIPS COMPANY-SR UNSECURED		01/22/2018	CALL 102.403		307,209	300,000	292,601	294,978		69		69		302,256				7,712	11/15/2021	
20826F-AF-3	CONOCOPHILLIPS COMPANY-SR UNSECURED		06/15/2018	TENDERED		551,036	530,000	566,114	562,466		(663)		(663)		561,804				12,830	11/15/2034	
20826F-AJ-5	CONOCOPHILLIPS COMPANY-SR UNSECURED		01/22/2018	CALL 100.18274		250,457	250,000	241,494	245,269		111		111		245,838				778	05/15/2020	
20826F-AS-5	CONOCOPHILLIPS CO-SENIOR UNSECURED		01/22/2018	CALL 104.867997		2,097,360	2,000,000	2,133,360	2,123,172		(2,219)		(2,219)		2,218,312				102,260	03/15/2021	
209111-ET-6	Consolidated Edison Co o-SENIOR UNSECURE		04/01/2018	MATURITY		2,700,000	2,700,000	3,258,853	2,728,576		(28,576)		(28,576)		2,700,000				39,488	04/01/2018	
210518-CS-3	CONSUMERS ENERGY CO-SECURED		11/29/2018	CALL 102.781458		205,563	200,000	231,181	214,583		(7,724)		(7,724)		212,422				17,772	09/15/2019	
21075W-DE-2	CONTIMORTGAGE HOME EQUIT-SERIES 1996-3 C		12/17/2018	PAYDOWN		2,443	2,443	1,940	1,940		503		503		2,443				35	09/15/2027	
210795-PZ-7	CONTL AIRLINES 2012-1 A-FIRST LIEN		10/11/2018	SINKING PAYMENT		12,305	12,305	12,751	12,658		(41)		(41)		12,305				383	04/11/2024	
210795-QB-9	CONTL AIRLINES 2012-2 A-FIRST LIEN		10/29/2018	SINKING PAYMENT		9,943	9,943	10,392	10,313		(43)		(43)		9,943				297	10/29/2024	
210795-QC-7	CONTL AIRLINES 2012-2 B-2ND LIEN		10/29/2018	SINKING PAYMENT		77,643	77,643	81,445	80,737		(566)		(566)		77,643				2,135	10/29/2020	
21079R-AA-0	CONTL AIRLINES 2007-1-2ND LIEN		10/19/2018	SINKING PAYMENT		539,655	539,655	569,066	560,503		(6,129)		(6,129)		539,655				16,564	04/19/2022	
212015-AH-4	CONTINENTAL RESOURCES IN-SENIOR UNSECURE		08/16/2018	CALL 101.667		2,168,556	2,132,999	2,186,375	2,150,284		(4,676)		(4,676)		2,181,165				133,616	09/15/2022	
212015-AR-2	Continental Resources In-SENIOR UNSECURE		05/29/2018	EXCHANGE OFFER		8,499,000	8,499,000	8,499,000	8,499,000						8,499,000				161,176	01/15/2028	
216831-AE-7	COOPER TIRE & RUBBER CO-NOTE		06/11/2018	JP MORGAN SECURITIES		11,366,570	10,774,000	11,111,245	10,866,237		(19,648)		(19,648)		10,846,588				387,864	12/15/2019	
21775F-AA-3	CORA Health Services, In Senior Sub Note		05/02/2018	PREPAYMENTS W/O PENA		3,878,217	3,878,217	3,879,848	3,879,770		(681)		(681)		3,879,089				166,729	06/30/2023	
22100F-AA-1	Corvias Campus Living LL Senior Secured		07/01/2018	SINKING PAYMENT		49,841	49,841	49,841	49,841						49,841				1,920	07/01/2050	
223611-AA-1	Cowboys Stadium LP Senior Secured		09/30/2018	SINKING PAYMENT		1,814,902	1,814,902	1,814,902	1,814,902						1,814,902				53,942	03/31/2034	
223611-AH-3	Cowboys Stadium LP Senior Secured		09/30/2018	SINKING PAYMENT		1,791,669	1,791,669	1,791,669	1,791,669						1,791,669				46,627	03/31/2034	
224399-AS-4	Crane Co-SENIOR UNSECURED NOTE		03/07/2018	CALL 100.3711051		6,499,029	6,475,000	6,474,094	6,474,769		(67)		(67)		6,498,731		298	298	56,674	12/15/2018	
22540V-3F-7	CREDIT SUISSE FIRST BOST-SERIES 2002-18		12/01/2018	PAYDOWN		42,614	398,394	82,146	71,004		25,136		25,136		42,614					12,123	06/01/2032
22540V-FZ-0	CREDIT SUISSE FIRST BOST-SERIES 2001-26		12/01/2018	PAYDOWN		39,133	39,133	36,697	36,046		3,087		3,087		39,133				1,587	11/01/2031	
22540V-G7-1	CREDIT SUISSE FIRST BOST-SERIES 2002-9 C		12/01/2018	PAYDOWN		4,902	4,902	4,914	4,775		127		127		4,902				109	03/01/2032	
22540V-Q7-0	CREDIT SUISSE FIRST BOST-SERIES 2002-10		12/01/2018	PAYDOWN		90,607	90,607	83,100	89,734		874		874		90,607				2,233	05/01/2032	
22540V-S9-4	CREDIT SUISSE FIRST BOST-SERIES 2002-AR1		12/01/2018	PAYDOWN		5,398	5,398	5,345	5,394		4		4		5,398				79	12/01/2039	
22541N-5E-5	CREDIT SUISSE FIRST BOST-SERIES 2003-AR1		12/01/2018	PAYDOWN		192,775	192,314	17,772	35,475		157,193		157,193		192,775				1,440	04/01/2033	
22541N-BT-5	CREDIT SUISSE FIRST BOST-SERIES 2002-22		09/01/2018	PAYDOWN		685,179	685,179	651,245	676,441		8,739		8,739		685,179				(19,612)	07/01/2032	
22541N-FL-8	CREDIT SUISSE FIRST BOST-SERIES 2002-24		11/01/2018	PAYDOWN		225,439	225,439	199,265	194,928		30,511		30,511		225,439				7,495	08/01/2032	
22541N-LR-8	CREDIT SUISSE FIRST BOST-SERIES 2002-26		12/01/2018	PAYDOWN		89,170	89,170	89,393	89,107		63		63		89,170				2,869	10/01/2032	
22541N-P6-8	CREDIT SUISSE FIRST BOST-SERIES 2003-AR9		12/01/2018	PAYDOWN		6,573	6,573	719	719		5,853		5,853		6,573				92	03/01/2033	
22541N-T5-8	CREDIT SUISSE FIRST BOST-SERIES 2003-8 C		12/01/2018	PAYDOWN		26,861	26,861	26,995	27,003		(142)		(142)		26,861				817	04/01/2033	
22541N-TH-2	CREDIT SUISSE FIRST BOST-SERIES 2002-AR3		12/01/2018	PAYDOWN		2,482	2,482	98	901		1,582		1,582		2,482				40	11/01/2032	
22541N-UB-3	CREDIT SUISSE FIRST BOST-SERIES 2002-30		12/01/2018	PAYDOWN		117,615	117,615	42,879	40,707		29,447		29,447		117,615				9,485	11/01/2032	
22541Q-AM-1	CREDIT SUISSE FIRST BOST-SERIES 2003-29		12/01/2018	PAYDOWN		53,361	143,497	12,669	15,191		46,313		46,313		53,361				7,613	12/01/2033	
22541Q-AA-4	CREDIT SUISSE FIRST BOST-SERIES 2003-AR2		12/01/2018	PAYDOWN		64,678	64,678	13,656	6,319		58,359		58,359		64,678				362	11/01/2033	
22541Q-DA-7	CREDIT SUISSE FIRST BOST-SERIES 2003-AR1		12/01/2018	PAYDOWN		119,892	119,892	62,326	42,380		57,566		57,566		119,892				1,238	06/01/2033	
22541Q-DB-5	CREDIT SUISSE FIRST BOST-SERIES 2003-AR1		12/01/2018	PAYDOWN		70,100	70,100	8,131	23,687		46,414		46,414		70,100				724	06/01/2033	
22541Q-JR-4	CREDIT SUISSE FIRST BOST-SERIES 2003-17		12/01/2018	VARIOUS		38,750	38,750	(149)	(32)		2,782		2,782							06/01/2033	
22541Q-NH-1	HOME EQUITY ASSET TRUST-SERIES 2003-5 QL		12/26/2018	PAYDOWN		1,255	1,255	1,255	1,255						1,255				25	12/25/2033	
22541Q-QR-6	CREDIT SUISSE FIRST BOST-SERIES 2003-21		12/01/2018	PAYDOWN		20,169	132,685	13,989	6,308		61,754		61,754		20,169				8,664	08/01/2033	
22541S-CC-0	CREDIT SUISSE FIRST BOST-SERIES 2004-CLA		11/28/2018	PAYDOWN		28,397	28,426	22,152	24,614		3,184		3,184		28,397				497	12/01/2033	
22541S-PC-4	FIRST FRANKLIN MTG LOAN -SERIES 2004-FFB		12/01/2018	PAYDOWN		37,612	37,612	32,637	36,118		1,495		1,495								

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
22546U-AA-6	CREDIT SUISSE ABS REPACKAGING TR 2013-A		10/25/2018	PAYDOWN		1,038,968	1,038,968	996,196	1,011,578		27,390		27,390		1,038,968				12,087	01/25/2030
225470-BU-6	CREDIT SUISSE FIRST BOST-SERIES 2005-C5		12/01/2018	PAYDOWN		27,237	27,237	6,865	11,545	7,449			7,449		27,237				3,070	08/01/2038
2254W0-NK-7	CREDIT SUISSE FIRST BOST-SERIES 2005-11		12/01/2018	PAYDOWN		77,552	104,855	17,375	28,600		53,590		53,590		77,552				3,005	12/01/2035
22822R-AR-1	Crown Castle Towers LLC-SERIES 2010-3		01/15/2018	CALL 105.413297		4,820,472	4,573,000	5,291,900	4,838,139		(4,896)		(4,896)		5,080,715			(260,243)	258,421	01/15/2020
22822R-AZ-3	Crown Castle Towers LLC-SERIES 2010-6		07/16/2018	CALL 102.878763		14,048,095	13,655,000	14,324,327	14,189,413		(106,812)		(106,812)		14,475,696			(427,601)	752,412	08/15/2020
22845H-AE-9	Crown Pine Parent LP Senior Secured		06/20/2018	CA CASH CLOSE		54,007,000	50,950,000	52,781,398	51,541,021		(136,864)		(136,864)		54,461,157			(454,157)	4,752,354	12/14/2019
22943H-AD-8	CSAB MORTGAGE BACKED TRU-SERIES 2006-1 C		12/26/2018	PAYDOWN		391,636	391,636	123,955	121,461		270,176		270,176		391,636					06/25/2036
22959H-AA-9	CSOLAR IV South LLC Senior Secured		12/31/2018	SINKING PAYMENT		675,132	675,132	675,132	675,132						675,132				31,187	09/30/2038
22970H-AA-4	CTL 2015-20 Trust Pass-Through Le		12/15/2018	SINKING PAYMENT		225,467	225,467	225,467	225,467						225,467				4,584	03/15/2029
23242T-AB-2	COUNTRYWIDE ASSET-BACKED-SERIES 2006-SD2		12/26/2018	PAYDOWN		110,461	167,610	76,329	104,813		34,348		34,348		110,461				807	11/25/2036
23243A-AD-8	COUNTRYWIDE ALTERNATIVE -SERIES 2006-0A1		12/20/2018	PAYDOWN		76,633	98,111	46,407	59,953		24,292		24,292		76,633				1,089	09/20/2046
232450-AA-7	COUNTRYWIDE ALTERNATIVE -SERIES 2006-0A2		12/20/2018	PAYDOWN		152,926	152,926	93,186	92,684		60,243		60,243		152,926				1,438	03/20/2047
23248A-AJ-0	COUNTRYWIDE ASSET-BACKED-SERIES 2007-SEA		12/26/2018	PAYDOWN		120,688	120,688	88,925	111,643		9,045		9,045		120,688				1,657	05/25/2047
233046-AD-3	DB MASTER FINANCE LLC-DNKN 2015 - 1A A2I		11/20/2018	PAYDOWN		383,590	383,590	392,564	389,774		(6,184)		(6,184)		383,590				9,542	02/20/2045
233046-AE-1	DB Master Finance LLC-SERIES 2017-1A CLA		11/20/2018	PAYDOWN		24,385	24,385	23,750			635		635		24,385				332	11/20/2047
23305X-AD-3	DBUS MORTGAGE TRUST-SERIES 2011-LC2A CL		02/01/2018	PAYDOWN		1,633	1,633	1,650	1,639		(5)		(5)		1,633				12	07/01/2044
23305Y-AC-3	DBUS MORTGAGE TRUST-SERIES 2011-LC3A CL		03/01/2018	PAYDOWN		174,980	174,980	176,726	175,001		(21)		(21)		174,980				917	08/01/2044
23305Y-AD-1	DBUS MORTGAGE TRUST-SERIES 2011-LC3A CL		12/01/2018	PAYDOWN		567,673	567,673	573,311	569,458		(1,785)		(1,785)		567,673				9,745	08/01/2044
23307*-AB-8	D.C. Arena L.P. Gtd Senior Secu		05/24/2018	CA CASH CLOSE		3,961,415	3,661,534	3,661,534	3,661,534						3,961,415				390,056	11/30/2023
23307*-AC-6	D.C. Arena L.P. Gtd Senior Secu		05/24/2018	CA CASH CLOSE		7,600,655	6,962,903	6,962,903	6,962,903						7,600,655				819,190	11/30/2023
23312A-AA-0	DCP RIGHTS LLC-2014-1A CLASS A		10/25/2018	PAYDOWN		114,750	114,750	114,750	114,750						114,750				3,918	10/25/2044
23314H-AC-3	DCT Industrial Operating Senior Note Cla		06/22/2018	MATURITY		12,500,000	12,500,000	12,500,000	12,500,000						12,500,000				387,125	06/22/2018
23314H-AD-1	DCT Industrial Operating Senior Note Cla		09/21/2018	CA CASH CLOSE		23,508,955	21,500,000	21,500,000	21,500,000						23,508,955				3,088,136	06/22/2021
23314H-AK-5	DCT Industrial Operating Senior Note Cla		09/21/2018	CA CASH CLOSE		7,522,826	7,000,000	7,000,000	7,000,000						7,522,826				800,882	08/01/2022
23314H-AL-3	DCT Industrial Operating Senior Note Cla		09/21/2018	CA CASH CLOSE		10,941,848	10,000,000	10,000,000	10,000,000						10,941,848				1,344,126	08/01/2023
23314H-AN-9	DCT Industrial Operating Senior Note Cla		09/21/2018	CA CASH CLOSE		6,082,464	6,000,000	6,000,000	6,000,000						6,082,464				244,964	08/08/2024
23314H-AP-4	DCT Industrial Operating Senior Note Cla		09/21/2018	CA CASH CLOSE		18,467,352	18,000,000	18,000,000	18,000,000						18,467,352				976,952	08/08/2026
233150-AC-5	DCT IND OPER PTRN LP-SENIOR UNSECURED NO		09/21/2018	CALL 105.81534		14,814,148	14,000,000	14,303,853	14,204,509		(24,061)		(24,061)		14,994,596		(180,448)	(180,448)	1,269,148	10/15/2023
23321P-6A-1	FINQUIT TRUST-SERIES 2000-1 CLASS DB1		12/01/2018	PAYDOWN		444,649	444,649	423,958	423,021		21,629		21,629		444,649				12,056	03/01/2030
23323C-AF-2	FIRST NATIONWIDE TRUST-SERIES 2000-2 CLA		12/01/2018	PAYDOWN		644	644	498	237		407		407		644				25	12/01/2030
233326-CF-2	DST Systems, Inc. Senior Notes Tr		05/01/2018	CA CASH CLOSE		22,665,760	22,100,000	22,100,000	22,100,000						22,665,760				847,167	01/09/2025
233326-C*-6	DST Systems, Inc. Senior Note Ser		05/01/2018	CA CASH CLOSE		28,120,626	26,700,000	26,700,000	26,700,000						28,120,626				1,903,006	08/09/2020
23332U-AC-8	DSL MORTGAGE LOAN TRUST-SERIES 2004-AR1		12/19/2018	PAYDOWN		203,087	203,087	139,752	163,551		39,536		39,536		203,087				2,458	09/19/2044
23332U-BW-3	DSL MORTGAGE LOAN TRUST-SERIES 2004-AR4		12/19/2018	PAYDOWN		22,142	27,679	6,606	6,932		16,679		16,679		22,142				243	01/19/2045
23332U-OM-4	DSL MORTGAGE LOAN TRUST-SERIES 2005-AR1		12/19/2018	PAYDOWN		32,376	32,376	26,626	29,361		3,014		3,014		32,376				269	02/19/2045
23332U-DU-5	DSL MORTGAGE LOAN TRUST-SERIES 2005-AR3		12/19/2018	PAYDOWN		1,632,494	1,632,494	1,311,709	1,448,047		184,447		184,447		1,632,494				18,506	07/19/2045
23332U-FV-1	DSL MORTGAGE LOAN TRUST-SERIES 2005-AR6		12/19/2018	PAYDOWN		102,398	102,398	86,281	95,175		7,224		7,224		102,398				1,052	10/19/2045
23340K-AB-2	DRB PRIME STUDENT LOAN T-SERIES 2015-A C		12/25/2018	PAYDOWN		3,532,716	3,532,716	3,518,814	3,526,462		6,255		6,255		3,532,716				49,566	07/25/2031
23340K-AC-0	DRB PRIME STUDENT LOAN T-SERIES 2015-A C		12/25/2018	PAYDOWN		921,184	921,184	921,029	921,337		(154)		(154)		921,184				8,864	04/25/2030
23340L-AA-2	DRB PRIME STUDENT LOAN T-SERIES 2015-B C		12/26/2018	PAYDOWN		2,832,119	2,832,119	2,816,814	2,832,119						2,832,119				42,663	10/27/2031
23340L-AB-0	DRB PRIME STUDENT LOAN T-SERIES 2015-B C		12/25/2018	PAYDOWN		3,043,865	3,043,865	3,060,635	3,055,439		(11,574)		(11,574)		3,043,865				46,324	07/25/2031
23340L-AC-8	DRB PRIME STUDENT LOAN T-SERIES 2015-B C		12/25/2018	PAYDOWN		606,680	606,680	606,612	606,668		12		12		606,680				76,950	04/27/2026
23340U-AB-0	DT AUTO OWNER TR 2016-1 ASSET BKD NT CL		01/15/2018	PAYDOWN		208,386	208,386	208,376	208,386						208,386				226	05/15/2020
23340W-AB-6	DRB PRIME STUDENT LOAN T-SERIES 16-A CLA		12/25/2018	PAYDOWN		2,355,835	2,355,835	2,348,701	2,350,577		5,258		5,258		2,355,835				38,152	04/25/2040
23341B-AC-9	DRB PRIME STUDENT LOAN T-DRB 2016-B A2		12/25/2018	PAYDOWN		5,082,488	5,082,488	5,080,944	5,081,394		1,093		1,093		5,082,488				74,043	06/25/2040
23341K-AA-3	DRB PRIME STUDENT LOAN T-SERIES 2015-C		12/26/2018	PAYDOWN		3,168,014	3,168,014	3,092,552	3,109,227		58,787		58,787		3,168,014				79,300	01/25/2040
23341K-AB-1	DRB PRIME STUDENT LOAN T-SERIES 15-D CLA		12/25/2018	PAYDOWN		4,428,723	4,428,723	4,437,243	4,438,629		(10,183)		(10,183)		4,428,723				88,619	01/25/2040
23342B-AB-0	DRB PRIME STUDENT LOAN T-SERIES 16-R CLA		10/25/2018	PAYDOWN		8,371,290	8,371,290	8,369,757	8,382,863		(11,573)		(11,573)		8,371,290				160,126	10/25/2044
23342K-AD-6	DRB PRIME STUDENT LOAN T-DRB 2017-A B		12/25/2018	PAYDOWN		2,744,126	2,744,126	2,743,935	2,758,270		(14,144)		(14,144)		2,744,126				36,991	05/27/2042
23356H-AA-8	DHM Acquisition Corp. Senior Sub Note		06/20/2018	EXCHANGE OFFER		2,864,081	2,864,081													06/30/2021
23918K-AP-3	DAVITA HEALTHCARE PARTNE-SENIOR UNSECURE		10/31/2018	BARCLAYS CAPITAL INC		1,620,000	1,600,000	1,600,000	1,600,000						1,600,000		20,000	20,000	111,678	08/15/2022
24422E-SB-6	JOHN DEERE CAPITAL CORP-SR UNSECURED		03/12/2018	MATURITY		150,000	150,000	148,957	149,905		95		95		150,000					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21		
										11	12	13	14	15								
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date		
24763L-FY-1	DELTA FUNDING HOME EQUIT-SERIES 1999-3 C		12/01/2018	PAYDOWN		(4,255)	55,772	22,398	24,176		(743)		(743)		(4,255)					(311)	01/01/2030	
247916-AK-5	Denbury Resources Inc-SENIOR UNSECURED		06/21/2018	EXCHANGE OFFER		3,483,403	4,760,000	3,411,333			72,069		72,069		3,483,403					(40,372)	12/15/2023	
24823U-AH-1	Denbury Resources Inc-SENIOR SUBORDINATE		01/11/2018	EXCHANGE OFFER		7,525,000	14,000,000	7,525,000	7,525,000						7,525,000					17,986	07/15/2023	
25044#-AA-1	DESERT SUNLIGHT FDG TR I -SR SEC SER A-1		10/07/2018	SINKING PAYMENT		3,604,297	3,604,297	3,643,083	3,635,635		(1,244)		(1,244)		3,604,297					96,103	10/07/2036	
25044#-AB-9	DESERT SUNLIGHT FDG TR I SER A-1-NG		10/07/2018	SINKING PAYMENT		1,221,727	1,221,727	1,218,634	1,219,156		94		94		1,221,727					50,972	10/07/2036	
25150#-AB-3	DEUTSCHE ALT-A SECURITIE-SERIES 2006-AR2		12/26/2018	PAYDOWN		736,012	816,882	505,910	595,834		177,097		177,097		736,012					3,709	05/25/2036	
251510-CY-7	DEUTSCHE ALT-A SECURITIE-SERIES 2005-1 C		12/01/2018	PAYDOWN		68,831	295,594	28,365	27,748		65,212		65,212		68,831					10,188	02/01/2035	
251510-FB-4	DEUTSCHE ALT-A SECURITIE-SERIES 2005-AR1		12/26/2018	PAYDOWN		750,998	808,413	479,435	542,841		226,130		226,130		750,998					7,364	08/25/2035	
251510-HS-5	DEUTSCHE ALT-A SECURITIE-SERIES 2005-5 C		12/01/2018	PAYDOWN		856,837	905,816	705,264	785,412		103,371		103,371		856,837					10,572	11/01/2035	
251510-NC-3	DEUTSCHE ALT-A SECURITIE-SERIES 2006-AF1		12/26/2018	PAYDOWN		2,077,858	2,207,952	1,360,517	1,788,810		279,840		279,840		2,077,858					18,176	04/25/2036	
251513-AQ-0	DEUTSCHE ALT-A SECURITIE-SERIES 2006-AB4		12/01/2018	PAYDOWN		14,444	19,645	10,901	14,625		2,158		2,158		14,444					661	10/01/2036	
251563-FB-3	DEUTSCHE MORTGAGE SECURI-SERIES 2004-4 C		12/01/2018	PAYDOWN		9,322	9,322	6,345	7,353		1,969		1,969		9,322					149	06/01/2034	
25159#-AW-5	DDR Corp-SENIOR NOTE REID		02/16/2018	TENDERED		3,376,234	3,400,000	3,910,224	3,448,824		(11,249)		(11,249)		3,437,530		(61,296)	(61,296)		31,875	07/15/2018	
25179#-AU-7	DEVON ENERGY CORPORATION-SENIOR UNSECURE		12/12/2018	MORGAN		134,229	150,000	152,982	152,952		(29)		(29)		152,903		(18,674)	(18,674)		7,146	06/15/2045	
25272K-AA-1	DIAMOND 1 FIN/DIAMOND 2-FIRST LIEN		08/08/2018	JP MORGAN SECURITIES		376,384	375,000	382,013	378,464		(1,478)		(1,478)		376,987		(603)	(603)		7,939	06/01/2019	
25272J-AA-9	DIAMOND RESORTS OWN TRST-SERIES 2013-2 C		08/20/2018	PAYDOWN		1,248,187	1,248,187	1,247,939	1,248,152		35		35		1,248,187					15,934	05/20/2026	
25272V-AA-7	DIAMOND RESORTS OWN TRST-SERIES 2015-1 C		10/20/2018	PAYDOWN		4,542,807	4,542,807	4,522,108	4,524,480		18,327		18,327		4,542,807					78,075	07/20/2027	
25273A-AA-2	DIAMOND RESORTS OWN TRST-SERIES 2014-1 C		11/20/2018	PAYDOWN		3,143,542	3,143,542	3,125,177	3,131,333		12,208		12,208		3,143,542					56,546	05/20/2027	
25273L-AA-8	DIAMOND RESORTS OWN TRST-SERIES 2015-2 C		12/20/2018	PAYDOWN		1,364,277	1,364,277	1,363,884	1,363,868		408		408		1,364,277					18,582	05/22/2028	
25273L-AB-6	DIAMOND RESORTS OWN TRST-SERIES 2015-2 C		12/20/2018	PAYDOWN		751,223	751,223	751,182	751,199		24		24		751,223					12,124	05/22/2028	
25275#-AA-1	Diamond State Generation Senior Secured		12/30/2018	SINKING PAYMENT		3,233,581	3,233,581	3,233,581	3,233,581						3,233,581						03/30/2025	
254709-AM-0	DISCOVER FINANCIAL SVS-SENIOR UNSECURED		12/11/2018	BANK OF AMERICA CORP		2,315,800	2,500,000	2,427,600			2,799		2,799		2,430,399		(114,599)	(114,599)		86,556	02/09/2027	
25470X-AB-1	DISH DBS CORP-SENIOR UNSECURED NOTE		11/15/2018	CITIGROUP GLOBAL MAR		1,177,328	1,146,000	1,358,010	1,205,113		(30,841)		(30,841)		1,174,273		3,055	3,055		79,719	09/01/2019	
25654#-AA-0	Dodger Tickets LLC Senior Secured		03/31/2018	SINKING PAYMENT		628,487	628,487	628,487	628,487						628,487					35,572	03/31/2030	
25654#-AB-8	Dodger Tickets LLC Senior Secured		03/31/2018	SINKING PAYMENT		438,400	438,400	438,400	438,400						438,400					26,611	03/31/2032	
25755#-AH-7	DOMTAR CORP-SENIOR UNSECURED NOTE		12/12/2018	FIRST TENNESSEE		9,960,000	10,000,000	10,113,960	10,055,290		(12,318)		(12,318)		10,042,972		(82,972)	(82,972)		529,222	04/01/2022	
25755T-AD-2	DOMINOS PIZZA MASTER ISS-SERIES 15-1A CL		04/25/2018	PAYDOWN		18,127,940	18,127,940	18,125,160	18,132,515		(4,575)		(4,575)		18,127,940					203,090	10/25/2045	
25755T-AE-0	DOMINOS PIZZA MASTER ISS-SERIES 2015-1A		10/25/2018	PAYDOWN		380,250	380,250	380,250	380,250						380,250					10,633	10/25/2045	
25755T-AH-3	DOMINOS PIZZA MASTER ISS-SERIES 17-1A CL		10/25/2018	PAYDOWN		152,550	152,550	152,273	134,800		277		277		152,550					3,652	07/25/2047	
25755T-AK-6	Domino's Pizza Master Is-DPABS 2018-1A A		10/25/2018	PAYDOWN		210,000	210,000	210,000	210,000						210,000					3,434	07/25/2048	
257867-AG-6	PR Donnelly & Sons Co-DEBENTURE		06/12/2018	GUGGENHEIM CAPITAL M		3,840,000	4,000,000	3,393,280	3,603,954		10,118		10,118		3,614,072		225,928	225,928		119,986	04/15/2029	
000000-00-0	DREYFUS INSTITUTIONAL SHARES - Cash Mana		01/01/2018	VARIOUS		(8,871)	(8,871)	(8,871)	(8,871)				(8,871)		(8,871)							10/01/2018
26207K-AE-1	Drive Auto Receivables T-DRIVE 2017-3 B		12/15/2018	PAYDOWN		342,531	342,531	342,046			485		485		342,531					1,446	05/17/2021	
26208B-AL-4	Drive Auto Receivables T-DRIVE 2016-CA C		12/15/2018	PAYDOWN		300,594	300,594	300,785			(191)		(191)		300,594					1,628	11/15/2021	
26223N-AD-7	DRUG ROYALTY CORPORATION-SERIES 2012-1 C		10/15/2018	PAYDOWN		249,962	249,962	254,080	251,957		(1,995)		(1,995)		249,962					13,501	07/15/2024	
26223N-AE-5	DRUG ROYALTY CORPORATION-SERIES 2012-1 C		10/15/2018	PAYDOWN		158,051	158,051	158,024	158,031		20		20		158,051					5,781	07/15/2024	
26223U-AC-3	DRUG ROYALTY II LP 1-SERIES 2014-1 CLASS		10/15/2018	PAYDOWN		987,109	987,109	987,109	987,109						987,109					34,096	07/15/2023	
26223U-AD-1	DRUG ROYALTY II LP 1-SERIES 2014-1 CLASS		10/15/2018	PAYDOWN		1,974,218	1,974,218	1,989,615	1,981,288		(7,070)		(7,070)		1,974,218					39,869	07/15/2023	
263534-BR-9	EI du Pont de Nemours & -SENIOR UNSECURE		11/29/2018	TENDERED		23,410,283	18,450,000	20,038,977	19,774,464		(39,609)		(39,609)		19,734,855		3,675,428	3,675,428		941,360	12/15/2036	
263534-BT-5	EI du Pont de Nemours & -SENIOR NOTE		07/15/2018	MATURITY		1,250,000	1,250,000	1,271,675	(4,692)				(4,692)	1,250,000						40,417	07/15/2018	
263534-BZ-1	EI du Pont de Nemours & -NOTE		11/29/2018	TENDERED		8,447,657	8,550,000	8,535,471	8,552,073		(1,285)		(1,285)		8,550,789		(103,132)	(103,132)		360,287	01/15/2020	
263534-CB-3	E. I. DU PONT DE NEMOURS-SR UNSECURED		11/29/2018	TENDERED		147,405	150,000	155,454	153,366		(982)		(982)		152,384		(4,979)	(4,979)		4,954	01/15/2021	
263534-CC-1	EI du Pont de Nemours & -SENIOR NOTE		11/29/2018	TENDERED		229,386	193,000	217,848	216,302		(574)		(574)		215,728		13,658	13,658		8,616	01/15/2041	
263534-CK-3	E. I. DU PONT DE NEMOURS-SR UNSECURED		11/29/2018	TENDERED		339,500	350,000	332,370	336,916		2,152		2,152		339,067		433	433		8,929	02/15/2023	
26439#-AA-2	Duke Endowment (The) Senior Note		10/31/2018	SINKING PAYMENT		914,522	914,522	914,522	914,522						914,522					26,491	10/31/2037	
26441C-AF-2	DUKE ENERGY CORPORATION-SENIOR UNSECURED		08/03/2018	CITIGROUP GLOBAL MAR		151,248	150,000	160,298	154,265		(711)		(711)		153,554		(2,306)	(2,306)		3,195	09/15/2021	
26827X-AA-1	ECMC GROUP STUDENT LOAN -SERIES 2016-1A		12/26/2018	PAYDOWN		1,578,480	1,578,480	1,578,480	1,578,480						1,578,480					20,587	07/26/2066	
26860#-AA-8	EIF Pio Pico, LLC Senior Secured		12/31/2018	SINKING PAYMENT		1,494,808	1,494,808	1,494,808	1,494,808						1,494,808					48,383	12/31/2041	
26875P-AC-5	EOG Resources Inc-SENIOR UNSECURED NOTE		10/01/2018	MATURITY		4,300,000	4,300,000	5,481,408	4,461,021		(161,021)		(161,021)		4,300,000					221,719	10/01/2018	
26884A-AZ-6	ERP OPERATING LP-SENIOR UNSECURED NOTE R		08/08/2018	GOLDMAN		25,895	25,000	24,905	24,957		5		5		24,962			933	933	755	12/15/2021	
26884L-AB-5	EQT Corp-SENIOR NOTE		05/1																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
278865-AL-4	Ecolab Inc-SENIOR UNSECURED NOTE		08/03/2018	VARIOUS		5,634,807	5,274,998	5,766,377	5,507,180		317		317		5,866,607		(231,800)	(231,800)	373,049	12/08/2021
278865-AZ-3	Ecolab Inc-SENIOR UNSECURED		04/19/2018	EXCHANGE OFFER		9,052,440	9,100,000	9,052,407	9,052,214		226		226		9,052,440				107,835	12/01/2047
278865-BF-6	Ecolab Inc. Senior Note Ser		11/21/2018	MATURITY		23,000,000	23,000,000	24,121,480	23,180,783		(180,783)		(180,783)		23,000,000				754,400	11/21/2018
28108R-AA-0	EdInc Student Loan Fund-ESLFT 2017-A A		12/03/2018	PAYDOWN		10,011,249	10,011,249	9,941,631	9,941,697		69,551		69,551		10,011,249				159,993	12/01/2047
28140D-AC-7	EDUCATION LOAN ASSET-BAC-SERIES 13-1 CLA		12/26/2018	PAYDOWN		679,220	679,220	654,173	657,926		21,294		21,294		679,220				10,414	11/25/2033
28258F-AA-4	8point3 Solar Investco 1 Senior Secured		08/31/2018	SINKING PAYMENT		1,136,749	1,136,749	1,136,749						1,136,749				10,454	11/30/2035	
284157-AA-2	ELARA HGV TIMESHARE ISSU-SERIES 2014-A C		12/25/2018	PAYDOWN		834,149	834,149	834,131	834,139		10		10		834,149				10,777	02/25/2027
284157-AB-0	ELARA HGV TIMESHARE ISS-SERIES 2014-A CL		12/25/2018	PAYDOWN		347,130	347,130	343,876	345,925		1,205		1,205		347,130				5,353	02/25/2027
28501*-AE-5	Electric Transmission Te Senior Note Ser		06/28/2018	MATURITY		10,000,000	10,000,000	10,327,000	10,031,513		(31,513)		(31,513)		10,000,000				181,425	06/28/2018
28618X-AA-0	ELEMENT RAIL LEASING II LLC 2015-1 ETC C		12/19/2018	PAYDOWN		1,495,922	1,495,922	1,488,871	1,492,216		3,707		3,707		1,495,922				21,786	02/19/2045
28618X-AD-4	ELEMENT RAIL LEASING II LLC 2016-1 ETC C		12/19/2018	PAYDOWN		2,205,746	2,205,746	2,205,746	2,205,746						2,205,746				44,934	03/19/2046
28621U-AA-1	Elevate Holdco Funding L Senior Secured		12/31/2018	SINKING PAYMENT		1,392,719	1,392,719	1,392,719	1,392,719						1,392,719					12/31/2032
28842*-AA-1	Eliiana Solar LLC Senior Secured		10/05/2018	SINKING PAYMENT		209,535	209,535	209,535	209,535						209,535					10/05/2030
28932M-AA-3	ELM RD GENERATING STAT-SECURED NOTE		08/11/2018	SINKING PAYMENT		445,255	445,255	512,906	487,786		(2,425)		(2,425)		445,255				17,470	02/11/2030
290408-AB-9	ELWOOD ENERGY LLC-SECURED NOTE		07/05/2018	SINKING PAYMENT		15,642	15,642	17,181	16,163		(3)		(3)		15,642				654	07/05/2026
292480-AJ-9	ENABLE MIDSTREAM PARTNER-SR UNSECURED		01/11/2018	MILLENNIUM ADVISORS		1,472,159	1,483,000	1,374,911	1,378,311		57		57		1,378,368		93,791	93,791	3,090	05/15/2044
29252B-AA-7	Enbridge Pipelines LLC Senior Note		12/31/2018	SINKING PAYMENT		3,309,187	3,309,187	3,309,187	3,309,187						3,309,187				297,393	06/30/2040
29257N-AK-4	ENCORE EDUCATION CORP-SECURED		07/02/2018	CALL 100		1,050,000	1,050,000	1,050,000	1,050,000						1,050,000				26,396	09/15/2018
29273R-AH-2	Energy Transfer Partners-SENIOR UNSECURE		07/01/2018	MATURITY		1,350,000	1,350,000	1,354,898	1,350,353		(353)		(353)		1,350,000				45,225	07/01/2018
29273V-AD-2	ENERGY TRANSFER EQUITY L-SENIOR UNSECURE		11/19/2018	VARIOUS		26,129,898	25,000,000	25,000,000	25,000,000						25,000,000		1,129,898	1,129,898	1,005,365	01/15/2024
29335H-AA-1	Enhanced Capital Connect CAPCO Note Seri		12/15/2018	SINKING PAYMENT		1,080,781	1,080,781	1,080,781	1,080,781						1,080,781					12/15/2020
29355X-AD-9	EnPro Industries Inc-SENIOR UNSECURED		10/31/2018	CALL 102.938		2,439,631	2,370,000	2,389,385	2,388,639		(5,467)		(5,467)		2,432,803		(13,172)	(13,172)	185,662	09/15/2022
29386E-AD-3	Enterprise RB Fund I LP Secured Promiss		04/02/2018	SINKING PAYMENT		5,434,574	5,434,574	4,254,346	5,267,766		(14,814)		(14,814)		5,434,574					04/01/2020
29444U-AR-7	EQUINIX INC-SENIOR UNSECURED		10/29/2018	MORGAN		3,277,513	3,319,000	3,319,000	3,319,000						3,319,001		(41,488)	(41,488)	148,664	05/15/2027
29481F-AC-7	Ergon, Inc. Gtd Senior Note		05/20/2018	SINKING PAYMENT		2,618,280	2,618,280	2,618,280	2,618,280						2,618,280				55,602	05/20/2018
29977H-AB-6	EP ENER/EVEREST ACQ FIN-SENIOR UNSECURED		01/04/2018	EXCHANGE OFFER		1,643,000	1,643,000	1,643,000	1,388,335	254,665			254,665		1,643,000				109,961	05/01/2020
30212P-AB-1	Expedia Inc-BOND		08/15/2018	MATURITY		2,010,000	2,010,000	2,353,184	2,055,050		(45,050)		(45,050)		2,010,000				93,250	08/15/2018
30231G-AL-6	EXXON MOBIL CORPORATION-SR UNSECURED		03/06/2018	MATURITY		450,000	450,000	448,285	449,855		145		145		450,000				1,060	03/06/2018
30231G-AH-2	EXXON MOBIL CORPORATION-SR UNSECURED		08/03/2018	GOLDMAN		2,825,026	2,760,000	2,760,000	2,760,000						2,760,000		65,026	65,026	105,977	03/01/2046
30247D-AD-3	FIRST FRANKLIN MTG LOAN -SERIES 2006-FF1		12/26/2018	PAYDOWN		123,449	123,449	42,730	56,923		66,526		66,526		123,449				1,711	10/25/2036
30251Y-AB-4	FNBA MORTGAGE PASS THRU-SERIES 2004-AR1		12/19/2018	PAYDOWN		845,764	845,764	794,316	856,216		(10,452)		(10,452)		845,764				16,477	08/19/2034
30257D-AA-6	FNA TRUST-SERIES 2015-1 CLASS A		04/10/2018	PAYDOWN		1,371,134	1,371,134	1,371,076	1,370,980		154		154		1,371,134				11,197	12/10/2023
30273E-AA-3	FPL Energy Rockaway Peak Senior Secured		12/31/2018	SINKING PAYMENT		672,176	672,176	672,176	672,176						672,176				47,792	06/28/2020
30280E-AA-4	FR-Enclave SPV LP Secured Note		10/07/2018	SINKING PAYMENT		756,316	756,316	759,774	758,843		(99)		(99)		756,316				24,889	10/07/2033
30571F-AA-0	Fairview Health Services Taxable Bonds		11/15/2018	SINKING PAYMENT		1,175,128	1,175,128	1,175,128	1,175,128						1,175,128				48,885	11/15/2043
30605X-AA-1	FAIRWAY OUTDOOR FUNDING -SERIES 2012-1A		12/15/2018	PAYDOWN		209,494	209,494	211,968	211,414		(1,920)		(1,920)		209,494				4,780	10/15/2042
31305E-AA-3	FBI Phoenix Lease Financ Lease Backed Pa		12/15/2018	SINKING PAYMENT		1,231,949	1,231,949	1,231,949	1,231,949						1,231,949				31,385	02/15/2032
313305-AA-2	FEDEX CORP 2012 PASS TST-SECURED NOTE		01/15/2018	SINKING PAYMENT		397,991	397,991	397,991	397,991						397,991				406	01/15/2018
31331F-AX-9	FEDEX CORP 1998 PASS TST-1ST LIEN PT CER		01/15/2018	SINKING PAYMENT		78,141	78,141	89,460	83,526		(149)		(149)		78,141				2,626	01/15/2022
313747-AR-8	FEDERAL REALTY INVESTMEN-SENIOR UNSECURE		01/01/2018	VARIOUS		393,674	393,674	393,674	393,674						393,674				393,674	04/01/2020
3137G0-EQ-8	FHLMC STACR-SER 2015-DNA1 CL M-1		06/25/2018	PAYDOWN		836,289	836,289	836,289	836,289						836,289				5,346	10/25/2027
3137G0-HQ-5	FHLMC STACR-SER 2016-DNA1 CL M-1		04/25/2018	PAYDOWN		1,058,318	1,058,318	1,058,318	1,058,318						1,058,318				5,233	07/25/2028
31677Q-AV-1	FIFTH THIRD BANK-SR UNSECURED		02/28/2018	MATURITY		200,000	200,000	198,654	199,899		101		101		200,000				459	02/28/2018
31677Q-BD-0	FIFTH THIRD BANK-SR UNSECURED		07/20/2018	CALL 100		200,000	200,000	200,139	200,030		(90)		(90)		200,000				2,377	08/20/2018
317350-BT-2	FINANCE AMERICA MORTGAGE-SERIES 2004-3 C		12/26/2018	PAYDOWN		587,543	587,543	492,174	587,543						587,543				5,873	11/25/2034
318340-AB-2	FIRST FRANKLIN MTG LOAN -SERIES 2006-FFA		12/26/2018	PAYDOWN		1,798,530	1,798,530	73,794	(87)		1,798,618		1,798,618		1,798,530				5,160	09/25/2026
32008D-AA-4	FIRST DATA CORPORATION-1ST LIEN		06/08/2018	VARIOUS		5,020,758	5,002,000	5,002,000	5,002,000						5,002,000		18,758	18,758	111,850	01/15/2024
32051D-CJ-9	FIRST HORIZON MORTGAGE P-SERIES 2000-H C		12/01/2018	PAYDOWN		37,622	37,622	37,640	37,577		44		44		37,622				1,048	05/01/2030
32051D-CK-6	FIRST HORIZON MORTGAGE P-SERIES 2000-H C		12/01/2018	PAYDOWN		28,613	28,613	24,852	25,391		3,222		3,222		28,613				797	05/01/2030
32051G-BV-6	FIRST HORIZON ALTERNATIV-SERIES 2004-AA5		12/01/2018	PAYDOWN		36,259	107,096	4,811	10,867		29,097		29,097		36,259				1,225	12/01/2034
32051G-CF-0	FIRST HORIZON ALTERNATIV-SERIES 2004-AA6		12/01/2018	PAYDOWN		22,121	69,250	3,283	5,087		9,510		9,510		22,121				1,351	01/01/2035
32053L-AA-0	FIRST HORIZON ALTERNATIV-SERIES 2007-FA2		12/01/2018	PAYDOWN		13,760	17,488	10,707	11,143		4,837		4,837		13,760				462	04/01/2037
32113J-AA-3	FIRST NLC TRUST-SERIES 2005-1 CLASS A		12/26/2018	PAYDOWN		25,142	25,142	20,52												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
33843L-AA-3	FLAGSHIP CREDIT AUTO TRU-SERIES 2015-3 C		12/15/2018	PAYDOWN		2,098,421	2,098,421	2,098,414	2,098,421						2,098,421				25,424	10/15/2020
33882B-AE-9	FLATIRON CLO 2007-1 LTD DEF MEZZ TERM NO		01/16/2018	PAYDOWN		2,100,000	2,100,000	320,250	1,363,885		736,115		736,115		2,100,000				4,182	10/15/2021
340711-AG-5	FLORIDA GAS TRANSMISSION-SENIOR NOTE		11/01/2018	SINKING PAYMENT		100,000	100,000	116,055	104,584		(1,367)		(1,367)		100,000				9,190	11/01/2024
344868-AA-2	FOOTBALL CLUB TERM NTS 2020 TR CTF		08/22/2018	VARIOUS		33,727,310	32,905,000	35,756,174	33,988,668		(243,911)		(243,911)		33,744,758		(17,448)	(17,448)	3,030,861	10/05/2020
345370-CA-6	Ford Motor Co-SENIOR UNSECURED NOTE		12/11/2018	MARKETAXESS FINANCIA		520,405	500,000	635,000	635,000						635,000		(114,595)	(114,595)	52,460	07/16/2031
345370-CS-7	FORD MOTOR COMPANY-SENIOR UNSECURED		12/11/2018	JP MORGAN SECURITIES		2,504,610	3,000,000	3,000,000	3,000,000						3,000,000		(495,390)	(495,390)	160,935	12/08/2046
345397-WF-6	Ford Motor Credit Co LLC-SENIOR UNSECURE		08/16/2018	MITSUBISHI UFJ SEC I		8,326,892	8,300,000	8,226,130	8,260,627		4,997		4,997		8,265,625		61,267	61,267	224,388	09/20/2022
345397-WZ-2	FORD MOTOR CREDIT CO LLC-SENIOR UNSECURE		01/09/2018	MATURITY		300,000	300,000	301,575	300,029		(29)		(29)		300,000				143	01/09/2018
345397-XF-5	FORD MOTOR CREDIT CO LLC-SENIOR UNSECURE		08/16/2018	MILLENNIUM ADVISORS		492,720	500,000	504,956	503,082		(860)		(860)		502,222		(9,502)	(9,502)	7,821	03/27/2020
345397-XQ-1	FORD MOTOR CREDIT CO LLC-SENIOR UNSECURE		08/15/2018	MARKETAXESS FINANCIA		197,840	200,000	206,881	204,777		(961)		(961)		203,816		(5,976)	(5,976)	6,969	01/15/2021
345397-XW-8	FORD MOTOR CREDIT CO LLC-SENIOR UNSECURE		08/15/2018	ROYAL BANK SCOTLAND		4,456,485	4,500,000	4,603,450	4,596,062		(18,106)		(18,106)		4,577,956		(121,471)	(121,471)	94,242	03/18/2021
349588-AA-7	Fortistar Energy Recycli Secured Mezzani		12/20/2018	VARIOUS		17,172,319	17,172,319	16,957,674	16,140,539		7,984		7,984		16,991,024		181,295	181,295	1,739,468	12/17/2029
350910-AN-5	FOUR TIMES SQUARE TRUST-SERIES 2006-4TS		12/11/2018	PAYDOWN		352,327	352,327	422,622	379,579		(27,252)		(27,252)		352,327				10,507	12/11/2028
354613-AG-6	Franklin Resources Inc-SENIOR UNSECURED		05/20/2018	CALL 103,389		6,823,674	6,600,000	7,589,624	6,938,831		(53,396)		(53,396)		7,109,110		(285,436)	(285,436)	341,534	05/20/2020
35671D-AU-9	FREEMONT-MCMORAN INC-SENIOR UNSECURED NO		08/22/2018	VARIOUS		30,838,498	31,864,000	31,702,723	31,786,678		13,449		13,449		31,663,627		(825,129)	(825,129)	468,378	03/01/2022
35671D-AZ-8	FREEMONT-MCMORAN INC-SENIOR UNSECURED NO		07/17/2018	VARIOUS		10,178,375	10,700,000	10,203,862	10,354,332		32,272		32,272		10,386,604		(208,229)	(208,229)	349,891	03/15/2023
35671D-CB-9	FREEMONT-MCMORAN INC-SENIOR UNSECURED		02/28/2018	CREDIT SUISSE SECURI		5,176,310	4,804,000	4,746,848	4,751,334		1,728		1,728		4,753,062		423,248	423,248	55,681	02/15/2023
35729R-AE-6	FREEMONT HOME LOAN TRUST-SERIES 2006-A CL		12/26/2018	PAYDOWN		321,524	321,524	167,703	173,614		147,909		147,909		321,524				2,357	05/25/2036
361448-AP-8	GATX CORP-SENIOR UNSECURED NOTE		06/11/2018	CALL 100.030468		75,023	75,023	74,625	74,951		37		37		75,010		13	13	815	07/30/2018
361452-AA-3	GATX RAIL CORP 2000-1 PT-PASS-THRU CTF		07/13/2018	SINKING PAYMENT		872,549	872,549	872,549	872,549						872,549				19,375	01/13/2020
36155W-AK-2	GC1 INC-SR UNSECURED		11/15/2018	WELLS FARGO		414,497	405,000	407,025	406,708		(232)		(232)		406,475		8,022	8,022	30,473	04/15/2025
361849-K7-6	GMAC COMMERCIAL MORTGAGE-SERIES 2004-C3		12/01/2018	PAYDOWN		50,602	50,602	3,937	4,221						50,602				2,184	12/01/2041
36191*-AD-5	GFS US Holding LLC Senior Note Ser		09/24/2018	SINKING PAYMENT		3,900,000	3,900,000	3,900,000	3,900,000						3,900,000				140,790	09/24/2024
361924-AJ-2	GNMA-BACKED TRUST-SERIES 3 CLASS F		12/01/2018	PAYDOWN		10,025	10,025	7,838	9,775		250		250		10,025				217	06/01/2020
36192K-AT-4	GS MORTGAGE SECURITIES T-SERIES 2012-GCJ		11/01/2018	PAYDOWN		806,548	806,548	828,110	817,939		(11,391)		(11,391)		806,548				25,720	05/01/2045
36192L-AC-9	GS MORTGAGE SECURITIES T-SERIES 2012-SHO		12/01/2018	PAYDOWN		658,321	658,321		658,321						658,321					06/01/2031
36228C-WD-1	GS MORTGAGE SECURITIES T-SERIES 2005-G64		12/01/2018	PAYDOWN		4	4	339							4				166	07/01/2039
36228F-SR-3	GSR MORTGAGE LOAN TRUST-SERIES 2004-7 CL		12/01/2018	PAYDOWN		67,325	67,325	65,091	67,306		18		18		67,325				813	06/01/2034
36228F-C5-3	GSA HOME EQUITY TRUST-SERIES 2004-NC1 C		11/01/2018	PAYDOWN		87,873	87,873	65,555	76,886		10,987		10,987		87,873				1,467	11/01/2033
36228F-WU-6	GSR MORTGAGE LOAN TRUST-SERIES 2003-9 CL		12/01/2018	PAYDOWN		13,029	13,029	5,536	6,121		6,908		6,908		13,029				158	08/01/2033
362290-AC-2	GSR MORTGAGE LOAN TRUST-SERIES 2007-AR1		12/01/2018	PAYDOWN		139,585	141,468	71,422	96,397		39,517		39,517		139,585				1,764	03/01/2047
362334-ON-2	GSR MORTGAGE LOAN TRUST-SERIES 2006-2F		12/01/2018	PAYDOWN		3,533	3,894	2,908	3,337		326		326		3,533				66	02/01/2036
362334-EB-6	GSAMP TRUST-SERIES 2006-NC1 CLASS A2		02/26/2018	PAYDOWN		65,181	65,181	52,105	65,169		12		12		65,181				83	02/25/2036
362334-NU-4	GSRPM MORTGAGE LOAN TRUS-SERIES 2006-1 C		12/26/2018	PAYDOWN		34,243	34,243	34,312	34,309		(66)		(66)		34,243				451	03/25/2035
362341-L4-9	GSAMP TRUST-SERIES 2005-WMC3 CLASS A2B		12/26/2018	PAYDOWN		368,463	368,463	335,160	365,799		2,664		2,664		368,463				1,608	12/25/2035
362341-TM-1	GSAMP TRUST-SERIES 2005-SEA2 CLASS A1		06/25/2018	PAYDOWN		476,718	476,718	439,108	477,324		(606)		(606)		476,718				2,610	01/25/2045
362341-VU-0	GSR MORTGAGE LOAN TRUST-SERIES 2005-8F C		12/01/2018	PAYDOWN		931,644	949,173	801,320	851,948		94,055		94,055		931,644				25,703	11/01/2035
362420-2A-0	GSAMP TRUST-SERIES 2005-AHL CLASS M1		12/26/2018	PAYDOWN		8,535	8,535	7,979	8,533		2		2		8,535				100	04/25/2035
362420-BJ-1	GSR MORTGAGE LOAN TRUST-SERIES 2004-9 CL		12/01/2018	PAYDOWN		103,867	103,867	86,431	97,421		6,446		6,446		103,867				1,584	08/01/2034
362420-BY-8	GSR MORTGAGE LOAN TRUST-SERIES 2004-9 CL		12/01/2018	PAYDOWN		14,580	14,580	12,589	14,314		266		266		14,580				297	08/01/2034
362420-BZ-5	GSR MORTGAGE LOAN TRUST-SERIES 2004-9 CL		12/01/2018	PAYDOWN		94,999	94,999	18,999	30,686		64,313		64,313		94,999				522	08/01/2034
362420-GA-5	GSR MORTGAGE LOAN TRUST-SERIES 2004-11 C		12/01/2018	PAYDOWN		17,248	30,925	1,794	2,064		15,983		15,983		17,248				706	09/01/2034
362420-N4-1	FIRST FRANKLIN MTG LOAN -SERIES 2005-FF2		03/26/2018	PAYDOWN		335,206	335,206	312,789	335,205		1		1		335,206				912	03/25/2035
362480-AD-7	GSC CAPITAL CORP MORTGAG-SERIES 2006-2 C		12/28/2018	PAYDOWN		803,012	938,224	608,404	741,816		147,728		147,728		803,012				9,263	05/25/2036
36248F-AG-7	GS MORTGAGE SECURITIES T-SERIES 2011-GC3		12/01/2018	PAYDOWN		1,030,897	1,030,897	1,046,333	1,035,720		(4,822)		(4,822)		1,030,897				12,624	03/01/2044
36290P-AK-3	GSMP MORTGAGE LOAN TRUS-SERIES 2003-2 C		12/01/2018	PAYDOWN			1,572,548												6,433	07/01/2043
36298X-AA-0	GSMP MORTGAGE LOAN TRUS-SERIES 2006-RP2		12/25/2018	PAYDOWN		1,396,907	1,564,289	1,252,409	1,376,767		79,817		79,817		1,396,907				5,166	04/25/2036
36298X-AB-8	GSMP MORTGAGE LOAN TRUS-SERIES 2006-RP2		12/25/2018	PAYDOWN		1,288,594	1,445,614	1,083,440	1,192,356		149,029		149,029		1,288,594				17,797	04/25/2036
36804F-AA-6	GATX Corp. Pass Thru Ctf		09/01/2018	SINKING PAYMENT		10,101,762	10,101,762	10,101,762	10,101,762						10,101,762					03/01/2027
368280-KX-3	GE COMMERCIAL MORTGAGE C-SERIES 2005-C1		12/01/2018	PAYDOWN		922,216	922,216	892,772	922,216						922,216				21,424	06/01/2048
36962G-3A-0	GENERAL ELECTRIC CO-SR UNSECURED GMTN		02/12/2018	BRILEY		12,530,579	10,555,000	11,853,675	11,742,897		(4,185)		(4,185)		11,738,711		791,868	791,868	77,535	08/07/2037
36962G-3U-6	GENERAL ELECTRIC CO-SR UNSECURED GMTN		05/01/2018	MATURITY		35,000	35,000	40,621												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
369626-XZ-2	GENERAL ELEC CAP CORP-NOTE		02/13/2018	BANK OF AMERICA CORP		13,132,245	10,510,000	13,868,740	13,463,634		(18,615)		(18,615)		13,445,019		(312,774)	(312,774)	86,708	03/15/2032
37045V-AD-2	General Motors Co-SENIOR UNSECURED NOTE		10/02/2018	MATURITY		110,000	110,000	111,813	110,339		(339)		(339)		110,000				2,898	10/02/2018
37045X-BB-1	General Motors Financial-SR UNSECURED		04/16/2018	MORGAN		250,490	250,000	249,885	249,957		6		6		249,964		526	526	2,303	01/15/2019
373626-AA-0	Georgia Transmission Cor First Mortgage		12/31/2018	SINKING PAYMENT		979,333	979,333	979,333	979,333						979,333				43,691	06/30/2030
37459*-AA-6	Giants Training Facility Senior Note Ser		12/01/2018	SINKING PAYMENT		502,966	502,966	546,116	532,960		(3,364)		(3,364)		502,966				17,981	12/01/2030
37459*-AB-4	Giants Training Facility Senior Note Ser		12/01/2018	SINKING PAYMENT		502,966	502,966	546,116	532,960		(3,364)		(3,364)		502,966				24,268	12/01/2030
37459*-A*-2	Giants Stadium LLC Senior Secured		04/01/2018	SINKING PAYMENT		202,758	202,758	202,758	202,758						202,758				7,198	04/01/2040
377372-AD-9	GlaxoSmithKline Capital -SENIOR UNSECURE		05/15/2018	MATURITY		450,000	450,000	492,727	456,733		(6,733)		(6,733)		450,000				9,464	05/15/2018
38002F-AA-2	GLYNLYON HLDG CO SR SUB NT		03/05/2018	CA CASH CLOSE		2,991,060	2,961,446	2,962,766	2,962,584		(44)		(44)		2,992,154		(1,094)	(1,094)	92,792	01/15/2022
38012U-AA-7	GMAC MORTGAGE CORPORATIO-SERIES 2006-HE4		07/25/2018	PAYDOWN		187,645	187,645	187,645	112,959		74,686		74,686		187,645				1,972	12/25/2036
38021B-AG-5	GOAL CAPITAL FUNDING TRU-SERIES 2006-1 C		11/26/2018	PAYDOWN		912,301	912,301	826,622	838,668		73,633		73,633		912,301				13,464	08/25/2042
38021E-AA-2	GOAL CAPITAL FUNDING TR 2010-1 STUDENT L		11/26/2018	PAYDOWN		629,873	629,873	603,694	608,031		21,842		21,842		629,873				10,362	08/25/2048
38021G-AC-3	GOAL STRUCTURED SOLUTION-SERIES 2016-B C		11/26/2018	DIRECT		13,056,000	13,056,000	13,170,240	13,188,715		33,121		33,121		13,221,836		(165,836)	(165,836)	427,119	08/25/2051
38046C-AB-5	GOGO INC-SR UNSECURED		12/13/2018	JEFFERIESLLC		9,604,063	10,525,000	9,346,875	9,742,819		322,095		322,095		10,064,914		(460,851)	(460,851)	378,461	03/01/2020
38141E-A2-5	Goldman Sachs Group Inc/-SENIOR UNSECURE		09/27/2018	TENDERED		4,639,863	4,550,000	5,434,278	4,805,086		(167,304)		(167,304)		4,637,782		2,081	2,081	252,146	02/15/2019
38141G-CU-6	Goldman Sachs Group Inc/-NOTE		09/27/2018	TENDERED		9,535,496	8,093,000	10,073,300	9,919,086		(65,713)		(65,713)		9,853,373		(317,877)	(317,877)	366,264	02/15/2033
38141G-FG-4	GOLDMAN SACHS GROUP INC-SR UNSECURED		01/18/2018	MATURITY		200,000	200,000	215,612	200,361		(361)		(361)		200,000				562	01/18/2018
38141G-G0-1	Goldman Sachs Group Inc/-SENIOR UNSECURE		08/08/2018	GOLDMAN		141,909	135,000	131,151	133,312		266		266		133,578		8,331	8,331	7,343	07/27/2021
38141G-RC-0	GOLDMAN SACHS GROUP INC-SR UNSECURED		01/22/2018	MATURITY		350,000	350,000	353,269	350,091		(91)		(91)		350,000				485	01/22/2018
000000-00-0	GOLDMAN SACHS FINANCIAL SQUARE Prime Obl		01/01/2018	VARIOUS		(8,888)	(8,888)				(8,888)		(8,888)		(8,888)					10/01/2018
38145X-AA-1	GOLDMAN SACHS GROUP INC-SR UNSECURED		09/27/2018	TENDERED		250,300	250,000	252,068	250,735		(504)		(504)		250,231		69	69	4,849	01/31/2019
38147M-AA-3	GOLDMAN SACHS GROUP INC-SR UNSECURED		07/19/2018	MATURITY		375,000	375,000	380,843	376,275		(1,275)		(1,275)		375,000				5,981	07/19/2018
38217K-AA-2	GOODGREEN TRUST-SERIES 16-1A CLASS A		12/15/2018	PAYDOWN		5,692,756	5,692,756	5,699,921	5,675,480		17,276		17,276		5,692,756				172,111	10/15/2052
38217V-AA-8	GOODGREEN TRUST-SERIES 17-1A CLASS A		11/15/2018	PAYDOWN		2,707,065	2,707,065	2,705,805	2,707,065						2,707,065				93,448	10/15/2052
384780-AA-0	GRAIN SPECTRUM FUND II-SECURED NOTE		10/10/2018	SINKING PAYMENT		482,528	482,528	482,617	482,567		(16)		(16)		482,528				11,906	10/10/2019
38742F-AA-7	Granite Reliable Funding Pass Thru Trust		10/08/2018	SINKING PAYMENT		231,906	231,906	231,906	231,906						231,906				7,252	01/08/2032
38742F-AB-5	Granite Reliable Funding Pass Thru Trust		10/08/2018	SINKING PAYMENT		978,641	978,641	978,641	978,641						978,641				16,112	01/08/2032
390636-AD-2	Great Lakes Gas Transmis Senior Note Ser		10/30/2018	SINKING PAYMENT		1,900,000	1,900,000	1,928,832	1,904,555		(3,034)		(3,034)		1,900,000				172,710	10/30/2021
393222-AD-6	Green Plains Inc-SENIOR UNSECURED NOTE		05/17/2018	JEFFERIESLLC		3,809,222	3,500,000	3,500,000	3,500,000						3,500,000		309,222	309,222	43,446	10/01/2018
393505-BK-7	CONSECO FINANCIAL CORP-SERIES 1993-3 CLA		05/15/2018	PAYDOWN		2,779	2,779	2,858	2,779						2,779				35	10/15/2018
393505-E3-2	CONSECO FINANCIAL CORP-SERIES 1998-3 CLA		12/01/2018	PAYDOWN		39,054	39,054	38,966	39,038		16		16		39,054				1,300	03/01/2030
393513-AF-3	GREEN TREE MORTGAGE LOAN-SERIES 2005-HE1		12/26/2018	PAYDOWN		2,183,722	2,183,722	2,097,738	2,182,593		1,129		1,129		2,183,722				28,943	12/25/2032
39353F-AA-6	Greenleaf Power Consolid Sub Note (6% PI		10/01/2018	VARIOUS		28,187,751	28,194,439	28,225,646	27,689,861		(497)		(497)		28,217,166		(29,415)	(29,415)	1,667,922	06/30/2022
39538R-BB-4	GREENPOINT MORTGAGE FUND-SERIES 2005-AR2		12/26/2018	PAYDOWN		622,071	622,071	485,060	503,063		119,007		119,007		622,071				8,193	06/25/2045
39538W-BD-9	GREENPOINT MORTGAGE FUND-SERIES 2005-HY1		12/26/2018	PAYDOWN		453,733	453,733	403,823	443,144		10,589		10,589		453,733				4,863	07/25/2035
398433-AK-8	GRIFFON CORP-SENIOR UNSECURED		02/06/2018	EXCHANGE OFFER		4,286,733	4,250,000	4,292,500	4,288,243		(1,510)		(1,510)		4,286,733				21,693	03/01/2022
40408L-AC-1	HASI SYB 2017-1 LLC Senior Secured		12/20/2018	SINKING PAYMENT		394,662	394,662	394,616	394,610		3		3		394,662					12/20/2057
404119-BR-9	HCA INC-SENIOR UNSECURED		12/18/2018	VARIOUS		8,571,736	8,516,000	8,409,390	8,421,160		10,607		10,607		8,431,767		139,969	139,969	631,384	02/01/2025
404119-BS-7	HCA INC-SENIOR UNSECURED		12/18/2018	VARIOUS		9,783,696	9,500,000	10,070,000	10,021,679		(55,757)		(55,757)		9,965,923		(182,227)	(182,227)	537,303	02/15/2026
404121-AC-9	HCA Inc-SENIOR SECURED NOTE		08/15/2018	VARIOUS		4,576,176	4,400,000	4,345,000	4,382,598		5,184		5,184		4,387,783		188,393	188,393	179,544	02/15/2020
404170-AC-9	HERO FUNDING TRUST-HERO 2016-4A A2		12/20/2018	PAYDOWN		4,021,508	4,021,508	4,120,966	4,021,508		7,659		7,659		4,021,508					09/20/2047
40428H-PO-9	HSBC USA INC-SR UNSECURED		03/05/2018	MATURITY		200,000	200,000	199,035	199,919		81		81		200,000				604	03/05/2018
40429C-GD-8	HSBC FINANCE CORP-SENIOR SUBORDINATED		01/19/2018	TENDERED		337,551	300,000	341,469	325,793		(397)		(397)		325,396		12,155	12,155	1,001	01/15/2021
40430H-AG-3	HSI ASSET SECURITIZATION-SERIES 05-INC1 C		12/26/2018	PAYDOWN		165,644	165,644	158,863	165,629		15		15		165,644				1,980	07/25/2035
40430H-FL-7	HSI ASSET SECURITIZATION-SERIES 2006-OPT		12/26/2018	PAYDOWN		99,206	99,206	96,037	99,615		(408)		(408)		99,206				1,025	02/25/2036
40431K-AA-8	HSI ASSET LOAN OBLIGATION-SERIES 2007-WF1		12/26/2018	PAYDOWN		1,058	1,058	781	84		974		974		1,058				4	12/25/2036
40431K-AE-0	HSI ASSET LOAN OBLIGATION-SERIES 2007-WF1		12/01/2018	PAYDOWN		430,539	430,539	207,786	145,461		285,078		285,078		430,539				20,758	12/01/2036
40573L-AU-0	Halfmoon Parent Inc-SENIOR UNSECURED		10/17/2018	GOLDMAN		294,396	300,000	299,424			(11)		(11)		299,414		(5,018)	(5,018)	1,280	08/15/2038
406216-BC-4	HALLIBURTON CO-SR UNSECURED		08/01/2018	MATURITY		200,000	200,000	197,211	199,359		641		641		200,000				2,333	08/01/2018
410246-AA-2	Handi Quilter, Inc. Senior Sub Note		10/23/2018	PREPAYMENTS //O PENA		2,768,873	2,768,873	2,768,873	2,768,873						2,768,873				273,543	06/19/2021
000000-00-0	Handi Quilter (HQ Acquis Senior Sub Note		10/23/2018	PREPAYMENTS //O PENA		553,755	553,755	553,755	553,755						553,755					06/19/2021
41138F-AA-3	Happy Floors Acquisition Senior Sub Note		04/30/2018	PREPAYMENTS //O PENA		1,697,263	1,697,263	1,698,106	1,698,059		(49)		(49)		1,698,009		(746)	(746)	148,310	01/01/2023
41161																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
41161P-IB-5	HARBORVIEW MORTGAGE LOAN-SERIES 2005-13		12/19/2018	PAYDOWN		650,057	650,057	484,293	463,231		186,826		186,826		650,057				8,318	02/19/2036
41161P-XH-1	HARBORVIEW MORTGAGE LOAN-SERIES 2005-15C		12/20/2018	PAYDOWN		81,354	81,354	64,172	69,382		11,972		11,972		81,354				681	10/20/2045
411707-AA-0	CKE RESTAURANTS HOLDINGS-SERIES 2013-1A		06/20/2018	PAYDOWN		21,250,298	21,250,298	21,431,837	21,339,002		(88,704)		(88,704)		21,250,298				439,229	03/20/2043
41242*-AK-8	Hardwood Funding LLC Senior Note Ser		06/07/2018	MATURITY		3,000,000	3,000,000	3,390,930	3,033,237		(33,237)		(33,237)		3,000,000				68,510	06/07/2018
41283D-AB-9	HARLEY-DAVIDSON FUNDING-SENIOR UNSECURED		06/15/2018	MATURITY		10,851,000	10,851,000	13,033,903	11,040,767		(189,767)		(189,767)		10,851,000				336,140	06/15/2018
413875-AM-7	HARRIS CORPORATION-NOTE		06/22/2018	CALL 103.7847226		12,454,167	12,000,000	11,931,480	11,976,407		3,678		3,678		12,454,252		19,915	19,915	704,967	12/15/2020
41810*-AA-2	HASI SYB Trust 2015-1 Class A Bonds		10/20/2018	SINKING PAYMENT		1,728,961	1,728,961	1,728,961	1,728,961						1,728,961				50,216	10/20/2045
419839-AA-3	HAWAIIAN AIRLINES 13-1B-SERIES 13-1 CLAS		07/15/2018	VARIOUS		136,776	134,539	137,398	137,077		258		258		136,227		549	549	2,489	01/15/2022
421924-BT-7	HEALTHSOUTH CORP-SENIOR UNSECURED		11/27/2018	VARIOUS		1,348,097	1,360,000	1,353,453	1,354,327		528		528		1,354,854		(6,757)	(6,757)	69,576	09/15/2025
42329G-AA-8	HELIOS ISSUER LLC-SERIES 17-1A CLASS A		09/20/2018	PAYDOWN		970,767	970,767	970,310	970,310		3,993		3,993		970,767				35,078	09/20/2049
42709E-AG-7	HERCULES CAPITAL INC-SENIOR UNSECURED		05/22/2018	JEFFERIESLLC		91,165	92,000	91,493	91,504		38		38		91,543		(378)	(378)	2,479	10/23/2022
42710W-AA-0	HERCULES CAPITAL FUNDING-SERIES 2014-1A		10/16/2018	PAYDOWN		2,402,504	2,402,504	2,402,504	2,402,504						2,402,504				37,187	04/16/2021
428040-CT-4	HERTZ CORP-2ND LIEN		11/19/2018	BARCLAYS CAPITAL INC		3,740,773	3,830,000	3,766,755	3,772,180		10,228		10,228		3,782,407		(41,634)	(41,634)	259,182	06/01/2022
42809H-AC-1	HESS CORP-SENIOR UNSECURED BOND		05/17/2018	JEFFERIESLLC		19,189,413	18,530,000	21,627,564	21,312,158		(28,924)		(28,924)		21,283,234		(2,093,821)	(2,093,821)	429,936	01/15/2040
428236-BQ-5	HP Inc-SENIOR UNSECURED NOTE		03/26/2018	TENDERED		7,843,125	7,500,000	7,434,810	7,468,915		2,143		2,143		7,471,058		372,067	372,067	77,474	09/15/2021
428236-BV-4	HP Inc-SENIOR UNSECURED NOTE		03/26/2018	TENDERED		5,291,000	5,000,000	5,019,450	5,009,477		(707)		(707)		5,008,770		282,230	282,230	54,896	12/09/2021
42824C-AW-9	HP ENTERPRISE CO-SENIOR UNSECURED		05/11/2018	WELLS FARGO		231,687	225,000	237,137	236,300		(474)		(474)		235,826		(4,139)	(4,139)	6,431	10/15/2025
428291-AN-8	Hexcel Corp-SENIOR UNSECURED		08/09/2018	MARKETAXESS FINANCI		24,445	25,000	24,890	24,897		7		7		24,904		(459)	(459)	982	02/15/2027
42970F-AA-2	High Noon Solar LLC Senior Secured		12/31/2018	SINKING PAYMENT		1,074,833	1,074,833	1,074,833	1,074,833						1,074,833				29,967	12/31/2036
429827-AR-9	HIGHER EDUCATION FUNDING-SERIES 2004-1 C		01/16/2018	PAYDOWN		1,610,000	1,610,000	1,357,431	1,383,982		226,018		226,018		1,610,000					01/01/2044
431282-AF-9	HIGHWOODS REALTY LP-SENIOR UNSECURED NOT		04/15/2018	MATURITY		915,000	915,000	1,054,409	922,588		(7,588)		(7,588)		915,000				19,825	04/15/2018
432837-AA-0	HILTON GRAND VACATIONS T-SERIES 2013-A C		12/25/2018	PAYDOWN		1,244,632	1,244,632	1,243,014	1,243,632		1,000		1,000		1,244,632				13,928	01/25/2026
43534*-AA-3	Hollandia Produce LP Senior Sub Note		10/01/2018	VARIOUS		2,832,877	2,845,780	2,838,719	2,818,403		1,365		1,365		2,833,485		(608)	(608)	234,073	03/31/2021
437076-BB-7	HOME DEPOT INC-SR UNSECURED		09/10/2018	MATURITY		650,000	650,000	665,580	653,646		(3,646)		(3,646)		650,000				10,116	09/10/2018
437084-AE-6	HOME EQUITY ASSET TRUST-SERIES 2003-7 CL		12/26/2018	PAYDOWN		1,272,234	1,272,234	1,135,718	1,272,234						1,272,234				23,487	03/25/2034
437084-NZ-5	HOME EQUITY ASSET TRUST-SERIES 2005-7 CL		12/26/2018	PAYDOWN		1,643,827	1,643,827	1,021,453	1,479,606		164,221		164,221		1,643,827				20,887	01/25/2036
43739E-AP-2	HOMEBCANC MORTGAGE TRUST-SERIES 2005-1 CL		12/26/2018	PAYDOWN		1,093,986	1,093,986	809,878	880,511		213,475		213,475		1,093,986				14,538	03/25/2035
43739E-BJ-5	HOMEBCANC MORTGAGE TRUST-SERIES 2005-3 CL		12/26/2018	PAYDOWN		818,059	818,059	716,865	793,745		24,315		24,315		818,059				21,077	07/25/2035
43739E-BS-5	HOMEBCANC MORTGAGE TRUST-SERIES 2005-4 CL		12/26/2018	PAYDOWN		985,511	985,511	757,323	856,410		129,102		129,102		985,511				16,922	10/25/2035
438516-BR-6	Honeywell International -SENIOR UNSECURE		01/31/2018	EXCHANGE OFFER		556,966	425,000	557,577	557,230		(265)		(265)		556,966				1,350	11/21/2047
441077-AV-8	HOST HOTELS & RESORTS LP-SENIOR UNSECURE		04/16/2018	MARKETAXESS FINANCI		88,321	90,000	89,854	89,883		2		2		89,885		(1,564)	(1,564)	1,230	06/15/2025
44266R-AC-1	HOWARD HUGHES MEDICAL IN-SENIOR UNSECURE		12/20/2018	CALL 102.886119		13,452,360	13,075,000	13,219,263	13,180,819		(16,918)		(16,918)		13,541,261		(88,901)	(88,901)	821,002	09/01/2023
44416*-AB-2	Hudson Transmission Part Senior Secured		11/30/2018	SINKING PAYMENT		1,019,480	1,019,480	1,017,142	1,017,606		94		94		1,019,480				28,895	05/31/2033
444859-AU-6	Humana Inc-SENIOR UNSECURED		01/01/2018	VARIOUS		540,938	540,938								540,938					08/01/2018
44919*-AC-2	I 595 Express, LLC Senior Secured		12/31/2018	SINKING PAYMENT		3,566,132	3,566,132	3,566,132	3,566,132						3,566,132				100,496	12/31/2031
449669-CD-0	MOSAIC GLOBAL HLDG-SENIOR UNSECURED NOTE		08/01/2018	MATURITY		7,500,000	7,500,000	9,268,500	7,705,439		(205,439)		(205,439)		7,500,000				322,656	08/01/2018
450056-AA-6	IRS Ogden II Lease Finan Lease Backed No		12/15/2018	SINKING PAYMENT		1,063,416	1,063,416	1,063,416	1,063,416						1,063,416				26,143	03/15/2032
45071K-AE-4	IXIS REAL ESTATE CAPITAL-SERIES 2004-HE4		12/26/2018	PAYDOWN		363,451	363,451	268,273	363,451						363,451				6,323	02/25/2035
45071K-DD-3	IXIS REAL ESTATE CAPITAL-SERIES 2006-HE1		12/26/2018	PAYDOWN		75,703	75,703	36,481	41,617		34,086		34,086		75,703				662	03/25/2036
451102-BN-6	Icahn Enterprises LP / I-SENIOR UNSECURE		02/14/2018	EXCHANGE OFFER		4,249,000	4,249,000	4,249,000	4,249,000						4,249,000				32,354	12/15/2025
45254N-FY-8	IMPAC CMB TRUST-SERIES 2003-11 CLASS 1A1		12/26/2018	PAYDOWN		109,950	109,950	101,905	105,641		4,308		4,308		109,950				1,337	10/25/2033
45254N-HV-2	IMPAC CMB TRUST-SERIES 2004-4 CLASS 1M1		12/26/2018	PAYDOWN		37,651	37,651	19,370	21,971		15,680		15,680		37,651				552	09/25/2034
45254N-JB-4	IMPAC CMB TRUST-SERIES 2004-4 CLASS 2A1		12/01/2018	PAYDOWN		307,458	307,458	294,680	280,521		26,938		26,938		307,458				2,220	09/01/2034
45254N-JG-3	IMPAC CMB TRUST-SERIES 2004-5 CLASS 1A1		12/26/2018	PAYDOWN		64,574	64,574	59,157	63,989		585		585		64,574				820	10/25/2034
45254N-JK-4	IMPAC CMB TRUST-SERIES 2004-5 CLASS 1M1		12/26/2018	PAYDOWN		16,526	16,526	9,799	11,488		5,038		5,038		16,526				162	10/25/2034
45254N-JP-3	IMPAC CMB TRUST-SERIES 2004-5CLASS 1M5		12/26/2018	PAYDOWN		15,302	15,302	5,746	6,881		8,421		8,421		15,302				333	10/25/2034
45254N-JV-0	IMPAC CMB TRUST-SERIES 2004-6 CLASS 1A1		12/26/2018	PAYDOWN		46,904	46,904	42,296	45,585		1,319		1,319		46,904				610	10/25/2034
45254N-JX-6	IMPAC CMB TRUST-SERIES 2004-6 CLASS M1		12/26/2018	PAYDOWN		19,472	19,472	9,275	10,759		8,713		8,713		19,472				264	10/25/2034
45254N-KA-4	IMPAC CMB TRUST-SERIES 2004-6 CLASS M4		12/26/2018	PAYDOWN		44,137	44,137	8,718	15,745		28,393		28,393		44,137				802	10/25/2034
45254N-KK-2	IMPAC CMB TRUST-SERIES 2004-7 CLASS M1		12/26/2018	PAYDOWN		13,891	13,891	2,695	6,115		7,776		7,776		13,891				214	11/25/2034
45254N-KM-0	IMPAC CMB TRUST-SERIES 2004-11 CLASS 2A1		12/26/2018	PAYDOWN		77,995	77,995	55,814	66,473		11,522		11,522		77,995				972	03/25/2035
45254N-KL-8	IMPAC CMB TRUST-SERIES 2005-1 CLASS 1A1																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
45254T-PX-6	IMPAC SECURED ASSETS COR-SERIES 2004-3 C		12/26/2018	PAYDOWN		267,983	267,983	218,512	266,447		1,536		1,536		267,983				3,635	11/25/2034
45254T-RX-4	IMPAC SECURED ASSETS COR-SERIES 2005-1 C		12/25/2018	PAYDOWN		15,174	15,174	9,153	10,239		4,934		4,934		15,174				212	07/25/2035
45254T-SM-7	IMPAC SECURED ASSETS COR-SERIES 2005-2 C		12/26/2018	PAYDOWN		209,294	250,892	170,707	190,895		41,258		41,258		209,294				4,459	03/25/2036
45257E-AE-4	IMPAC SECURED ASSETS COR-SERIES 2006-5 C		12/26/2018	PAYDOWN		511,627	511,627	444,646	481,189		30,438		30,438		511,627				4,834	12/25/2036
45660L-AU-3	RES ASSET SECURIZATION TR-SERIES 2004-IP		12/01/2018	PAYDOWN		48,831	63,918	11,557	15,540		35,944		35,944		48,831				458	12/01/2034
45660L-IY-6	INDYMAC INDX MORTGAGE LO-SERIES 2005-AR3		12/26/2018	PAYDOWN		242,880	266,112	152,167	190,308		54,276		54,276		242,880				2,556	01/25/2036
45660L-IY-4	INDYMAC INDX MORTGAGE LO-SERIES 2005-AR2		12/01/2018	PAYDOWN		44,128	44,128	10,137	161		43,967		43,967		44,128				569	01/01/2036
45660L-IY-3	INDYMAC INDX MORTGAGE LO-SERIES 2005-1 C		12/26/2018	PAYDOWN		297,733	368,727	221,085	240,814		97,005		97,005		297,733				1,312	11/25/2035
45660N-2J-3	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR8		12/26/2018	PAYDOWN		356,189	356,189	241,334	263,791		92,397		92,397		356,189				5,745	11/25/2034
45660N-2Y-0	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1		12/26/2018	PAYDOWN		59,886	59,886	46,907	53,396		6,491		6,491		59,886				590	05/25/2034
45660N-3S-2	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR9		12/26/2018	PAYDOWN		327,835	327,835	282,491	321,171		6,664		6,664		327,835				4,131	11/25/2034
45660N-5H-4	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1		12/26/2018	PAYDOWN		653,656	678,742	447,357	451,154		219,036		219,036		653,656				12,026	12/25/2034
45660N-7R-0	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1		12/01/2018	PAYDOWN		(4,138)	38,460	3,198	2,366		(2,350)		(2,350)		(4,138)				762	01/01/2035
45660N-Q2-4	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR4		12/01/2018	PAYDOWN		208,754	208,754	139,784	159,895		48,859		48,859		208,754				1,218	08/01/2034
45660N-S3-0	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR5		12/25/2018	PAYDOWN		98,532	98,532	82,146	87,285		10,742		10,742		98,532				1,551	08/25/2034
45660N-T8-8	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR7		12/25/2018	PAYDOWN		6,166	6,547	4,688	4,627		1,802		1,802		6,166				103	09/25/2034
45660N-W5-0	RESIDENTIAL ASSET SECURI-SERIES 03-A15 C		11/01/2018	PAYDOWN		11,673	11,673	10,512	11,115		558		558		11,673				181	02/01/2034
45660N-ZY-4	INDYMAC INDX MORTGAGE LO-SERIES 2004-AR1		12/25/2018	PAYDOWN		57,714	57,714	6,412	57,235		51,421	50,941	480		57,714				295	04/25/2034
45661E-AA-2	INDYMAC INDX MORTGAGE LO-SERIES 2006-AR2		12/26/2018	PAYDOWN		28,951	28,951	14,625	17,829		11,122		11,122		28,951				329	04/25/2046
45667W-AA-6	INDYMAC INDX MORTGAGE LO-SERIES 2006-FLX		12/26/2018	PAYDOWN		305,229	305,229	213,422	251,909		53,320		53,320		305,229				3,901	11/25/2036
45670A-AA-9	INDYMAC INDX MORTGAGE LO-SERIES 2007-FLX		12/26/2018	PAYDOWN		1,418,955	1,418,955	1,118,763	1,245,304		173,650		173,650		1,418,955				13,740	06/25/2037
45687A-AA-0	INGERSOLL-RAND GL HLD CO-NOTE		03/15/2018	CALL 101.8618		4,512,478	4,430,000	4,295,856	4,417,199		4,117		4,117		4,503,793		8,685	8,685	145,082	08/15/2018
45687A-AL-6	INGERSOLL-RAND GL HLD CO-SENIOR UNSECURE		03/15/2018	CALL 100.4186652		3,313,816	3,300,000	3,295,849	3,298,976		144		144		3,312,936		880	880	33,318	01/15/2019
457187-AB-8	INGREDION INC-SENIOR UNSECURED		04/16/2018	MITSUBISHI UFJ SEC I		80,696	85,000	84,963	84,965		3		3		84,968		(4,272)	(4,272)	1,488	10/01/2026
45782B-AA-2	INSEEGO CORP-SENIOR UNSECURED		11/02/2018	JEFFERIESLLC		7,358,440	7,000,000	7,000,000	7,000,000						7,000,000		358,440	358,440	300,917	06/15/2022
458140-AF-7	INTEL CORP-CONVERTIBLE BOND		06/14/2018	CREDIT SUISSE SECURI		11,938,500	4,500,000	6,134,612	5,921,792		(22,324)		(22,324)		5,898,468		6,039,032	6,039,032	58,419	08/01/2039
458140-AT-7	INTEL CORP-SR UNSECURED		01/18/2018	GOLDMAN		18,811,409	15,711,000	17,824,944	17,762,987		(2,076)		(2,076)		17,760,910		1,050,499	1,050,499	369,950	07/29/2045
45866F-AA-2	INTERCONTINENTALEXCHANGE-SENIOR UNSECURE		12/19/2018	VARIOUS		10,267,144	10,085,000	10,272,863	10,224,948		(17,894)		(17,894)		10,207,054		60,090	60,090	416,246	10/15/2023
45866F-AB-0	INTERCONTINENTALEXCHANGE-SENIOR UNSECURE		09/12/2018	CALL 100.022		400,088	400,000	399,644	399,934		55		55		400,076		12	12	7,060	10/15/2018
459200-GM-7	International Business M-NOTE		10/15/2018	MATURITY		7,300,000	7,300,000	8,969,904	7,536,116		(236,116)		(236,116)		7,300,000				439,115	10/15/2018
459200-HK-0	IBM CORP-SR UNSECURED		02/08/2018	MATURITY		300,000	300,000	298,606	299,931		69		69		300,000				385	02/08/2018
459200-HZ-7	IBM CORP-SR UNSECURED		02/06/2018	MATURITY		250,000	250,000	248,670	249,938		63		63		250,000				273	02/06/2018
459745-GC-3	INTL LEASE FINANCE CORP-FIRST LIEN		09/01/2018	MATURITY		200,000	200,000	221,500	206,981		(6,981)		(6,981)		200,000				9,500	09/01/2018
459745-GH-2	INTL LEASE FINANCE CORP-SENIOR UNSECURED		08/03/2018	CITIGROUP GLOBAL MAR		691,430	675,000	730,262	700,864		(11,188)		(11,188)		689,677		1,753	1,753	25,313	05/15/2019
459745-GP-4	INTL LEASE FINANCE CORP-UNSECURED NOTE		04/15/2018	MATURITY		135,000	135,000	135,959	135,063		(63)		(63)		135,000				1,511	04/15/2018
46247E-AA-2	Iowa Interstate Railroad Senior Secured		01/28/2018	SINKING PAYMENT		3,753,601	3,753,601	3,753,601	3,753,601						3,753,601					01/28/2028
462592-AD-8	IOWA STUDENT LOAN LIQUID-SERIES 2005-1 C		09/25/2018	PAYDOWN		133,655	133,655	96,900	108,379		25,276		25,276		133,655				1,189	09/25/2037
463556-AD-2	ILLINOIS GAS TRANSMISSION-BOND		10/31/2018	SINKING PAYMENT		67,059	67,059	67,059	67,059						67,059				3,068	10/31/2027
464126-BW-0	IRWIN HOME EQUITY-SERIES 2002-1 CLASS 2B		07/25/2018	PAYDOWN		91,076	91,076	18,112	28,461		62,616		62,616		91,076				2,240	02/25/2029
46412A-AD-4	IRWIN HOME EQUITY-SERIES 2006-P1 CLASS 2		12/01/2018	PAYDOWN		2,245,165	2,245,165	737,899	826,101		1,419,064		1,419,064		2,245,165				100,977	06/01/2037
46616V-AA-8	J G WENTWORTH REC VV-ASSET BKD NT 12-1		12/15/2018	PAYDOWN		272,844	272,844	284,078	282,912		(10,068)		(10,068)		272,844				2,445	02/16/2065
46617A-AA-3	JGWIPT XXVII LLC-ASSET BKD SERIES 2012-3		12/15/2018	PAYDOWN		476,459	476,459	463,952	464,691		11,768		11,768		476,459				3,034	09/15/2065
46617T-AA-2	JGWIPT XXXI LLC-ASSET BKD SERIES 2014-1 C		12/15/2018	PAYDOWN		348,535	348,535	349,653	349,514		(980)		(980)		348,535				6,727	03/15/2063
46618H-AA-7	J G WENTWORTH XXXIII LLC-ASSET BKD SER 2		12/15/2018	PAYDOWN		686,014	686,014	679,838	680,221		5,793		5,793		686,014				12,749	06/15/2077
46618L-AA-8	J G WENTWORTH XXXIV LLC-ASSET BKD SER 20		12/15/2018	PAYDOWN		619,061	619,061	606,692	607,437		11,623		11,623		619,061				10,982	09/15/2072
46619R-AA-4	J G WENTWORTH XXV LLC-ASSET BKD NT 15-		12/15/2018	PAYDOWN		548,745	548,745	549,395	549,338		(593)		(593)		548,745				11,074	03/15/2058
46620D-AA-2	321 HENDERSON RECEIVABLE-SERIES 16-1A CL		12/17/2018	PAYDOWN		563,481	563,481	546,306	562,935		546		546		563,481				12,246	06/15/2067
466247-CL-5	JP MORGAN MORTGAGE TRUST-SERIES 2004-A2C		10/01/2018	PAYDOWN		118,642	118,642	117,122	116,066		2,576		2,576		118,642				3,215	05/01/2034
466247-K9-3	JP MORGAN MORTGAGE TRUST-SERIES 2006-A2		12/01/2018	PAYDOWN		5,226	5,226	4,521	5,100		126		126		5,226				93	11/01/2033
466247-NC-3	JP MORGAN MORTGAGE TRUST-SERIES 2005-S1		12/01/2018	PAYDOWN		(39,598)	86,698				(39,598)		(39,598)		(39,598)				442	01/01/2035
466247-TQ-6	JP MORGAN MORTGAGE TRUST-SERIES 2005-A6		12/01/2018	PAYDOWN		237,165	237,165	232,940	229,058		14,106		14,106		237,165				3,142	08/01/2035
466247-UG-6	JP MORGAN MORTGAGE TRUST-SERIES 2005-A6		12/01/2018	PAYDOWN		160,185	168,228	139,696	1											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
46627M-CS-4	J.P. MORGAN ALTERNATIVE -SERIES 2006-A1		12/25/2018	PAYDOWN		498,406	498,406	380,661	373,614		124,792		124,792		498,406				4,723	03/25/2036
46629B-AR-0	JP MORGAN MORTGAGE ACQUI-SERIES 2006-CW2		12/26/2018	PAYDOWN		221,414	221,414	185,412	215,203		6,210		6,210		221,414				2,748	08/25/2036
46629N-AC-7	JP MORGAN MORTGAGE ACQUI-SERIES 2006-RM1		12/26/2018	PAYDOWN		21,910	21,910	8,969	7,655		14,254		14,254		21,910				65	08/25/2036
46629T-AE-0	JP MORGAN MORTGAGE ACQUI-SERIES 06-CH1 C		12/26/2018	PAYDOWN		1,263,100	1,263,100	1,194,419	1,261,551		1,549		1,549		1,263,100				5,729	07/25/2036
46630K-AA-4	JP MORGAN MORTGAGE ACQUI-SERIES 2007-HE1		12/26/2018	PAYDOWN		45,376	45,376	35,298	26,297		19,079		19,079		45,376				191	03/25/2047
46635T-CG-5	JP MORGAN CHASE COMMERCIAL-SERIES 2011-C3		12/01/2018	PAYDOWN		211,885	211,885	248,240	226,063		(14,178)		(14,178)		211,885				7,523	02/01/2046
46636D-AG-1	JP MORGAN CHASE COMMERCIAL-SERIES 2011-C4		08/17/2018	PAYDOWN		3,214,373	3,214,373	3,131,790	3,206,716		6,729		6,729		3,214,373				24,460	07/15/2046
46636D-AJ-5	JP MORGAN CHASE COMMERCIAL-SERIES 2011-C4		08/01/2018	PAYDOWN		595,284	595,284	601,235	597,127		(1,843)		(1,843)		595,284				17,413	07/01/2046
47032E-AK-7	JAMES CAMPBELL CO LLC SR NT SER 2014-E		10/30/2018	CA CASH CLOSE		13,500,000	13,500,000	13,500,000	13,500,000					13,500,000					389,346	09/30/2024
47714M-AA-7	JetBlue Airways Corporat Pass-Thru Ctf 2		10/15/2018	SINKING PAYMENT		235,775	235,775	235,775	235,775						235,775				4,761	01/15/2019
47715*-AA-5	JetBlue Airways Corporat Pass Thru Certi		09/05/2018	SINKING PAYMENT		3,535,658	3,535,658	3,535,658	3,535,658						3,535,658				110,839	03/05/2023
47746*-AA-4	JFMC Facilities Corp. Senior Note		07/31/2018	SINKING PAYMENT		481,301	481,301	481,301	481,301						481,301				4,861	07/30/2038
478045-AA-5	JOHN SEVIER COMB CYCLE-SECURED		07/15/2018	SINKING PAYMENT		16,202	16,202	18,063	17,961		(28)		(28)		16,202				813	01/15/2042
478115-AA-6	JOHN HOPKINS UNIVERSITY-UNSECURED NOTE		12/13/2018	CALL 101.199863		596,067	596,067	706,235	617,396		(17,894)		(17,894)		606,569		(10,502)	(10,502)	36,444	07/01/2019
478160-BG-8	JOHNSON & JOHNSON-SR UNSECURED		12/05/2018	MATURITY		250,000	250,000	252,274	250,723		(723)		(723)		250,000				3,827	12/05/2018
48121E-AA-9	Jrd Holdings LLC Senior Note Ser		04/30/2018	SINKING PAYMENT		3,571,429	3,571,429	3,723,224	3,621,630		(8,982)		(8,982)		3,571,429				72,143	04/30/2022
48121E-AB-7	Jrd Holdings LLC Senior Note Ser		04/30/2018	SINKING PAYMENT		3,454,545	3,454,545	3,454,545	3,454,545						3,454,545				80,318	04/30/2027
48121E-AD-3	Jrd Holdings LLC Senior Note		03/27/2018	SINKING PAYMENT		2,874,300	2,874,300	2,874,300	2,874,300						2,874,300				59,353	03/27/2024
48122H-AB-0	JP Morgan Student Loan T-SERIES 2007-A C		10/29/2018	PAYDOWN		654,575	654,575	623,892	624,142		30,434		30,434		654,575				3,129	06/28/2039
48128D-AA-8	JP Morgan Chase Bk Lease-Vadanta-Amazon		12/01/2018	SINKING PAYMENT		8,844,380	8,844,380	8,844,380	8,844,380						8,844,380				106,266	12/01/2020
483050-AA-1	Kaiser Foundation Hospit-SENIOR UNSECURE		08/03/2018	MILLENNIUM ADVISORS		20,119	20,119	19,839	19,923		10		10		19,933		186	186	595	04/01/2022
48730P-AC-4	KEENAN DEV ASSOCS TENN LLC LEASE REV BD		07/15/2018	SINKING PAYMENT		328,884	328,884	364,640	349,662		(1,210)		(1,210)		328,884				12,434	07/15/2028
487312-AC-4	Keenan Fort Detrick Ener Taxable Revenue		11/15/2018	SINKING PAYMENT		1,114,970	1,114,970	1,114,970	1,114,970						1,114,970				49,597	05/15/2033
489170-AD-2	Kenametal Inc-SENIOR UNSECURED NOTE		07/09/2018	CALL 100		20,500,000	20,500,000	20,471,588	20,491,547		2,231		2,231		20,493,778		6,222	6,222	283,697	11/01/2019
49239E-AA-6	Gunnison Platform Statut Senior Note Ser		01/30/2018	SINKING PAYMENT		554,749	554,749	554,749	554,749						554,749				18,640	01/30/2020
49239E-AB-4	Gunnison Platform Statut Senior Note Ser		01/30/2018	SINKING PAYMENT		307,978	307,978	307,978	307,978						307,978				10,348	01/30/2020
493268-AU-0	KEYCORP STUDENT LOAN TRU-SERIES 1999-B C		11/26/2018	PAYDOWN		1,859,699	1,859,699	1,499,293	1,634,968		224,731		224,731		1,859,699				10,259	11/25/2036
493268-AW-6	KEYCORP STUDENT LOAN TRU-SERIES 2000-A C		11/26/2018	PAYDOWN		209,673	209,673	200,238	207,686		1,987		1,987		209,673				2,734	05/25/2029
493268-BW-5	KEYCORP STUDENT LOAN TRU-SERIES 2004-A C		10/29/2018	PAYDOWN		223,647	223,647	197,997	206,753		16,894		16,894		223,647				2,346	01/27/2043
493268-BZ-8	KEYCORP STUDENT LOAN TRU-SERIES 2004-A C		10/29/2018	PAYDOWN		70,571	70,571	59,907	64,079		6,491		6,491		70,571				5,113	01/27/2042
49327H-AG-0	KEYCORP STUDENT LOAN TRU-SERIES 2006-A C		12/27/2018	PAYDOWN		5,236,756	5,236,756	4,694,533	5,170,681		66,076		66,076		5,236,756				86,712	09/27/2035
49327M-2A-1	KEY BANK NA-SR UNSECURED		02/01/2018	MATURITY		150,000	150,000	149,263	149,970		30		30		150,000				206	02/01/2018
49327M-2H-6	KEY BANK NA-SR UNSECURED		06/01/2018	MATURITY		150,000	150,000	149,108	149,844		156		156		150,000				1,063	06/01/2018
49456A-AA-1	KINDER MORGAN FIN CO LLC-SENIOR NOTE		01/15/2018	MATURITY		4,325,000	4,325,000	4,352,079	4,325,142		(142)		(142)		4,325,000				10,092	01/15/2018
49456B-AH-4	Kinder Morgan Inc/DE-SR UNSECURED		06/11/2018	SCOTIA CAPITAL MARKE		228,445	225,000	238,961	238,868		(104)		(104)		228,764		(10,319)	(10,319)	6,660	06/01/2045
49757*-AA-6	KIRKWALL HLDGS LLC SR SEC2 NT		10/05/2018	SINKING PAYMENT		215,952	215,952	215,952	215,952						215,952					10/05/2030
50075N-AC-8	MONDELEZ INTERNATIONAL-BOND		04/17/2018	TENDERED		1,229,740	1,000,000	1,288,885	1,232,921		(3,626)		(3,626)		1,229,294		446	446	49,139	11/01/2031
50075N-AZ-7	MONDELEZ INTERNATIONAL-SENIOR UNSECURED		04/17/2018	TENDERED		7,923,324	6,276,000	6,215,499	6,221,728		102		102		6,221,829		1,701,495	1,701,495	308,396	02/09/2040
50076Q-AN-6	Kraft Foods Group Inc-SENIOR UNSECURED B		10/17/2018	BANK OF AMERICA CORP		326,158	295,000	372,862	366,702		(1,520)		(1,520)		365,183		(39,025)	(39,025)	22,903	02/09/2040
50076Q-AZ-9	Kraft Foods Group Inc-SENIOR UNSECURED N		12/11/2018	GOLDMAN		8,142,676	8,297,000	8,860,366	8,580,733		(58,000)		(58,000)		8,522,733		(380,057)	(380,057)	275,875	06/06/2022
50077L-AB-2	KRAFT HEINZ FOODS CO-SENIOR UNSECURED		10/17/2018	MILLENNIUM ADVISORS		2,670,105	3,144,000	3,072,465	3,072,768		943		943		3,073,711		(403,606)	(403,606)	121,503	06/01/2046
501044-BK-6	KROGER CO-SENIOR NOTE		05/01/2018	MATURITY		8,000,000	8,000,000	9,450,432	8,085,741		(85,741)		(85,741)		8,000,000				186,667	05/01/2018
501773-CX-1	LB COMMERCIAL CONDUIT MO-SERIES 1999-C1		12/01/2018	PAYDOWN		5,685	5,685	13,561	42		6,007		6,007		5,685				4,449	06/01/2031
50179A-AQ-0	LB-UBS COMMERCIAL MORTGA-SERIES 2007-C1C		12/11/2018	PAYDOWN		44,296	44,296	28,863	241		18,493		18,493		44,296				962	02/11/2040
50212Y-AB-0	LPL Holdings Inc-SENIOR UNSECURED		11/27/2018	VARIIOUS		456,366	480,000	462,000	1,077		1,077		1,077		463,077		(6,711)	(6,711)	19,311	09/15/2025
502413-AY-3	L-3 Communications Corp-SENIOR UNSECURED		06/06/2018	TENDERED		8,985,534	8,700,000	9,004,733	8,852,262		(36,026)		(36,026)		8,816,236		169,298	169,298	194,783	10/15/2019
502413-AZ-0	L-3 Communications Corp-SENIOR NOTE		06/06/2018	TENDERED		13,051,055	12,538,000	12,966,226	12,870,819		(55,430)		(55,430)		12,815,390		235,665	235,665	256,420	07/15/2020
502413-BA-4	L-3 Communications Corp-SENIOR NOTE		08/08/2018	CREDIT SUISSE SECURI		196,855	190,000	205,382	199,904		(2,021)		(2,021)		197,884		(1,029)	(1,029)	9,274	02/15/2021
50346E-AA-5	LA HIPOTECARIA SA-SERIES 2014-1AClass A1		12/15/2018	PAYDOWN		843,212	843,212	872,724	859,996		(16,784)		(16,784)		843,212				15,212	11/24/2042
50543L-AA-0	LABRADOR AVIATION FINANC-SERIES 2016-1A		12/15/2018	PAYDOWN		2,836,250	2,836,250	2,781,219	2,795,363		40,887		40,887		2,836,250				66,061	01/15/2042
521050-AD-6	LAYNE CHRISTENSEN CO-2ND LIEN		08/20/2018	EXCHANGE OFFER		12,709,189	12,600,000	13,075,854	12,807,777		(98,587)		(98,587)		12,709,189				641,200	05/01/2019
521070-AF-2	LAZARD GROUP LLC-SENIOR UNSECURED NOTE		09/28/2018	TENDERED		2,877,293	2,900,000	3,065,												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
525226-AL-0	LEHMAN XS TRUST-SERIES 2006-12N CLASS A4		12/26/2018	PAYDOWN		(1,569)	49,078	18,005	26,216		(15,144)		(15,144)		(1,569)				612	08/25/2046
525229-AG-5	LEHMAN XS TRUST-SERIES 2006-10N CLASS 1A		12/26/2018	PAYDOWN		(542)	11,795	4,457	6,915		(20,164)		(20,164)		(542)				(19)	07/25/2046
526057-BN-3	Lennar Corp-SENIOR UNSECURED NOTE		12/19/2018	VARIOUS		2,888,466	2,933,000	2,908,751	2,918,553		2,608		2,608		2,921,162		(32,696)	(32,696)	152,657	11/15/2022
526057-BS-2	Lennar Corp-SENIOR UNSECURED NOTE		12/01/2018	MATURITY		235,000	235,000	239,700	236,027		(1,027)		(1,027)		235,000				8,886	12/01/2018
526057-CQ-5	Lennar Corp-SENIOR UNSECURED		06/15/2018	EXCHANGE OFFER		3,424,387	3,320,000	3,428,950			(4,563)		(4,563)		3,424,387				61,224	11/15/2024
526057-CU-6	Lennar Corp-SENIOR UNSECURED		06/15/2018	EXCHANGE OFFER		1,810,364	1,812,000	1,810,188			176		176		1,810,364				28,438	06/15/2027
532457-BK-3	ELI LILLY & CO-SR UNSECURED		03/01/2018	MATURITY		205,000	205,000	204,536	204,963		37		37		205,000				427	03/01/2018
539830-BH-1	LOCKHEED MARTIN CORP-SENIOR UNSECURED		04/16/2018	BANK OF AMERICA CORP		114,395	115,000	123,036	121,786		(236)		(236)		121,550		(7,155)	(7,155)	3,096	01/15/2026
54246#-AA-5	Long Beach Judicial Part Senior Secured		12/31/2018	SINKING PAYMENT		778,232	778,232	778,232	778,232						778,232				53,542	12/31/2047
542514-KA-1	LONG BEACH MORTGAGE LOAN-SERIES 2005-1 C		02/26/2018	PAYDOWN		42,981	42,981	39,693	42,936		45		45		42,981				147	02/25/2035
542514-LJ-1	LONG BEACH MORTGAGE LOAN-SERIES 2005-WL1		07/25/2018	PAYDOWN		73,552	73,552	69,264	73,468		84		84		73,552				384	06/25/2035
542514-RL-0	LONG BEACH MORTGAGE LOAN-SERIES 2006-1 C		12/26/2018	PAYDOWN		567,645	567,645	252,375	248,536		319,110		319,110		567,645				3,528	02/25/2036
550279-AA-1	LUMINENT MORTGAGE TRUST-SERIES 2005-1 CL		12/26/2018	PAYDOWN		290,783	290,783	230,358	244,716		46,067		46,067		290,783				4,780	11/25/2035
550279-AR-1	LUMINENT MORTGAGE TRUST-SERIES 2006-3 CL		12/26/2018	PAYDOWN		301,869	301,869	221,361	222,609		79,260		79,260		301,869				3,128	05/25/2036
550279-AU-4	LUMINENT MORTGAGE TRUST-SERIES 2006-3 CL		12/26/2018	PAYDOWN		441,037	441,037	294,613	302,228		138,809		138,809		441,037				3,584	05/25/2036
55068#-AF-6	Luxottica US Holdings Co Gtd Senior Note		07/01/2018	MATURITY		5,650,000	5,650,000	5,650,000	5,650,000						5,650,000				191,253	07/01/2018
552745-AM-3	MASTR ASSET SECURITIZATION-SERIES 2006-3 C		12/25/2018	PAYDOWN		52,779	52,764	23,525	23,597		29,175		29,175		52,779				398	02/25/2036
55279Y-AA-1	MCA FUND HOLDING LLC-SERIES 2014-1 CLASS		11/15/2018	PAYDOWN		974,251	974,251	974,251	974,251						974,251				19,962	08/15/2024
55291K-AC-1	MASTR ASSET BACKED SECUR-SERIES 2006-WMC		12/26/2018	PAYDOWN		81,556	81,556	12,483	20,166		61,390		61,390		81,556				596	08/25/2036
55312Y-BD-3	ML-CFC COMMERCIAL MORTGA-SERIES 2007-5 C		12/01/2018	PAYDOWN				22,703	27	1,496			1,496						600	08/01/2048
55336V-AC-4	MPLX LP-SENIOR UNSECURED		12/10/2018	CALL 101.833		193,483	190,000	198,313	195,579		(1,958)		(1,958)		197,104		(3,621)	(3,621)	13,323	02/15/2023
55336V-AG-5	MPLX LP-SENIOR UNSECURED		12/12/2018	U B S SECURITIES		254,783	251,000	235,874	237,776		1,531		1,531		239,307		15,476	15,476	11,658	12/01/2024
55336V-AK-6	MPLX LP-SENIOR UNSECURED		04/16/2018	CITIGROUP GLOBAL MAR		199,022	200,000	199,616	199,641		11		11		199,652		(630)	(630)	2,452	03/01/2027
55336V-AN-0	MPLX LP-SENIOR UNSECURED		08/08/2018	MARKETAXESS FINANCIA		103,021	110,000	109,283			5		5		109,289		(6,268)	(6,268)	2,614	04/15/2048
55374V-AA-1	MSN 1357 LLC Senior Secured Notes Class		12/24/2018	SINKING PAYMENT		129,064	129,064	129,064							129,064					01/24/2028
55374V-AB-9	MSN 1357 LLC Senior Secured Notes Class		12/24/2018	SINKING PAYMENT		55,313	55,313	55,313							55,313					01/24/2028
553794-AB-4	MUFG AMERICAS HLDGS CORP-SR UNSECURED		11/08/2018	CALL 100		200,000	200,000	197,521	198,702		515		515		199,216		784	784	3,438	02/10/2020
553794-AC-2	MUFG AMERICAS HLDGS CORP-SR UNSECURED		11/08/2018	CALL 100		40,000	40,000	38,263	38,602		149		149		38,751				1,493	02/10/2025
55388P-AA-8	MVW OWNER TRUST-SERIES 15-1A CLASS A		12/20/2018	PAYDOWN		1,324,350	1,324,350	1,324,251	1,324,314		36		36		1,324,350				16,436	12/20/2032
55388P-AB-6	MVW OWNER TRUST-SERIES 15-1A CLASS B		12/20/2018	PAYDOWN		183,937	183,937	183,900	183,923		14		14		183,937				2,680	12/20/2032
554694-AA-7	Mackinaw Power LLC-NOTE		12/31/2018	VARIOUS		2,873,739	2,636,190	2,636,190	2,636,190						2,873,739				161,753	10/31/2023
559080-AK-2	MAGELLAN MIDSTREAM PARTN-SR UNSECURED		04/16/2018	AMHERST SECURITIES		64,433	60,000	59,925	59,932		2		2		59,935				4,498	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)	(18)	892	03/01/2026
56033A-AA-8	MAIMONIDES MEDICAL CENTE-SECURED		09/20/2018	VARIOUS		106,916	106,916	106,783	106,791		9		9		106,934		(18)			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
57643L-HP-8	MASTR ASSET BACKED SECUR-SERIES 2005-NC2		12/26/2018	PAYDOWN		165,649	165,649	81,367	92,219		73,429		73,429		165,649				1,332	11/25/2035
57643Q-AE-5	MASTR REPERFORMING LOAN -SERIES 2005-2 C		12/25/2018	PAYDOWN		473,235	493,555	402,424	410,160		77,640		77,640		473,235				2,266	05/25/2035
57645L-AA-2	MASTR REPERFORMING LOAN -SERIES 2006-2 C		12/01/2018	VARIOUS		2,761,971	2,910,052	2,412,023	2,267,831		397,426		397,426		2,761,971				9,354	05/01/2036
58013M-EE-0	McDonald's Corp-SENIOR UNSECURED NOTE		03/01/2018	MATURITY		15,335,000	15,335,000	17,883,614	15,419,695		(84,695)		(84,695)		15,335,000				136,737	03/01/2018
58013M-EU-4	MCDONALD'S CORP-SENIOR UNSECURED		04/16/2018	STIFEL NICOLAUS		103,970	105,000	109,934	109,083		(154)		(154)		108,928		(4,958)	(4,958)	1,053	05/26/2025
581557-AX-3	McKesson Corp-SENIOR NOTE		03/26/2018	CALL 104,2511885		9,486,858	9,100,000	9,450,613	9,150,909		(10,559)		(10,559)		9,527,208		(40,350)	(40,350)	548,004	02/15/2019
581550-AD-5	McKesson Corp-SENIOR UNSECURED NOTE		02/23/2018	TENDERED		10,240,494	10,200,000	11,826,782	10,837,429		(30,219)		(30,219)		10,807,210		(566,716)	(566,716)	579,983	03/01/2021
58174#-AC-8	McKinsey and Company, In Senior Note Ser		05/10/2018	CA CASH CLOSE		18,322,374	17,600,000	17,600,000	17,600,000						18,322,374				1,044,609	05/26/2020
58405U-AD-4	MEDCO HEALTH SOLUTIONS-SENIOR UNSECURED		03/15/2018	MATURITY		16,200,000	16,200,000	20,193,235	16,365,358		(165,358)		(165,358)		16,200,000				237,263	03/15/2018
585055-BA-3	MEDTRONIC INC-SR UNSECURED		04/01/2018	MATURITY		200,000	200,000	199,219	199,912		88		88		200,000				688	04/01/2018
585055-BQ-8	MEDTRONIC INC-SR UNSECURED		03/15/2018	MATURITY		300,000	300,000	300,366	300,032		(32)		(32)		300,000				925	03/15/2018
585525-FC-7	MELLON RESIDENTIAL FUNDI-SERIES 01-TBC1		12/15/2018	PAYDOWN		4,359	4,359	4,181	4,181		177		177		4,359				48	11/15/2031
589331-AN-7	MERCK SHARP & DOHME CORP-SENIOR UNSECURE		12/13/2018	CALL 101,190862		11,277,722	11,145,000	13,414,679	11,690,085		(344,375)		(344,375)		11,478,432		(200,710)	(200,710)	662,109	06/30/2019
58933Y-AC-9	MERCK & CO INC-SENIOR UNSECURED NOTE		01/31/2018	MATURITY		29,900,000	29,900,000	29,875,951	29,899,534		466		466		29,900,000				26,495	01/31/2018
58933Y-AG-0	MERCK & CO INC-SR UNSECURED		05/18/2018	MATURITY		350,000	350,000	350,183	350,028		(28)		(28)		350,000				1,732	05/18/2018
589433-FF-3	Meredith Corp. Senior Note Ser		01/31/2018	CA CASH CLOSE		8,566,665	8,566,665	8,566,665	8,566,665						8,566,665				43,406	03/01/2018
589433-G8-4	Meredith Corp. Senior Note Ser		01/31/2018	CA CASH CLOSE		46,150,000	46,150,000	46,150,000	46,150,000						46,150,000				120,837	12/19/2022
589929-2N-7	MLCC MORTGAGE INVESTORS -SERIES 2003-F C		12/25/2018	PAYDOWN		62,349	62,349	61,338	62,229		120		120		62,349				1,095	10/25/2028
589929-3W-6	MERRILL LYNCH MORTGAGE I-SERIES 2003-A5		12/01/2018	PAYDOWN		151,077	151,077	47,705	80,353		70,724		70,724		151,077				915	08/01/2033
589929-D6-2	MERRILL LYNCH MORTGAGE I-SERIES 2003-A1		12/01/2018	PAYDOWN		6,161	6,161	6,263	6,537		(376)		(376)		6,161				87	12/01/2032
589929-E8-7	MERRILL LYNCH MORTGAGE I-SERIES 2003-A1		12/01/2018	PAYDOWN		85,617	85,617	22,419	34,020		51,597		51,597		85,617				1,166	12/01/2032
589929-M3-8	MERRILL LYNCH MORTGAGE I-SERIES 2003-A2		12/01/2018	PAYDOWN		127,406	127,406	125,163	126,771		635		635		127,406				871	03/01/2033
589929-H5-3	MERRILL LYNCH MORTGAGE I-SERIES 2003-A4		12/01/2018	PAYDOWN		6,499	6,499	5,900	5,849		650		650		6,499				90	07/01/2033
589929-X2-9	MERRILL LYNCH MORTGAGE I-SERIES 2003-A4		12/01/2018	PAYDOWN		307,049	307,049	271,051	297,908		9,141		9,141		307,049				2,097	07/01/2033
59001K-AD-2	Meritor Inc-SENIOR UNSECURED		12/19/2018	BARCLAYS CAPITAL INC		5,472,192	5,656,000	5,656,000	5,656,000						5,656,000		(183,808)	(183,808)	342,976	02/15/2024
59018Y-N6-4	Bank of America Corp-SR UNSECURED		04/25/2018	MATURITY		1,750,000	1,750,000	2,001,778	1,777,242		(27,242)		(27,242)		1,750,000				38,099	04/25/2018
59020U-AA-3	MERRILL LYNCH MORTGAGE I-SERIES 2004-A1		12/01/2018	PAYDOWN		27,560	27,560	23,172	26,636		925		925		27,560				309	02/01/2034
59020U-AC-9	MERRILL LYNCH MORTGAGE I-SERIES 2004-A1		12/01/2018	PAYDOWN		64,862	64,862	60,112	63,413		1,449		1,449		64,862				378	02/01/2034
59020U-GT-6	MERRILL LYNCH MORTGAGE I-SERIES 2004-A2		12/01/2018	PAYDOWN		19,316	19,316	16,917	18,443		873		873		19,316				225	07/01/2034
59020U-HP-3	MERRILL LYNCH MORTGAGE I-SERIES 2004-A3		12/01/2018	PAYDOWN		409,129	409,129	82,308	80,818		328,311		328,311		409,129				5,287	05/01/2034
59020U-NZ-4	MLCC MORTGAGE INVESTORS -SERIES 2004-G C		12/25/2018	PAYDOWN		125,272	125,272	96,060	118,064		7,208		7,208		125,272				1,661	01/25/2030
59020U-Q5-7	MERRILL LYNCH MORTGAGE I-SERIES 2005-A8		12/26/2018	PAYDOWN		579,297	579,297	453,879	540,553		38,744		38,744		579,297				9,202	08/25/2036
59020U-QD-0	MERRILL LYNCH MORTGAGE I-SERIES 2005-A1		12/01/2018	PAYDOWN		9,184	9,184	7,474	8,817		367		367		9,184				152	12/01/2034
59020U-TL-9	MERRILL LYNCH MORTGAGE I-SERIES 2005-A2C		12/01/2018	PAYDOWN		162,332	162,332	28,575	73,603		88,729		88,729		162,332				944	02/01/2035
59020U-UJ-2	MLCC MORTGAGE INVESTORS -SERIES 2005-1 C		12/01/2018	PAYDOWN		475,679	475,679	431,863	460,573		15,106		15,106		475,679				2,404	04/01/2035
59020U-UI-3	MERRILL LYNCH MORTGAGE I-SERIES 2005-A9C		12/01/2018	PAYDOWN		107,968	130,326	80,649	95,081		34,678	10,273	24,405		107,968				1,338	12/01/2035
590212-AB-2	MERRILL LYNCH MORTGAGE I-SERIES 2006-HE3		12/26/2018	PAYDOWN		10,345	10,345	4,142	2,260		8,085		8,085		10,345				35	06/25/2037
59024W-AB-3	MLCC MORTGAGE INVESTORS -SERIES 2007-2 C		12/01/2018	PAYDOWN		143,374	143,374	110,997	124,160		19,213		19,213		143,374				3,755	06/01/2037
59024W-AF-4	MLCC MORTGAGE INVESTORS -SERIES 2007-2 C		12/01/2018	VARIOUS		87,201	87,475	(66,370)	(46)					87,201				1,637	06/25/2037	
590488-AA-6	Mesa Air Group, Inc. Class A Notes		07/15/2018	SINKING PAYMENT		2,270,850	2,270,850	2,271,944	2,271,770		(46)		(46)		2,270,850				81,560	01/15/2028
590738-AA-4	Mesa Air Group, Inc. Class A Notes		07/05/2018	VARIOUS		136,359	136,359	136,359	136,359						136,359				685,400	12/31/2039
59156R-AX-6	MeLife Inc-SENIOR UNSECURED NOTE		05/30/2018	TENDERED		1,555,033	1,478,000	1,695,257	1,574,883		(12,510)		(12,510)		1,555,033		(7,340)	(7,340)	56,944	02/08/2021
593856-AC-1	MIAMI WORLD CENTER CDD F-SPECIAL ASSESSM		11/08/2018	DTCYID		287,850	285,000	280,283	280,455		167		167		280,622		7,228	7,228	12,659	11/01/2039
593856-AD-9	MIAMI WORLD CENTER CDD F-SPECIAL ASSESSM		11/08/2018	DTCYID		434,300	430,000	423,357	423,488		116		116		423,604		10,696	10,696	19,565	11/01/2049
594918-AL-8	Microsoft Corp-SENIOR UNSECURED NOTE		04/13/2018	U. S. BANCORP		5,176,000	5,000,000	5,725,555	5,292,016		(25,948)		(25,948)		5,266,067		(90,067)	(90,067)	136,111	02/08/2021
594918-AV-6	Microsoft Corp-SR UNSECURED		12/06/2018	MATURITY		450,000	450,000	452,650	450,845		(845)		(845)		450,000				6,805	12/06/2018
594918-BY-9	Microsoft Corp-SENIOR UNSECURED		04/13/2018	STIFEL NICOLAUS		297,249	300,000	308,418	307,913		(232)		(232)		307,681		(10,432)	(10,432)	2,888	02/06/2027
595017-AD-6	Microchip Technology Inc-SR SUBORDINATED		05/14/2018	VARIOUS		9,555,882	5,150,000	5,150,000	5,150,000						5,150,000		4,405,882	4,405,882	24,758	02/15/2025
595112-AY-9	Micron Technology Inc-SENIOR UNSECURED B		09/27/2018	VARIOUS		35,481,180	18,290,000	17,728,958	15,789,099		(230,606)		(230,606)		15,558,493		19,922,687	19,922,687	230,643	11/15/2043
595418-AB-6	Mid-Kansas Electric Co L 1st Mtg Bond Se		06/30/2018	SINKING PAYMENT		748,333	748,333	748,333	748,333						748,333				30,906	06/30/2043
595620-AH-8	MIDAMERICAN ENERGY CO-SR NT		03/15/2018	MATURITY		420,000	420,000	480,242	423,015		(3,015)		(3,015)		420,000				4,576	03/15/2018
59748T-AA-7	MIDLAND COGEN VENTURE-SENIOR SECURED NOT		09/15/2018	SINKING PAYMENT		3,145,963	3,145,963	3,315												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
606198-LF-4	MISSOURI PAC RR-GEN MTG INC A		04/01/2018	CALL 100		476,400	476,400	360,278	462,091		1,873		1,873		463,964		12,436	12,436	11,377	01/01/2020
606198-LG-2	MISSOURI PAC RR-GEN MTG INC B		04/01/2018	VARIOUS		160,500	160,500	114,958	135,331		450		450		135,782		24,718	24,718	1,927	01/01/2030
60871R-AG-5	MOLSON COORS BREWING CO-SENIOR UNSECURED		12/12/2018	MORGAN		107,347	120,000	119,814	119,838		15		15		119,853		(12,506)	(12,506)	5,090	07/15/2026
60936@-AA-9	Money Mailer Holding Cor Senior Sub Note		11/17/2018	CALL 6.3496359		530,718	8,358,236	12,534,181	8,355,961		(80,965)	7,614,066	(7,695,031)		530,718				876,643	10/29/2021
61166W-AC-5	MONSANTO COMPANY-SENIOR UNSECURED NOTE		07/16/2018	EXCHANGE OFFER		9,792,046	9,680,000	9,818,230	9,793,982		(1,936)		(1,936)		9,792,046				288,383	07/30/2035
61166W-AG-6	MONSANTO COMPANY-SENIOR NOTE		07/16/2018	EXCHANGE OFFER		28,121,309	26,329,000	28,464,474	28,149,112		(27,803)		(27,803)		28,121,309				837,866	04/15/2038
61166W-AJ-0	MONSANTO CO-SR UNSECURED		07/16/2018	EXCHANGE OFFER		827,460	1,055,000	817,299	825,959		2,557		2,557		828,515		(1,055)	(1,055)	20,573	07/15/2042
61166W-AN-1	MONSANTO COMPANY-SR UNSECURED		07/16/2018	EXCHANGE OFFER		140,439	133,000	141,495	140,628		(189)		(189)		140,439				3,026	07/15/2034
61166W-AP-6	MONSANTO COMPANY-SR UNSECURED		07/16/2018	EXCHANGE OFFER		2,588,190	2,670,000	2,586,573	2,587,581		609		609		2,588,190				63,635	07/15/2044
61166W-AQ-4	MONSANTO COMPANY-SR UNSECURED		07/16/2018	EXCHANGE OFFER		4,362,632	4,645,000	4,360,674	4,361,956		675		675		4,362,632				118,254	07/15/2064
61166W-AT-8	MONSANTO CO-SR UNSECURED		07/16/2018	EXCHANGE OFFER		198,169	200,000	196,727	197,854		315		315		198,169				2,979	07/15/2021
61166W-AW-1	MONSANTO CO-SR UNSECURED		07/16/2018	EXCHANGE OFFER		186,011	200,000	181,609	185,044		967		967		186,011				3,088	04/15/2025
617446-7U-7	MORGAN STANLEY-SR UNSECURED		04/25/2018	MATURITY		350,000	350,000	350,172	350,020		(20)		(20)		350,000				2,355	04/25/2018
61744C-NH-6	MORGAN STANLEY CAPITAL I-SERIES 2005-NC1		12/26/2018	PAYDOWN		490,216	490,216	484,241	493,038		(2,823)		(2,823)		490,216				7,353	01/25/2035
61744C-NB-8	MORGAN STANLEY CAPITAL I-SERIES 2005-HE2		12/26/2018	PAYDOWN		2,506,852	2,506,852	2,070,106	2,506,852						2,506,852				31,694	01/25/2035
61744C-RD-0	MORGAN STANLEY CAPITAL I-SERIES 2005-IMC		04/25/2018	PAYDOWN		16,838	16,838	16,318	16,838						16,838				86	04/25/2035
61744Y-AR-9	Morgan Stanley-SENIOR UNSECURED		08/08/2018	SUMRIDGE PARTNERS LL		193,851	195,000	195,000	195,000						195,000		(1,149)	(1,149)	2,559	04/22/2039
61745M-5K-5	MORGAN STANLEY CAPITAL I-SERIES 2005-T19		12/01/2018	PAYDOWN		905,304	905,304	865,569	903,729		1,575		1,575		905,304				23,228	06/01/2047
617463-AA-2	MORGAN STANLEY IXIS REAL-SERIES 2006-2 C		12/26/2018	PAYDOWN		1,369	1,369	607	610		759		759		1,369				12	11/25/2036
61746R-AB-7	MORGAN STANLEY CAPITAL I-SERIES 2002-HE3		12/26/2018	PAYDOWN		273,654	273,654	244,240	273,654						273,654				6,157	03/25/2033
61747J-AF-6	Morgan Stanley-SENIOR UNSECURED NOTE		08/08/2018	MILLENNIUM ADVISORS		137,216	130,000	133,320	131,364		(258)		(258)		131,105		6,111	6,111	4,547	01/25/2021
61748H-AA-9	MORGAN STANLEY MORTGAGE -SERIES 2004-2AR		11/01/2018	PAYDOWN		7,145	7,145	6,061	6,794		351		351		7,145				179	02/01/2034
61748H-BF-7	MORGAN STANLEY MORTGAGE -SERIES 2004-6AR		11/26/2018	PAYDOWN		264,562	264,562	258,671	264,562						264,562				3,897	07/25/2034
61749B-AB-9	MORGAN STANLEY CAPITAL I-SERIES 2006-NC5		12/26/2018	PAYDOWN		8,043	8,043	5,966	4,529		3,513		3,513		8,043				77	10/25/2036
61749L-AN-1	MORGAN STANLEY MORTGAGE -SERIES 2006-8AR		12/01/2018	PAYDOWN		113,949	113,949	74,668	93,207		20,742		20,742		113,949				1,511	06/01/2036
61750F-AE-0	MORGAN STANLEY CAPITAL I-SERIES 2006-HE6		12/26/2018	PAYDOWN		38,466	38,466	17,063	16,908		21,558		21,558		38,466				276	09/25/2036
61750M-AB-1	MORGAN STANLEY CAPITAL I-SERIES 2006-HE7		12/26/2018	PAYDOWN		542	542	291	285		257		257		542				6	09/25/2036
617526-AE-8	MORGAN STANLEY CAPITAL I-SERIES 2007-HE1		12/26/2018	PAYDOWN		33,951	33,951	11,728	16,966		16,986		16,986		33,951				318	11/25/2036
61755A-AB-2	MORGAN STANLEY CAPITAL I-SERIES 2007-NC3		12/26/2018	PAYDOWN		491	491	287	318		174		174		491				5	05/25/2037
61760R-BA-9	MORGAN STANLEY CAPITAL I-SERIES 2011-C3		12/01/2018	PAYDOWN		587,267	587,267	593,120	588,134		(867)		(867)		587,267				13,137	07/01/2049
61760V-AA-1	Morgan Stanley Capital I-SERIES 2012-C4C		12/01/2018	PAYDOWN		711,186	711,186	178,245	76,289						711,186				25,324	03/01/2045
61760V-AN-3	MORGAN STANLEY CAPITAL I-SERIES 2012-C4		12/01/2018	PAYDOWN		512,041	512,041	517,155	513,259		(1,219)		(1,219)		512,041				8,351	03/01/2045
61761J-3R-8	MORGAN STANLEY-SENIOR UNSECURED		06/11/2018	BARCLAYS CAPITAL INC		331,211	355,000	352,586	352,881		94		94		352,976				9,738	07/27/2026
61761J-VM-8	MORGAN STANLEY-SR UNSECURED		01/05/2018	MATURITY		400,000	400,000	399,253	399,995		5		5		400,000				83	01/05/2018
61790R-AF-3	MORGAN STANLEY MORTGAGE -SERIES 30 CLASS		12/01/2018	VARIOUS		14,002	14,002				13,586		13,586		13,586		416	416		12/01/2018
61915R-AX-4	MORTGAGEIT TRUST-SERIES 2005-5 CLASS M2		12/26/2018	PAYDOWN		375,302	267,223	14,694	75,144		290,575		290,575		375,302				3,410	12/25/2035
61915R-BB-1	MORTGAGEIT TRUST-SERIES 2005-AR1 CLASS 1		12/26/2018	PAYDOWN		562,696	562,696	419,546	444,562		118,133		118,133		562,696				4,789	11/25/2035
61915R-BZ-8	MORTGAGEIT TRUST-SERIES 2006-1 CLASS 1A2		12/26/2018	PAYDOWN		95,662	101,189	55,869	71,946		24,302		24,302		95,662				816	04/25/2036
61946E-AA-6	MOSAIC SOLAR LOANS LLC-SERIES 17-1A CLAS		12/20/2018	PAYDOWN		2,505,053	2,505,053	2,504,336	2,500,314		4,739		4,739		2,505,053				53,866	06/20/2042
61946G-AA-1	MOSAIC SOLAR LOANS 2017-2017-2A CLASS A		12/20/2018	PAYDOWN		2,191,176	2,191,176	2,190,893	2,190,935		240		240		2,191,176				45,575	06/22/2043
61946G-AB-9	MOSAIC SOLAR LOANS 2017-2017-2A CLASS B		12/20/2018	PAYDOWN		82,326	82,326	82,891	82,887		(561)		(561)		82,326				3,927	06/22/2043
61946L-AA-0	Mosaic Solar Loan Trust -MSAIC 2018-2GS		12/20/2018	PAYDOWN		77,261	77,261	76,440	821		821		821		77,261				270	02/22/2044
61980A-AC-7	MOTIVA ENTERPRISES LLC-NOTE		03/15/2018	CALL 105.700265		9,003,549	8,518,000	10,315,140	9,071,077		(54,753)		(54,753)		9,501,873		(498,324)	(498,324)	812,072	01/15/2020
620076-BB-4	Motorola Solutions Inc-SENIOR UNSECURED		12/10/2018	MILLENNIUM ADVISORS		3,150,304	3,200,000	3,185,519	3,192,877		1,458		1,458		3,194,335		(44,031)	(44,031)	113,667	05/15/2022
620076-BC-2	Motorola Solutions Inc-SENIOR UNSECURED		11/14/2018	MILLENNIUM ADVISORS		484,645	500,000	494,135	496,746		505		505		497,251		(12,606)	(12,606)	15,313	03/01/2023
628530-AV-9	MYLAN INC-SENIOR UNSECURED NOTE		11/15/2018	MORGAN		4,306,338	4,625,000	4,275,119	4,413,002		33,956		33,956		4,446,958		(140,620)	(140,620)	127,669	01/15/2023
62912X-AE-4	NPL PIPECO LLC-SENIOR UNSECURED		11/14/2018	U. S. BANCORP		648,235	658,000	658,000	658,000						648,235				25,189	08/15/2022
62927#-AA-4	NFL VENTURES LP SR GTD NT SER A TRANCHE		08/30/2018	BANK OF AMERICA CORP		15,785,260	15,723,154	15,723,154	15,723,154						15,723,154				62,106	10/15/2028
629377-CA-8	NRG ENERGY INC-SENIOR UNSECURED		11/14/2018	VARIOUS		4,380,043	4,100,000	4,011,476	4,017,647		6,750		6,750		4,024,397				355,646	05/15/2026
629377-CC-4	NRG ENERGY INC-SENIOR UNSECURED		11/14/2018	JP MORGAN SECURITIES		1,052,844	1,020,000	1,002,150	1,003,147		1,131		1,131		1,004,278				48,566	01/15/2027
629420-AX-1	NEW RESIDENTIAL ADVANCE -SERIES 2016-T1		05/07/2018	PAYDOWN		3,450,000	3,450,000	3,449,994	3,449,840		160		160		3,450,000				27,419	06/15/2049
629568-AQ-9	NABORS INDUSTRIES INC-SENIOR NOTE		02/15/2018	MATURITY		7,864,000	7,864,000	9,248,386	7,898,833		(34,833)		(34,833)		7,864,000				59,111	02/15/2018
629568-AT-3	NABORS INDUSTRIES LTD SR NT																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
62963#-AF-8	NRP (Operating) LLC Senior Note Ser		12/28/2018	VARIOUS		610,379	610,379	610,379	610,379						610,379				204,968	03/25/2019
62963#-AG-6	NRP (Operating) LLC Senior Note Ser		03/25/2018	VARIOUS		423,855	423,855	423,855	423,855						423,855				21,190	03/25/2024
62963#-AH-4	NRP (Operating) LLC Senior Note Ser		12/28/2018	VARIOUS		387,713	387,713	387,713	387,713						387,713				48,987	12/01/2023
62963#-AJ-0	NRP (Operating) LLC Senior Note Ser		01/01/2018	VARIOUS		12,869	12,869	12,869	12,869						12,869				11,643	12/01/2026
62963#-AK-7	NRP (OPER) LLC SR NT SER J		12/28/2018	VARIOUS		313,478	313,478	313,478	313,478						313,478				31,482	12/01/2026
62963#-AL-5	NRP (OPER) LLC SR NT SER K		12/28/2018	VARIOUS		313,478	313,478	313,478	313,478						313,478				32,441	12/01/2026
62970#-AA-2	NYC-DEA LEASE FIN TR PASS THRU CTF-GEN S		12/10/2018	SINKING PAYMENT		3,547,413	3,547,413	3,547,413	3,547,413						3,547,413				72,475	06/10/2031
62972#-AA-8	NSI Holdings, Inc. Senior Sub Note		01/01/2018	PIK BOND							40		40							05/17/2023
63080#-AA-5	NARA Caves Lease Trust Lease Backed Ce		12/15/2018	SINKING PAYMENT		573,223	573,223	573,223	573,223						573,223				16,589	09/15/2028
63615#-AD-3	National Football League Senior Note Ser		08/30/2018	VARIOUS		12,355,668	11,776,906	11,776,906	11,776,906						11,776,906		578,762	578,762	421,809	03/31/2024
637432-LR-4	NATIONAL RURAL UTIL COOP SECURED COLL TR		11/01/2018	VARIOUS		8,716,505	8,655,000	8,603,984	8,646,704		6,825		6,825		8,715,034		1,471	1,471	728,166	11/01/2018
63860#-AA-1	NationsBank Trust Compan Equipment Trust		12/21/2018	SINKING PAYMENT		1,544,282	1,544,282	1,544,282	1,544,282		(6,593)		(6,593)		1,544,282					12/21/2019
63939E-AB-9	NAVIENT PRIVATE ED LN TR 2015-A LN BACKE		11/15/2018	PAYDOWN		569,100	569,100	568,890	569,004		96		96		569,100				7,535	12/15/2028
640315-AF-4	NELNET STUDENT LOAN TRUS-SERIES 2006-2 C		04/25/2018	CALL 100		7,730,000	7,420,800	7,420,800	7,674,223		35,110		35,110		7,709,333		20,667	20,667	43,710	04/25/2031
64031A-AJ-5	NELNET STUDENT LOAN TRUS-SERIES 2006-3 C		12/26/2018	PAYDOWN		818,925	818,925	757,789	772,335		46,590		46,590		818,925				13,844	06/25/2041
640310-BR-1	NELNET STUDENT LOAN TRUS-SERIES 2005-1 C		10/25/2018	PAYDOWN		1,283,947	1,283,947	1,217,209	1,246,275		37,671		37,671		1,283,947				15,000	10/25/2033
640310-BX-8	NELNET STUDENT LOAN TRUS-SERIES 2005-2 C		12/24/2018	PAYDOWN		1,111,252	1,111,252	1,039,367	1,068,398		42,853		42,853		1,111,252				14,821	03/23/2037
640310-CX-5	NELNET STUDENT LOAN TRUS-SERIES 2005-4 C		12/31/2018	PAYDOWN		182,502	182,502	152,437	162,832		19,670		19,670		182,502				6,874	03/22/2032
640310-CM-1	NELNET STUDENT LOAN TRUS-SERIES 2005-4 C		12/13/2018	PAYDOWN		134,475	134,475	107,895	117,056		17,419		17,419		134,475				5,235	03/22/2032
64034J-AB-0	NELNET PRIVATE EDUCATION-NPELT 2016-A A1		12/25/2018	PAYDOWN		10,839,958	10,839,958	10,767,683	10,807,917		32,040		32,040		10,839,958				213,100	12/26/2040
641423-BW-7	NEVADA POWER CO-NOTE		08/01/2018	MATURITY		8,000,000	8,000,000	10,051,568	8,223,229		(223,229)		(223,229)		8,000,000				303,333	08/01/2018
64352V-EG-2	NEW CENTURY HOME EQUITY -SERIES 2003-5 C		12/26/2018	PAYDOWN		4,748	4,748	3,554	4,186		562		562		4,748				71	11/25/2033
64352V-JV-4	NEW CENTURY HOME EQUITY -SERIES 2005-1 C		01/25/2018	PAYDOWN		7,424	7,424	7,207	7,424						7,424				11	03/25/2035
64352V-NX-5	NEW CENTURY HOME EQUITY -SERIES 2005-COL		12/26/2018	PAYDOWN		1,724,690	1,724,690	1,714,834	1,724,690						1,724,690				18,862	12/25/2035
64352V-OR-5	NEW CENTURY HOME EQUITY -SERIES 2006-1 C		12/26/2018	PAYDOWN		637,429	637,429	410,700	433,157		204,273		204,273		637,429				6,810	05/25/2036
65106F-AG-7	NEWCASTLE MORTGAGE SECUR-SERIES 2007-1 C		11/26/2018	VARIOUS		(45,970)	912,970	6,272	(285)		35,035		35,035		(45,970)				(50,697)	04/25/2037
651229-AM-8	NEWELL RUBBERMAID INC-SENIOR UNSECURED N		05/29/2018	VARIOUS		5,608,768	5,590,000	5,892,585	5,740,575		(13,705)		(13,705)		5,726,870			(118,102)	91,316	06/15/2022
651229-AQ-9	NEWELL RUBBERMAID INC-SENIOR UNSECURED N		05/16/2018	VARIOUS		15,701,281	16,185,000	16,275,548	16,255,958		(3,298)		(3,298)		16,252,660		(551,379)	(551,379)	241,083	12/01/2024
651229-AS-5	NEWELL RUBBERMAID INC-SR UNSECURED		06/12/2018	WELLS FARGO		6,254,265	6,625,000	6,604,198	6,607,881		891		891		6,608,772		(354,507)	(354,507)	116,966	11/01/2025
651229-AU-0	NEWELL BRANDS INC-SENIOR UNSECURED		05/09/2018	MORGAN		2,470,075	2,500,000	2,564,265	2,559,517		(6,550)		(6,550)		2,552,967		(82,892)	(82,892)	28,438	04/01/2021
651229-AW-6	NEWELL RUBBERMAID INC-SENIOR UNSECURED		05/10/2018	CITIGROUP GLOBAL MAR		13,834,127	14,150,000	14,121,417	14,124,841		1,137		1,137		14,125,978		(291,851)	(291,851)	217,910	04/01/2026
65341K-AG-1	NEXTGEAR FLOORPLAN MASTE-SERIES 2015 2A		10/15/2018	PAYDOWN		9,300,000	9,300,000	9,299,171	9,299,766		234		234		9,300,000				174,613	10/15/2020
65353V-NS-3	NOMURA ASSET ACCEPTANCE -SERIES 2005-S3C		12/26/2018	PAYDOWN		598,149	600,039	261,934	256,849		341,191		341,191		598,149				(1,897)	08/25/2035
65353V-RH-3	NOMURA ASSET ACCEPTANCE -SERIES 2005-AR6		12/01/2018	PAYDOWN		1,075,727	1,075,727	621,368	771,136		304,591		304,591		1,075,727				10,959	12/01/2035
65353V-RK-6	NOMURA ASSET ACCEPTANCE -SERIES 2005-AR6		12/26/2018	PAYDOWN		136,905	136,905	51,112	48,650		88,255		88,255		136,905				437	12/25/2035
65353V-US-5	NOMURA ASSET ACCEPTANCE -SERIES 2006-AR2		12/26/2018	PAYDOWN		130,887	130,887	54,226	40,720		90,167		90,167		130,887				1,708	04/25/2036
65538D-AA-3	NOMURA ASSET ACCEPTANCE -SERIES 2006-AR4		12/26/2018	PAYDOWN		249,268	276,667	139,092	180,662		78,586		78,586		249,268				2,377	12/25/2036
655844-AZ-1	NORFOLK SOUTHERN CORP-SENIOR UNSECURED N		04/01/2018	MATURITY		9,000,000	9,000,000	10,748,331	9,086,859		(86,859)		(86,859)		9,000,000				129,375	04/01/2018
655844-BL-1	NORFOLK SOUTHERN CORP SR NT		12/19/2018	MARKETAXESS FINAN CIA		103,277	106,000	92,645	98,245		1,338		1,338		99,583			3,694	4,154	02/15/2023
655844-BU-1	NORFOLK SOUTHERN CORP-SENIOR UNSECURED		05/25/2018	EXCHANGE OFFER		1,550,703	1,663,000	1,549,757	1,550,188		515		515		1,550,703				26,941	08/15/2052
658262-FX-3	NORTH CAROLINA STATE EDU-SECURED		10/25/2018	PAYDOWN		113,127	113,127	109,680	112,271		856		856		113,127				1,593	07/25/2041
66705R-AA-7	NORTHSTAR EDUCATION FINA-NEF 2016-1 A		12/26/2018	PAYDOWN		1,489,606	1,489,606	1,422,341	1,450,098		16,052		16,052		1,489,606				39,535	05/27/2036
667294-AT-9	Northwest Airlines 2000-2000-1 CLASS G		10/01/2018	SINKING PAYMENT		3,434,473	3,434,473	3,732,014	3,495,656		256,595		256,595		3,434,473				195,555	10/01/2019
667752-AB-5	NORTHWEST PIPELINE LLC-NOTE		06/15/2018	MATURITY		2,750,000	2,750,000	2,742,571	2,749,473		527		527		2,750,000				75,793	06/15/2018
66987X-BV-6	NOVASTAR HOME EQUITY LOA-SERIES 2002-3 C		08/27/2018	PAYDOWN		239	239	229	240		(2)		(2)		239				9	07/25/2033
66987X-DH-5	NOVASTAR HOME EQUITY LOA-SERIES 2003-4 C		12/26/2018	PAYDOWN		48,262	48,262	33,826	42,595		5,667		5,667		48,262				560	02/25/2034
669884-AF-5	NOVASTAR HOME EQUITY LOA-SERIES 2006-1 C		12/26/2018	PAYDOWN		(25,360)	53,677	2,516	(21,666)		(21,666)		(21,666)		(25,360)				206	05/25/2036
67059T-AC-9	NUSTAR LOGISTICS LP-SENIOR UNSECURED NOT		06/18/2018	VARIOUS		15,517,199	15,850,000	15,920,660	15,924,647		(7,596)		(7,596)		15,917,050		(399,851)	(399,851)	334,705	02/01/2022
67103H-AA-5	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED		08/03/2018	MILLENNIUM ADVISORS		41,343	40,000	39,719	39,899		18		18		39,917		1,426	1,426	2,075	01/14/2021
67103H-AC-1	O'REILLY AUTOMOTIVE INC-SENIOR UNSECURED		12/19/2018	MILLENNIUM ADVISORS		150,776	150,000	149,441	149,708		55		55		149,763		1,013	1,013	7,442	09/01/2022
67109E-AA-6	OPE KAG FINANCE SUB-SR UNSECURED		06/05/2018	GOLDMAN		12,529,218	12,277,000	12,434,368	12,374,708		(19,640)		(19,640)		12,355,069		174,149	174,149	416,851	07/31/2023
674215-AG-3	OASIS PETROLEUM INC-SENIOR UNSECURED		10/31/2018	VARIOUS		3,023,279	3,000,000	2,864,250	2,876,684											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
68233J-AD-6	ONCOR ELECTRIC DELIVERY-SECURED NOTE		09/01/2018	MATURITY		2,500,000	2,500,000	3,100,455	2,574,581		(74,581)		(74,581)		2,500,000				113,333	09/01/2018
68235P-AD-0	ONE GAS INC-SR UNSECURED		12/17/2018	CALL 100		200,000	200,000	199,143	199,694		269		269		199,963		37	37	3,979	02/01/2019
68235R-AA-2	ONDECK ASSET SECURITIZAT-SERIES 2016-1A		04/17/2018	PAYDOWN		7,560,000	7,560,000	7,559,532	7,560,000						7,560,000				93,715	05/17/2020
68278#-AB-4	OneSteel US Investments Gtd Senior Note		09/27/2018	PREPAYMENTS W/O PENA		867,972	867,972	865,363									867,972	867,972		07/09/2019
68278#-AC-2	OneSteel US Investments Gtd Senior Note		09/27/2018	PREPAYMENTS W/O PENA		368,328	368,328	273,898									368,328	368,328		07/09/2020
68383N-BZ-5	OPTEUM MORTGAGE ACCEPTAN-SERIES 2005-3 C		12/26/2018	PAYDOWN		461,787	461,787	393,997	452,481		9,307		9,307		461,787				4,819	07/25/2035
68383N-CA-9	OPTEUM MORTGAGE ACCEPTAN-SERIES 2005-4 C		12/26/2018	PAYDOWN		1,797,346	1,797,346	1,464,849	1,680,743		116,603		116,603		1,797,346				18,462	11/25/2035
68383N-CD-3	OPTEUM MORTGAGE ACCEPTAN-SERIES 2005-4 C		03/26/2018	PAYDOWN		153,032	153,032	132,816	152,694		338		338		153,032				426	11/25/2035
68383N-CU-5	OPTEUM MORTGAGE ACCEPTAN-SERIES 2005-5 C		12/26/2018	PAYDOWN		539,796	539,796	435,777	469,869		69,927		69,927		539,796				5,710	12/25/2035
68383N-DT-7	OPTEUM MORTGAGE ACCEPTAN-SERIES 2006-1 C		12/26/2018	PAYDOWN		572,429	572,429	437,622	474,529		97,900		97,900		572,429				6,262	04/25/2036
68383N-DW-0	OPTEUM MORTGAGE ACCEPTAN-SERIES 2006-1 C		12/26/2018	PAYDOWN		848,406	848,406	654,295	758,658		89,748		89,748		848,406				9,692	04/25/2036
68389F-JW-5	OPTION ONE MORTGAGE LOAN-SERIES 2005-5 C		06/25/2018	PAYDOWN		287,069	287,069	282,515	287,069						287,069				1,576	12/25/2035
68389F-JX-3	OPTION ONE MORTGAGE LOAN-SERIES 2005-5 C		12/26/2018	PAYDOWN		1,389,981	1,389,981	1,379,034	1,389,981						1,389,981				22,787	12/25/2035
68389X-AC-9	ORACLE CORP-SENIOR UNSECURED NOTE		04/15/2018	MATURITY		14,625,000	14,625,000	17,798,698	14,804,419		(179,419)		(179,419)		14,625,000				242,938	04/15/2018
68504T-AA-2	ORANGE LAKE TIMESHARE TR-SER 2015-AA CL		11/08/2018	PAYDOWN		1,213,171	1,213,171	1,212,973	1,213,048		123		123		1,213,171				16,192	09/08/2027
68557N-AA-1	ORBITAL ATK INC-SR UNSECURED		07/19/2018	CALL 102,625		4,500,106	4,385,000	4,386,785	4,385,869		(276)		(276)		4,500,700			(594)	241,723	10/01/2021
690742-AD-3	OWENS CORNING-SENIOR UNSECURED NOTE		10/15/2018	WELLS FARGO		4,105,535	4,100,000	4,096,310	4,098,112		143		143		4,098,255		7,280	(594)	136,803	12/15/2022
690742-AE-1	OWENS CORNING-SENIOR UNSECURED NOTE		08/09/2018	JP MORGAN SECURITIES		59,476	60,000	58,846	59,152		64		64		59,216		260	260	1,764	12/01/2024
69121P-DX-8	OWINIT MORTGAGE LOAN ASSE-SERIES 2006-3 C		12/26/2018	PAYDOWN		100,018	100,018	66,884	98,955		1,063		1,063		100,018				815	03/25/2037
69138V-AB-7	OXBOW RESOURCES LLC-SERIES 2011-1A CLASS		08/01/2018	PAYDOWN		2,000,000	2,000,000	1,999,912	2,035,927		(35,927)		(35,927)		2,000,000				57,972	05/01/2036
69144V-AA-1	OXFORD FINANCE FUNDING T-SERIES 2014-1A		12/15/2018	PAYDOWN		2,345,131	2,345,131	2,345,131	2,345,131						2,345,131				44,524	12/15/2022
69144V-AA-5	OXFORD FINANCE FUNDING T-SERIES 2016 1A		12/15/2018	PAYDOWN		2,537,521	2,537,521	2,537,521	2,537,521						2,537,521			(8,982)	90,530	06/17/2024
69318F-AG-3	PBF Holding Co LLC / PBF-SENIOR UNSECURE		12/13/2018	VARIOUS		815,361	827,000	824,035	824,035		309		309		824,343		(8,982)	(8,982)	59,007	06/15/2025
69327R-AH-4	PDC Energy Inc-SENIOR UNSECURED		07/25/2018	EXCHANGE OFFER		4,725,000	4,725,000	4,725,000	4,725,000						4,725,000				153,966	05/15/2026
693304-AL-1	PECO ENERGY CO-SECURED		03/01/2018	MATURITY		5,000,000	5,000,000	6,017,000	5,033,764		(33,764)		(33,764)		5,000,000				44,583	03/01/2018
69336R-AW-0	PHHMC MORTGAGE PASS THRO-SERIES 2005-3 C		12/01/2018	PAYDOWN		807,812	807,812	780,575	791,083		16,729		16,729		807,812				19,395	06/01/2035
69338R-AA-6	PENNSYLVANIA HIGHER EDUC-SERIES 2011-1A		09/25/2018	PAYDOWN		85,684	85,684	84,399	85,684		(460)		(460)		85,684				1,310	06/25/2038
693506-BH-9	PPG INDUSTRIES INC-SR UNSECURED		10/26/2018	MILLENNIUM ADVISORS		148,478	150,000	148,891	149,453		240		240		149,693		(1,215)	(1,215)	2,865	11/15/2019
69353R-EJ-3	PNC BANK NA-SR UNSECURED		01/24/2018	CALL 100		350,000	350,000	348,112	349,870		57		57		349,927		73	73	335	02/23/2018
69353R-ER-5	PNC BANK NA-SR UNSECURED		07/20/2018	MATURITY		250,000	250,000	250,110	250,021		(21)		(21)		250,000				2,557	07/20/2018
69359#-AA-0	PGA Tour Investments Fin Senior Note		12/15/2018	SINKING PAYMENT		1,688,350	1,688,350	1,688,350	1,688,350						1,688,350				94,271	06/15/2019
694308-HF-7	PACIFIC GAS & ELECTRIC-SR UNSECURED		06/18/2018	CREDIT SUISSE SEQUI		124,835	125,000	145,581	145,281		(216)		(216)		145,065		(20,230)	(20,230)	3,826	11/15/2043
694455-AB-8	PANHANDLE EAST PIPE LINE-SENIOR UNSECURE		06/15/2018	MATURITY		3,180,000	3,180,000	3,170,937	3,179,284		716		716		3,180,000				101,407	06/15/2018
69447R-AB-8	PANHANDLE-PLAINS TX STUD-SERIES 2001-1 C		01/01/2018	CALL 100		914,339	(85,664)	(84,196)	(84,758)		27,564		27,564		909,721		4,618	4,618	96,213	12/01/2031
694525-AA-0	PANOCH ENERGY CENTER-SR SEC NOTE		08/31/2018	SINKING PAYMENT		567,279	567,279	623,409	610,880		(2,753)		(2,753)		567,279				29,195	07/31/2029
694638-AA-7	PANOS Brands LLC Senior Sub Note		01/01/2018	EXCHANGE OFFER		2,996,896	2,996,896	2,996,896	2,996,896						2,996,896					07/29/2021
694638-AB-5	PANOS Brands LLC Senior Sub Note		10/01/2018	IN-KIND TRANSFER		3,449,458	3,449,613	3,449,613	3,449,613						3,449,458	(155)		(155)	104,638	08/17/2022
70069F-BS-5	PARK PLACE SECURITIES IN-SERIES 2004-WHO		12/26/2018	PAYDOWN		4,203,692	4,203,692	3,061,532	3,885,728		317,963		317,963		4,203,692				70,735	09/25/2034
70069F-DL-8	PARK PLACE SECURITIES IN-SERIES 2004-WHF		04/25/2018	PAYDOWN		596,962	596,962	573,830	596,962						596,962				2,773	12/25/2034
70069F-EJ-2	PARK PLACE SECURITIES IN-SERIES 2004-WHO		03/26/2018	PAYDOWN		204,686	204,686	201,797	204,686						204,686				719	02/25/2035
70069F-HV-2	PARK PLACE SECURITIES IN-SERIES 2005-WHO		12/26/2018	PAYDOWN		1,719,986	1,719,986	1,349,369	1,656,319		63,667		63,667		1,719,986				30,070	05/25/2035
70069F-KE-6	PARK PLACE SECURITIES IN-SERIES 2005-WOV		12/26/2018	PAYDOWN		1,068,369	1,068,369	1,018,780	1,068,369						1,068,369				13,018	09/25/2035
70069F-LG-0	PARK PLACE SECURITIES IN-SERIES 2005-WOV		12/26/2018	PAYDOWN		27,863	27,863	24,667	27,813		50		50		27,863				388	07/25/2035
70069F-LW-5	PARK PLACE SECURITIES IN-PPSI 2005-WOV3		12/26/2018	PAYDOWN		272,971	272,971	249,854	271,790		1,181		1,181		272,971					08/25/2035
703428-AC-2	Patterson Companies, Inc Senior Note Ser		03/25/2018	MATURITY		5,500,000	5,500,000	5,500,000	5,500,000						5,500,000				73,792	03/25/2018
703428-AD-0	Patterson Companies, Inc Senior Note Ser		12/10/2018	MATURITY		15,000,000	15,000,000	15,118,950	15,020,060		(20,060)		(20,060)		15,000,000				416,688	12/10/2018
709163-GJ-2	PENNSYLVANIA ST HDR EDU -SERIES 2006 CL		11/30/2018	CALL 100		200,000	200,000	194,500	196,633		932		932		197,565		2,435	2,435	3,157	10/25/2042
713448-BH-0	PepsiCo Inc-NOTE		06/01/2018	MATURITY		6,614,000	6,614,000	6,510,313	6,608,225		5,775		5,775		6,614,000				137,792	06/01/2018
714615-AA-9	PERRY ELLIS INTL INC-SENIOR NOTE		01/08/2018	GUGGENHEIM CAPITAL M		846,000	846,000	892,530	849,095		(61)		(61)		849,035		(3,035)	(3,035)	1,666	04/01/2019
717081-CY-7	Pfizer Inc-SENIOR UNSECURED NOTE		01/31/2018	CREDIT SUISSE SECURI		246,612	165,000	216,525	209,924		(101)		(101)		209,823		36,789	36,789	4,521	03/15/2039
717081-D3-5	PFIZER INC-SR UNSECURED		06/15/2018	MATURITY		575,000	575,000	575,262	575,048		(48)		(48)		575,000				3,929	06/15/2018
717081-DK-6	Pfizer Inc-SR UNSECURED		08/03/2018	SUSQUEHANNA BANCSHAR		1,143,104	1,080,000	1,150,142	1,149,152		(917)		(917)		1,148,235		(5,131)	(5,131)	34	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
72650R-BL-5	PLAINS ALL AMER PIPELINE-SENIOR UNSECURE		12/12/2018	CITIGROUP GLOBAL MAR		409,687	425,000	428,313	428,240		(292)		(292)		427,948		(18,261)	(18,261)	18,222	12/15/2026
72703P-AB-9	Planet Fitness Master Is-PLNT 2018-1A A2		12/05/2018	PAYDOWN		100,000	100,000	100,000							100,000				1,607	09/05/2048
73180F-AA-3	Polytex Environmental In Sr. Sub Note (1		01/01/2018	PIK BOND						702	(70)		632						(146)	01/31/2020
73316P-FC-9	POPULAR ABS MORTGAGE PAS-SERIES 2005-4 C		12/26/2018	PAYDOWN		1,543,668	1,543,668	1,136,874	1,400,369		143,299		143,299		1,543,668				18,558	09/25/2035
73316P-JD-3	POPULAR ABS MORTGAGE PAS-SERIES 2005-6 C		12/01/2018	PAYDOWN		4,532	4,532	3,234	4,117		415		415		4,532				84	01/01/2036
73316P-KH-2	POPULAR ABS MORTGAGE PAS-SERIES 2006-B C		12/26/2018	PAYDOWN		28,475	28,475	26,180	28,267		208		208		28,475				361	05/25/2036
737415-AL-3	POST APARTMENT HOMES LP-SENIOR UNSECURED		08/09/2018	WELLS FARGO		147,879	150,000	149,958	149,976						149,977		(2,098)	(2,098)	3,544	12/01/2022
741503-BC-9	PRICELINE GROUP INC/THE-SENIOR UNSECURED		04/18/2018	MORGAN		235,367	245,000	244,799	244,798		13		13		244,811		(9,444)	(9,444)	2,585	03/15/2028
742718-EE-5	Procter & Gamble Co/The-SENIOR UNSECURED		11/15/2018	MATURITY		300,000	300,000	301,750	300,533		(533)		(533)		300,000				4,187	11/15/2018
742741-AA-9	PROCTER & GAMBLE - ESOP-DEBENTURE		07/01/2018	SINKING PAYMENT		1,412,400	1,412,400	1,431,335	1,414,681		(644)		(644)		1,412,400				99,937	01/01/2021
743947-AA-1	PRUDENTIAL HOME MORTGAGE-SERIES 1992-C C		11/01/2018	PAYDOWN		142	142	139	141		1		1		142				11	08/01/2022
744326-AE-7	PRUDENTIAL COMMERCIAL MO-SERIES 2003-PWR		04/01/2018	PAYDOWN		113,300	113,300	1,629	2,495	110,806			110,806		113,300				(109,983)	02/01/2036
74733V-AA-8	QEP RESOURCES INC-SENIOR UNSECURED NOTE		10/31/2018	VARIOUS		6,959,995	6,650,000	6,987,221	6,774,117		(26,378)		(26,378)		6,747,740		212,255	212,255	347,245	03/01/2021
747525-AG-8	QUALCOMM INC-SR UNSECURED		05/18/2018	MATURITY		200,000	200,000	198,225	199,713		287		287		200,000				1,066	05/18/2018
74919M-AA-4	RAAC SERIES-SERIES 2006-RP2 CLASS A		12/26/2018	PAYDOWN		20,026	20,026	19,569	20,026						20,026				232	02/25/2037
74922M-AB-7	RESIDENTIAL ACCREDIT LOA-SERIES 2006-OA6		12/26/2018	PAYDOWN		685,343	752,180	502,843	576,752		127,480		127,480		685,343				6,697	07/25/2036
74922M-AC-5	RESIDENTIAL ACCREDIT LOA-SERIES 2006-OA6		12/26/2018	PAYDOWN		94,510	103,727	66,224	77,640		18,741		18,741		94,510				946	07/25/2036
749685-AQ-6	RPM INTERNATIONAL INC-SENIOR UNSECURED N		02/15/2018	MATURITY		45,000	45,000	51,326	45,188		(188)		(188)		45,000				358	02/15/2018
749685-AU-7	RPM INTERNATIONAL INC-SENIOR UNSECURED		12/03/2018	STIFEL NICOLAUS		3,886,000	4,000,000	4,250,193	4,246,706		(4,132)		(4,132)		4,242,575		(356,575)	(356,575)	212,333	06/01/2045
75115D-AH-8	RESIDENTIAL ACCREDIT LOA-SERIES 2006-QS1		12/01/2018	PAYDOWN		1,105	1,545	930	1,209		103		103		1,105				56	09/01/2036
75116C-ET-9	RESIDENTIAL ACCREDIT LOA-SERIES 2007-QS6		12/01/2018	PAYDOWN		17,486	22,938	11,173	15,823		3,264		3,264		17,486				383	04/01/2037
75156X-AC-5	RESIDENTIAL ASSET MORTGA-SERIES 2006-RZ4		12/26/2018	PAYDOWN		486,920	486,920	234,787	411,580		75,340		75,340		486,920				7,762	10/25/2036
75281A-AW-9	RANGE RESOURCES CORP-SENIOR UNSECURED		08/15/2018	VARIOUS		2,654,529	2,600,000	2,600,000	2,600,000						2,600,000		54,529	54,529	93,853	06/01/2021
756109-AM-6	REALTY INCOME CORP-SENIOR UNSECURED NOTE		01/31/2018	MATURITY		240,000	240,000	237,744	239,953		47		47		240,000				387	01/31/2018
75846F-AA-4	Reelcraft Ind. SR SUB NT		10/01/2018	IN-KIND TRANSFER		4,544,359	4,544,601	4,544,601	4,544,601						4,544,359	(242)	(242)	(242)	408,617	02/28/2023
758844-AA-2	REGAL TR II MTG BCD CTF CL II-A		11/01/2018	PAYDOWN		3,283	3,283	3,270	3,285		(2)		(2)		3,283					03/27/2019
75913M-AB-5	REGIONS BANK-UNSECURED NOTE		05/15/2018	MATURITY		100,000	100,000	118,693	101,617		(1,617)		(1,617)		100,000				2,792	05/15/2018
759150-AC-2	REGIONAL CARE HOSPITAL PR-FIRST LIEN		11/27/2018	BARCLAYS CAPITAL INC		2,736,125	2,650,000	2,848,750	2,821,909		(31,673)		(31,673)		2,790,236		(54,111)	(54,111)	199,192	05/01/2023
759351-AJ-8	Reinsurance Group of Ame-SENIOR UNSECURE		05/01/2018	U. S. BANCORP		67,843	65,000	71,651	67,931		(275)		(275)		67,656		187	187	1,372	06/01/2021
759351-AL-3	Reinsurance Group of Ame-SENIOR UNSECURE		05/02/2018	AMHERST SECURITIES		103,303	100,000	102,732	102,423		(132)		(132)		102,291		1,012	1,012	1,606	09/15/2023
759351-AM-1	REINSURANCE GRP OF AMER-SENIOR UNSECURED		05/01/2018	WELLS FARGO		126,790	130,000	129,995	129,984		2		2		129,985		(3,195)	(3,195)	3,252	09/15/2026
759509-AE-2	Reliance Steel & Aluminu-SENIOR UNSECURE		07/24/2018	RAYMOND JAMES		40,755	40,000	39,834	39,901		9		9		39,910		845	845	1,405	04/15/2023
75970N-AG-2	RENAISSANCE HOME EQUITY -SERIES 2005-2 C		12/26/2018	PAYDOWN		72,342	72,342	68,667	74,408		(2,066)		(2,066)		72,342				873	08/25/2035
759950-AW-8	RENAISSANCE HOME EQUITY -SERIES 2003-2 C		12/26/2018	PAYDOWN		85,534	85,534	81,311	85,348		186		186		85,534				2,272	08/25/2033
759950-DG-0	RENAISSANCE HOME EQUITY -SERIES 2004 3 C		12/26/2018	PAYDOWN		10,521	10,521	10,538	10,619		(98)		(98)		10,521				136	11/25/2034
76009X-AA-6	RENSSLAER POLYTECHNIC I-UNSECURED NOTE		12/24/2018	CALL 104.332596		7,704,962	7,385,000	8,467,275	7,768,797		(137,135)		(137,135)		7,951,623		(246,661)	(246,661)	725,481	09/01/2020
760759-AL-4	Republic Services Inc-SENIOR UNSECURED N		05/15/2018	MATURITY		18,950,000	18,950,000	20,559,061	19,088,240		(138,240)		(138,240)		18,950,000				268,037	05/15/2018
760759-AQ-3	Republic Services Inc-SR UNSECURED		04/05/2018	CITIGROUP GLOBAL MAR		10,017,387	10,305,000	10,185,977	10,199,271		3,713		3,713		10,202,984		(185,597)	(185,597)	186,864	03/15/2025
760985-DV-0	RESIDENTIAL ASSET MTG PRODS 2001-RS2 CTF		12/26/2018	PAYDOWN		3,339	3,339	3,340	3,352		(13)		(13)		3,339				43	06/25/2031
76110H-AM-8	RESIDENTIAL ACCREDIT LOA-SERIES 2005-QA4		12/01/2018	PAYDOWN		10,213	18,639	(3,087)	3,129		13,539	3,452	10,087		10,213				39	04/01/2035
76110H-SC-9	RESIDENTIAL ACCREDIT LOA-SERIES 2005-QA5		12/01/2018	PAYDOWN		5,245	34,435	3,227	3,349		4,860		4,860		5,245				278	04/01/2035
76110V-NY-0	RESIDENTIAL FUNDING MORT-SERIES 2003-HS3		08/27/2018	PAYDOWN		11,330	11,330	1,682	8,806		2,525		2,525		11,330				180	08/25/2033
76110V-TX-6	RESIDENTIAL FUNDING MORT-SERIES 2006-HI1		04/01/2018	PAYDOWN		489,834	489,834	325,767	489,813		21		21		489,834				7,282	02/01/2036
76110W-AM-3	RESIDENTIAL ASSET SECURI-SERIES 2005-AHL		12/26/2018	PAYDOWN		561,566	561,566	570,627	570,806		(9,241)		(9,241)		561,566				8,594	11/25/2035
761118-FM-5	RESIDENTIAL ACCREDIT LOA-SERIES 2005-QA9		12/01/2018	PAYDOWN		838,038	935,055	691,873	775,861		102,074		102,074		838,038				39,499	08/01/2035
761118-RJ-9	RESIDENTIAL ACCREDIT LOA-SERIES 2006-Q01		12/26/2018	PAYDOWN		15,846	21,621	11,022	12,914		5,653		5,653		15,846				157	02/25/2046
76112B-AM-9	RESIDENTIAL ASSET MORTGA-SERIES 2006-NC3		12/26/2018	PAYDOWN		217,209	217,209	192,765	217,086		123		123		217,209				2,730	03/25/2036
76112B-H4-5	RESIDENTIAL ASSET MORTGA-SERIES 2005-EFC		01/25/2018	PAYDOWN		317	317	298	317						317					10/25/2035
76112B-H5-2	RESIDENTIAL ASSET MORTGA-SERIES 05-EFC5		12/26/2018	PAYDOWN		238,921	238,921	223,540	237,576		1,345		1,345		238,921				3,845	10/25/2035
76112B-K2-5	RESIDENTIAL ASSET MORTGA-SERIES 2005-EFC		06/25/2018	PAYDOWN		355,332	355,332	329,570	355,289		43		43		355,332				2,027	11/25/2035
76112B-K6-6	RESIDENTIAL ASSET MORTGA-SERIES 2005-EFC		11/26/2018	PAYDOWN		(103,702)	81,349	1,003	492		(100,549)		(100,549)		(103,702)				810	11/25/2035
76112B-UE-8	GMAC MORTGAGE CORPORATIO-SERIES 2005-ARA		12/01/2018	PAYDOWN		33,983	33,983	23,698	26,109		7,874		7,874		33,983				598	07/01/2035
76112H-AE-7	RES ASSET SECURIZATION TR-SERIES 2006-AG		12/01/2018	PAYDOWN		2,156	2,761	1,339	1,375		1,076		1,076							

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
76716X-AC-6	Rio Oil Finance Trust Se-SECURED		04/18/2018	DTCYID		418,500	400,000	400,000							400,000		18,500	18,500	.91	04/06/2028
771196-BL-5	ROCHE HOLDING INC-SENIOR UNSECURED		04/13/2018	GOLDMAN		348,202	380,000	375,847	376,260		104		104		376,365		(28,163)	(28,163)	2,632	01/28/2027
77183F-AA-1	Rock Chalk Park Lease Backed Ce		12/01/2018	SINKING PAYMENT		517,389		517,389	517,389						517,389				12,066	07/01/2044
77183F-AB-9	Rock Chalk Park Trust Clfs Seri		12/01/2018	SINKING PAYMENT		112,842		112,842	112,842						112,842				7,804	07/01/2044
77587T-AA-3	ROMARK LABORATORIES, L C-BOND		01/01/2018	VARIOUS		606,620	606,620	603,587	(93,091)		71		71		606,812		1,808	1,808	13,717	08/15/2020
77587T-AC-9	ROMARK LABORATORIES L C-BOND		01/01/2018	VARIOUS		97,557	97,557	97,070	(14,400)		(8)		(8)		97,262		295	295	5,097	08/15/2020
77587T-AD-7	ROMARK LABORATORIES L C-BOND		01/01/2018	PREPAYMENTS //PENALT		284,833	284,833	281,279	(282,749)		(53)		(53)		282,697		2,136	2,136	14,883	08/15/2020
776696-AE-6	Roper Technologies Inc-SENIOR UNSECURED		08/09/2018	WELLS FARGO		49,197	50,000	49,962	49,979		2		2		49,981		(784)	(784)	1,163	11/15/2022
779382-AP-5	ROWAN COMPANIES INC-SENIOR UNSECURED NOT		08/29/2018	VARIOUS		22,050,682	23,555,000	25,217,233	24,418,842		(111,211)		(111,211)		24,307,631		(2,256,949)	(2,256,949)	658,728	06/01/2022
78355H-JT-7	RYDER SYSTEM INC-SENIOR UNSECURED NOTE		02/07/2018	CALL 100		4,000,000	4,000,000	3,990,760	3,999,632		212		212		3,999,844		156	156	10,000	03/01/2018
78355H-JV-2	RYDER SYSTEM INC-SENIOR UNSECURED NOTE		11/15/2018	MATURITY		6,300,000	6,300,000	6,285,573	6,297,267		2,733		2,733		6,300,000				134,627	11/15/2018
78387G-AM-5	AT&T Inc-NOTE		01/01/2018	EXCHANGE OFFER															997,824	06/15/2034
78387G-AO-6	AT&T Inc-SR UNSECURED		01/01/2018	EXCHANGE OFFER															137,255	09/15/2034
78403D-AE-0	SBA TOWER TRUST-SERIES 2013-1 CLASS D		04/10/2018	MATURITY		2,645,000	2,645,000	2,568,216	2,640,994		4,006		4,006		2,645,000				19,562	04/10/2018
78409V-AD-6	S&P GLOBAL INC-SR UNSECURED		08/09/2018	MARKETAXESS FINANCA		100,819	100,000	99,290	99,419		39		39		99,458		1,361	1,361	2,644	06/15/2025
78412F-AP-9	SESI LLC-SENIOR UNSECURED NOTE		06/04/2018	BANK OF AMERICA CORP		19,986,884	19,571,000	21,350,910	19,989,451		(100,494)		(100,494)		19,888,957		97,927	97,927	600,381	12/15/2021
784419-AE-3	SLC STUDENT LOAN TRUST-SERIES 2006-A CLA		04/16/2018	PAYDOWN		373,815	373,815	330,907	373,815						373,815				494	07/15/2036
784419-AF-0	SLC STUDENT LOAN TRUST-SERIES 2006-A CLA		07/16/2018	PAYDOWN		18,450,000	18,450,000	16,767,563	17,448,768		1,001,232		1,001,232		18,450,000				203,097	07/15/2036
784419-AG-8	SLC STUDENT LOAN TRUST-SERIES 2006-A CLA		07/16/2018	PAYDOWN		10,500,000	10,500,000	9,277,188	9,771,682		728,318		728,318		10,500,000				139,138	07/15/2036
784420-AE-1	SLC STUDENT LOAN TRUST-SERIES 2005-1 CLA		11/15/2018	PAYDOWN		810,483	810,483	641,203	673,310		137,173		137,173		810,483				10,441	02/15/2045
784424-AE-3	SLC STUDENT LOAN TRUST 2-SERIES 07-1 CLA		11/15/2018	PAYDOWN		374,625	374,625	349,729	350,226		24,399		24,399		374,625				4,168	08/15/2037
784428-AG-9	SLC STUDENT LOAN TRUST 2-SERIES 06-2 CLA		12/17/2018	PAYDOWN		448,668	448,668	416,748	417,357		31,311		31,311		448,668				3,411	12/15/2039
784428-GM-2	SLM STUDENT LOAN TRUST 2003-4 LN BKD CTF		12/17/2018	PAYDOWN		268,913	268,913	251,301	168,713		14,960		14,960		268,913				4,082	06/15/2038
784428-HH-2	SLM STUDENT LOAN TRUST-SERIES 2003-7A CL		12/17/2018	PAYDOWN		53,505	53,505	53,505	53,505						53,505				1,049	12/15/2033
784428-KD-7	SLM STUDENT LOAN TRUST-SERIES 2003-12 CL		12/17/2018	PAYDOWN		207,536	207,536	188,375	194,080		13,456		13,456		207,536				3,343	03/15/2038
784428-KN-5	SLM STUDENT LOAN TRUST-SERIES 2003-14 CL		10/25/2018	PAYDOWN		51,252	51,252	49,010	50,441		811		811		51,252				1,170	07/25/2025
784428-LJ-3	SLM STUDENT LOAN TRUST-SERIES 2004 - 3 C		10/25/2018	PAYDOWN		362,009	362,009	308,613	322,151		39,858		39,858		362,009				5,163	10/25/2064
784428-PD-2	SLM STUDENT LOAN TRUST-SERIES 2005-3 CLA		04/25/2018	PAYDOWN		339,661	339,661	280,220	294,114		45,547		45,547		339,661				2,086	04/25/2040
784428-PL-4	SLM STUDENT LOAN TRUST-SERIES 2005-4 CLA		10/25/2018	PAYDOWN		1,337,906	1,337,906	1,211,577	1,225,457		112,449		112,449		1,337,906				16,657	07/25/2055
784428-PQ-3	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLA		10/25/2018	PAYDOWN		1,330,931	1,330,931	1,244,420	1,291,263		39,667		39,667		1,330,931				25,593	10/25/2028
784428-PS-9	SLM STUDENT LOAN TRUST-SERIES 2005-5 CLA		10/25/2018	PAYDOWN		1,758,278	1,758,278	1,550,808	1,595,183		163,095		163,095		1,758,278				23,130	10/25/2040
784428-QA-7	SLM STUDENT LOAN TRUST-SERIES 2005-6 CLA		10/25/2018	PAYDOWN		1,939,749	1,939,749	1,772,783	1,807,449		132,300		132,300		1,939,749				24,958	01/25/2044
784428-QL-3	SLM Student Loan Trust 2-SLMA 2005-7 B		10/25/2018	PAYDOWN		166,679	166,679	158,553	158,553		8,126		8,126		166,679				1,127	01/25/2040
784428-QT-6	SLM STUDENT LOAN TRUST-SERIES 2005-8 CLA		10/25/2018	PAYDOWN		746,087	746,087	624,848	661,863		84,223		84,223		746,087				9,892	01/25/2055
784428-RC-2	SLMA 2005-9 STUDENT LN-BKO NT CL B		10/25/2018	PAYDOWN		769,232	769,232	610,357	643,967		125,265		125,265		769,232				8,216	01/25/2041
784428-RX-6	SLM STUDENT LN TR 2006-2 LN BKO NT CL A-		10/25/2018	PAYDOWN		336,078	336,078	301,530	310,395		25,683		25,683		336,078				6,883	01/25/2041
784428-RY-4	SLM STUDENT LOAN TRUST-SERIES 2006-2 CLA		10/25/2018	PAYDOWN		302,770	302,770	265,049	275,073		27,697		27,697		302,770				3,822	01/25/2041
784428-SL-1	SLM Student Loan Trust 2-SERIES 06-4 CLA		10/25/2018	PAYDOWN		682,022	682,022	638,543	638,780		43,242		43,242		682,022				10,106	01/25/2070
78443B-AK-2	SLM STUDENT LOAN TRUST-SERIES 2006-10 CL		10/25/2018	PAYDOWN		253,792	253,792	223,991	228,708		25,083		25,083		253,792				3,795	03/25/2044
78443F-AF-4	SLM STUDENT LOAN TRUST-SERIES 2007-5 CLA		10/25/2018	PAYDOWN		313,751	313,751	270,200	281,606		32,145		32,145		313,751				6,298	01/26/2043
78443G-AJ-4	SLM STUDENT LOAN TRUST 2-SERIES 06-7 CLA		10/25/2018	PAYDOWN		540,289	540,289	501,750	425,324		37,964		37,964		540,289				3,053	01/27/2042
78443K-AK-2	SLM STUDENT LOAN TRUST 2-SERIES 06-9 CLA		07/25/2018	PAYDOWN		432,859	432,859	406,122	406,585		26,274		26,274		432,859				1,767	01/25/2041
78443Y-AE-6	SLM STUDENT LOAN TRUST-SERIES 2007-3 CLA		04/10/2018	BANK OF AMERICA CORP		4,214,063	4,650,000	4,010,625	4,650,000						4,650,001		(435,938)	(435,938)	23,553	01/25/2028
78446D-AC-3	SLM STUDENT LOAN TRUST-SERIES 2011-A CLA		12/17/2018	PAYDOWN		122,541	122,541	123,845	123,991		(1,449)		(1,449)		122,541				5,537	01/15/2043
78449F-AC-5	SMB PRIVATE ED LN TR 201-SMB PRIVATE ED		12/17/2018	PAYDOWN		6,365,242	6,365,242	6,365,242	6,365,242						6,365,242				110,256	05/15/2031
78449G-AB-5	SMB PRIVATE EDUCATION LO-SERIES 2016-B A		12/15/2018	PAYDOWN		1,819,513	1,819,513	1,819,448	1,818,932		580		580		1,819,513				30,412	02/17/2032
78454L-AN-0	SM ENERGY CO-SENIOR UNSECURED		12/13/2018	GOLDMAN		1,608,750	1,650,000	1,578,000	1,580,396		5,652		5,652		1,586,048		22,702	22,702	107,044	09/15/2026
78469E-AB-5	SOCIAL PROFESSIONAL LOAN-SERIES 2014-A C		12/25/2018	PAYDOWN		372,577	372,577	374,251	373,500		(923)		(923)		372,577				4,589	10/25/2027
78469P-AB-0	SOCIAL PROFESSIONAL LOAN-SERIES 2016-A C		12/25/2018	PAYDOWN		7,292,714	7,292,714	7,226,131	7,235,211		57,503		57,503		7,292,714				97,038	12/26/2036
78471D-AA-5	SOFI CONSUMER LOAN PROGR-SQLP 2016-1A A		12/25/2018	PAYDOWN		3,052,223	3,052,223	3,052,861	3,052,420		(197)		(197)		3,052,223				51,260	08/25/2025
78471F-AA-0	SOFI CONSUMER LOAN PROGR-SERIES 2016-3 C		12/25/2018	PAYDOWN		4,710,696	4,710,696	4,710,599	4,723,283		(12,587)		(12,587)		4,710,696				74,961	12/26/2025
78486Q-AC-5	SVB FINANCIAL GROUP-SENIOR UNSECURED NOT		12/04/2018	MILLENNIUM ADVISORS		20,582	20,000	22,44												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
80557B-AC-8	SAXON ASSET SECURITIES T-SERIES 2007-3 C		11/26/2018	PAYDOWN		2,192,423	2,192,423	1,153,653	2,134,255		58,168		58,168		2,192,423				20,547	09/25/2047
808194-AB-0	A SCHULMAN INC-SENIOR UNSECURED		09/20/2018	VARIOUS		6,375,793	6,060,000	6,267,889	6,234,646		(33,043)		(33,043)		6,433,056		(57,263)	(57,263)	521,765	06/01/2023
80821F-AC-9	Schurz Communications, I Senior Note Ser		02/21/2018	CA CASH_CLOSE		8,766,294	8,357,143	8,357,143	8,357,143						8,766,294				463,588	12/13/2022
808513-AJ-4	CHARLES SCHWAB CORP-SR UNSECURED		06/25/2018	CALL 100		250,000	250,000	250,849	250,167		(167)		(167)		250,000				2,658	07/25/2018
81170Y-AB-5	SEACOR Holdings Inc-SENIOR UNSECURED NOT		12/17/2018	JEFFERIESLLC		8,323,493	8,668,000	8,579,881	8,612,830		12,351		12,351		8,625,181		(301,688)	(301,688)	207,181	11/15/2028
81744F-AZ-0	SEQUOIA MORTGAGE TRUST-SERIES 2004-3 CLA		12/20/2018	PAYDOWN		82,898	82,898	75,598	83,533		(636)		(636)		82,898				1,298	05/20/2034
81744F-DK-0	SEQUOIA MORTGAGE TRUST-SERIES 2004-8 CLA		12/20/2018	PAYDOWN		217,719	217,719	214,140	218,887		(1,168)		(1,168)		217,719				3,286	09/20/2034
81744F-JH-1	SEQUOIA MORTGAGE TRUST-SERIES 2005-4 CLA		12/01/2018	PAYDOWN		33,561	33,561	21,450	25,999		7,561		7,561		33,561				558	04/01/2035
824348-BB-1	SHERWIN-WILLIAMS CO/THE-SENIOR UNSECURED		10/29/2018	BANK OF AMERICA CORP		26,287,176	26,030,000	27,012,317	26,925,316		(188,519)		(188,519)		26,736,797		(449,621)	(449,621)	911,050	01/15/2022
82652H-AB-7	SIERRA TIMESHARE 2015-2 REC FNDG-LN BKD		12/20/2018	PAYDOWN		606,762	606,762	606,630	606,706		56		56		606,762				8,472	06/20/2032
82652J-AA-5	SIERRA RECEIVABLES FUND1-SERIES 15-3A CL		12/20/2018	PAYDOWN		1,338,565	1,338,565	1,338,306	1,338,440		125		125		1,338,565				17,410	09/20/2032
82652W-AB-4	SIERRA RECEIVABLES FUND1-SERIES 16-2A CL		12/20/2018	PAYDOWN		472,103	472,103	472,077	472,086		17		17		472,103				6,431	07/20/2033
82652X-AB-2	SIERRA RECEIVABLES FUND1-SERIES 16-1A CL		12/20/2018	PAYDOWN		670,064	670,064	669,912	683,360		(13,296)		(13,296)		670,064				12,435	03/21/2033
83149E-AG-2	SLM STUDENT LN TR 2006-5-NOTE CL B		10/25/2018	PAYDOWN		2,460,323	2,460,323	2,177,244	2,215,069		245,254		245,254		2,460,323				31,492	10/25/2040
83149F-AD-6	SLMA 2006 6 NT CL B		10/25/2018	PAYDOWN		885,459	885,459	690,208	726,578		158,881		158,881		885,459				13,302	01/25/2070
832696-AK-4	JM SMUCKER CO-SR UNSECURED		07/06/2018	VARIOUS		16,235,357	16,950,000	16,751,766	16,791,662		10,017		10,017		16,801,679		(566,322)	(566,322)	308,063	03/15/2025
833034-AJ-0	SNAP-ON INC-SECURED		01/15/2018	MATURITY		150,000	150,000	157,724	150,147		(147)		(147)		150,000				248	01/15/2018
83367E-AB-7	Societe Generale Financi Lease Backed No		08/21/2018	SINKING PAYMENT		972,483	972,483	972,483	972,483						972,483				15,268	08/21/2022
834014-AB-8	SOCIAL PROFESSIONAL LOAN-SERIES 2014-B C		12/25/2018	PAYDOWN		439,574	439,574	439,442	439,500		64		64		439,574				5,485	08/27/2029
834016-AB-3	SOCIAL PROFESSIONAL LOAN-SERIES 2015-C C		12/25/2018	PAYDOWN		682,343	682,343	678,597	679,417		2,766		2,766		682,343				9,706	08/25/2033
83401L-AA-2	SOCIAL PROFESSIONAL LOAN-SERIES 2015-A C		12/26/2018	PAYDOWN		371,331	371,331	371,331	371,331						371,331				3,658	03/25/2033
83401L-AB-0	SOCIAL PROFESSIONAL LOAN-SERIES 2015-A C		12/25/2018	PAYDOWN		351,249	351,249	351,196	351,202		47		47		351,249				3,926	03/25/2030
83402J-AC-2	SOCIAL PROFESSIONAL LOAN-SOPI 2016-B A2B		12/25/2018	PAYDOWN		3,352,271	3,352,271	3,351,940	3,352,060		211		211		3,352,271				71,746	10/25/2032
83402Q-AA-0	SOCI CONSUMER LOAN PROGR-SQLP 2016-2A A		12/25/2018	PAYDOWN		3,532,318	3,532,318	3,532,175	3,537,639		(5,321)		(5,321)		3,532,318				55,981	10/27/2025
83404Y-AA-1	SOFI CONSUMER LOAN PROGR-SERIES 16-5 CLA		12/25/2018	PAYDOWN		12,979,970	12,979,970	12,935,782	12,977,201		2,769		2,769		12,979,970				207,817	09/25/2028
83405P-AA-9	SOFI CONSUMER LOAN PROGR-SERIES CLASS		12/25/2018	PAYDOWN		13,083,406	13,083,406	13,061,574	13,094,590		(11,184)		(11,184)		13,083,406				220,998	02/25/2026
83416W-AB-9	SOLAR STAR FUNDING LLC-SECURED		12/30/2018	SINKING PAYMENT		1,023,210	1,023,210	1,023,210	1,023,210						1,023,210				40,417	06/30/2035
83421F-AA-1	SoGen, LLC Senior Secured		12/31/2018	SINKING PAYMENT		816,769	816,769	816,769	816,769						816,769				32,099	09/30/2036
83546D-AD-0	SONIC CAPITAL LLC-SERIES 16-1A CLASS A2		12/20/2018	PAYDOWN		599,822	599,822	599,822	599,822						599,822				2,471	05/20/2046
83546D-AF-5	Sonic Capital LLC-SERIES 18-1A CLASS A2		12/20/2018	PAYDOWN		3,000	3,000	3,000	3,000						3,000				107	02/20/2048
83611M-AQ-1	SOUNDVIEW HOME EQUITY LO-SERIES 2003-2 C		12/26/2018	PAYDOWN		20,866	20,866	20,345	20,866						20,866				407	11/25/2033
83613G-AA-7	SOUNDVIEW HOME EQUITY LO-SERIES 2008-1 C		12/26/2018	PAYDOWN		81,038	81,038	69,458	58,918		22,120		22,120		81,038				1,006	02/25/2038
83715R-AH-5	SOUTH CAROLINA STUDENT L-SERIES 15-A CLA		12/26/2018	PAYDOWN		405,701	405,701	373,245	388,340		17,361		17,361		405,701				6,694	01/25/2036
83887E-AB-8	South Mississippi Electr First Mortgage		12/09/2018	SINKING PAYMENT		642,939	642,939	642,939	642,939						642,939				26,155	12/09/2040
841215-AA-4	Southaven Combined Cycle-SECURED		08/15/2018	SINKING PAYMENT		17,584	17,584	18,012	18,012		(24)		(24)		17,584				338	08/15/2033
84265V-AF-2	SOUTHERN COPPER CORP-SR UNSECURED		11/23/2018	VARIOUS		563,302	578,000	536,962	546,882		5,291		5,291		552,173		11,129	11,129	21,298	11/08/2022
84265V-AG-0	SOUTHERN COPPER CORP-NOTE		02/23/2018	VARIOUS		223,797	210,000	170,289	172,387		90		90		172,477		51,320	51,320	8,934	11/08/2042
84265V-AH-8	SOUTHERN COPPER CORP-SR UNSECURED		04/11/2018	BARCLAYS CAPITAL INC		3,022,500	3,000,000	2,983,770	2,987,398		523		523		2,987,922		34,578	34,578	32,938	04/23/2025
84314F-AB-7	Southern Illinois Power Senior Secured		12/15/2018	SINKING PAYMENT		1,012,500	1,012,500	1,012,500	1,012,500						1,012,500				43,664	06/15/2040
84519F-AF-1	Southwest Power Pool, In Senior Note Ser		12/31/2018	SINKING PAYMENT		1,000,000	1,000,000	1,036,791	1,015,335		(4,087)		(4,087)		1,000,000				24,375	03/31/2024
845467-AH-2	SOUTHWESTERN ENERGY CO-SENIOR UNSECURED		12/04/2018	VARIOUS		33,044,143	34,250,000	34,294,611	34,270,956		(1,198)		(1,198)		34,269,758		(1,225,615)	(1,225,615)	1,767,831	03/15/2022
84615F-AA-5	Space Florida Non-Recourse No		11/28/2018	SINKING PAYMENT		2,441,350	2,441,350	2,441,350	2,441,350						2,441,350				37,762	02/28/2021
84751P-AP-4	SPECIALTY UNDERWRITING & SERIES 2003-BC2		12/26/2018	PAYDOWN		237,603	237,603	168,050	203,077		34,527		34,527		237,603				5,057	06/25/2034
84752C-AE-7	SPECIALTY UNDERWRITING & SERIES 2007-AB1		12/26/2018	PAYDOWN		174,945	174,945	58,106	58,943		116,002		116,002		174,945				341	03/25/2037
84858D-AA-6	SPIRIT AIR 2015-1 PTT A-SECURED		10/01/2018	VARIOUS		335,757	333,694	348,384	348,061		(899)		(899)		347,163		(11,406)	(11,406)	16,145	04/01/2028
84858E-AA-4	SPIRIT AIR 2015-1 PTT B-SERIES 2015-1 CL		10/01/2018	SINKING PAYMENT		33,730	33,730	34,776	34,677		(49)		(49)		33,730				600	04/01/2024
84860*-AB-9	Spirits of St Louis Bask Senior Secured		12/31/2018	SINKING PAYMENT		413,079	413,079	413,079	413,079						413,079					06/30/2036
848609-AA-1	Spirits NewCo LLC Senior Secured		12/31/2018	SINKING PAYMENT		397,519	397,519	397,519	397,519						397,519					06/30/2036
84860Y-AA-6	SPIRIT MASTER FUNDING LL-SERIES 2014-2A		12/01/2018	PAYDOWN		159,461	159,461	146,579	152,572		6,890		6,890		159,461				3,277	03/01/2041
84861C-AA-3	SPIRIT MASTER FUNDING LL-SERIES 2014-4A		04/01/2018	PAYDOWN		25,701	25,701	25,654	25,681		20		20		25,701				96	01/01/2045
84861C-AB-1	SPIRIT MASTER FUNDING LL-SERIES 2014-4A		12/01/2018	PAYDOWN		316,096	316,096	315,326	315,413		683		683		316,096				5,639	01/01/2045
85172L-AA-4	SPRINGLEAF FUNDING TRUST-SERIES 2015-AA		12/15/2018	PAYDOWN		1,347,749	1,347,749	1,347,480	1,347,686		62		62		1,347,749				24,286	11/15/2024
852																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
85375C-BE-0	CALATLANTIC GROUP INC-SENIOR UNSECURED		02/22/2018	EXCHANGE OFFER		3,432,270	3,320,000	3,444,500	3,431,121		(2,171)		(2,171)		3,428,950		3,320	3,320	27,632	11/15/2024
855244-AS-8	Starbucks Corp-SENIOR UNSECURED		10/17/2018	MARKETAXESS FINANCI		605,644	650,000	642,733			(17)		(17)		642,716		(37,072)	(37,072)	5,606	11/15/2048
855541-AC-2	SUNTRUST ADJUSTABLE RATE-SERIES 2007-S1		12/01/2018	PAYDOWN		357,574	380,831	283,796	318,973		53,608		53,608		357,574				4,027	01/01/2037
85554N-AG-5	SUNTRUST ADJUSTABLE RATE-SERIES 2007-3 C		12/01/2018	PAYDOWN		153,005	155,524	102,567	122,466		(9,325)		(9,325)		153,005				9,278	06/01/2037
85571B-AJ-4	Starwood Property Trust -SENIOR UNSECURE		08/15/2018	VARIOUS		4,928,086	4,986,000	4,948,555	4,948,701		2,180		2,180		4,950,881		(22,795)	(22,795)	138,260	03/15/2025
857477-AN-3	State Street Corp-SR UNSECURED		12/19/2018	TORONTO DOMINION SEC		108,097	110,000	109,888	109,917		11		11		109,928		(1,831)	(1,831)	3,680	12/16/2024
858119-AZ-3	Steel Dynamics Inc-SENIOR UNSECURED NOTE		06/15/2018	VARIOUS		12,200,529	11,983,000	11,699,645	11,804,330		13,494		13,494		11,817,824		382,705	382,705	287,782	04/15/2023
86074Q-AM-4	STILLWATER MINING CO-SENIOR UNSECURED		09/04/2018	CA_CASH_CLOSE		1,705,500	1,800,000	1,780,992	1,782,654		(77,154)		(77,154)		1,705,500				133,012	06/27/2022
862015-AC-8	STONE LANE FUNDING LTD-SERIES 2007-1A C		01/17/2018	PAYDOWN		2,299,581	2,299,581	1,581,044	2,247,648		51,933		51,933		2,299,581				1,772	04/18/2022
86212U-AA-4	STORE MASTER FUNDING LLC-SERIES 2013-1A		10/20/2018	PAYDOWN		7,081,922	7,081,922	7,080,427	7,081,922						7,081,922				210,430	03/20/2043
86212V-AE-4	Store Master Funding I-V-SERIES 18-1A CL		12/20/2018	PAYDOWN		32,714	32,714	32,702			12		12		32,714				168	10/20/2048
86212V-AG-9	Store Master Funding I-V-SERIES 18-1A CL		12/20/2018	PAYDOWN		7,833	7,833	7,833			1		1		7,833				44	10/20/2048
86212W-AA-0	STORE MASTER FUNDING LLC-SERIES 2013-2A		10/20/2018	PAYDOWN		4,969,635	4,969,635	4,967,412	4,968,686		949		949		4,969,635				173,014	07/20/2043
86213A-AA-7	STORE MASTER FUNDING LLC-SERIES 2013-3A		12/20/2018	PAYDOWN		99,482	99,482	99,993	99,889		(406)		(406)		99,482				2,302	11/20/2043
86213B-AA-5	STORE MASTER FUNDING LLC-SERIES 2014-1A		12/20/2018	PAYDOWN		15,150	15,150	15,149	15,149		1		1		15,150				345	04/20/2044
863572-2A-0	STRUCTURED ASSET SECURIT-SERIES 2000-5 C		12/01/2018	PAYDOWN		9,019	9,019	5,632	3,347		6,727		6,727		9,019				188	11/01/2030
863572-F9-9	STRUCTURED ASSET SECURIT-SERIES 1999-ALS		12/01/2018	PAYDOWN		7,040	7,040	6,046	3,085		3,955		3,955		7,040				199	09/01/2029
863579-CB-2	STRUCTURED ADJUSTABLE RA-SERIES 2004-14		12/01/2018	PAYDOWN		452,846	452,846	333,095	393,167		59,680		59,680		452,846				2,989	10/01/2034
863579-DV-7	STRUCTURED ADJUSTABLE RA-SERIES 2004-17		12/26/2018	PAYDOWN		192,383	813,121	45,461	188,910		86,095	37,081	49,014		192,383				535	11/25/2034
863579-KG-2	STRUCTURED ADJUSTABLE RA-SERIES 2005-2 C		12/01/2018	PAYDOWN		394,936	394,936	316,098	343,471		51,465		51,465		394,936				2,324	02/01/2035
863579-NR-5	STRUCTURED ADJUSTABLE RA-SERIES 2005-16X		12/26/2018	PAYDOWN		568,683	568,683	466,822	534,403		34,281		34,281		568,683				5,768	08/25/2035
863579-YR-3	STRUCTURED ADJUSTABLE RA-SERIES 2005-19X		12/26/2018	PAYDOWN		694,171	694,171	480,742	485,480		208,691		208,691		694,171				7,268	10/25/2035
86358H-HX-0	STRUCTURED ASSET MORTGAG-SERIES 1999-2 C		12/01/2018	PAYDOWN		15,618	15,618	13,740	13,721		1,897		1,897		15,618				834	05/01/2029
86358R-SR-4	STRUCTURED ASSET SECURIT-SERIES 2002-18A		01/01/2018	PAYDOWN															6	09/01/2032
86358R-A2-3	STRUCTURED ASSET SECURIT-SERIES 2002-6 C		12/01/2018	PAYDOWN		157,224	157,224	143,653	145,120		12,104		12,104		157,224				4,744	04/01/2032
86358R-CF-2	STRUCTURED ASSET SECURIT-SERIES 2001-8A		01/01/2018	PAYDOWN															(31)	05/25/2031
86359A-SE-9	STRUCTURED ASSET SECURIT-SERIES 2003-34A		12/01/2018	PAYDOWN		37,952	37,952	24,827	15,227		22,725		22,725		37,952				536	11/01/2033
86359A-6A-6	STRUCTURED ASSET SECURIT-SERIES 2003-34A		12/01/2018	PAYDOWN		834,381	834,381	130,367	164,951		656,531		656,531		834,381				9,356	11/01/2033
86359A-CD-3	STRUCTURED ASSET SECURIT-SERIES 2002-21A		12/01/2018	PAYDOWN		310	(803)	(80)	(90)		276		276		310				(22)	11/01/2032
86359A-CG-6	STRUCTURED ASSET SECURIT-SERIES 2002-21A		03/01/2018	PAYDOWN		(13,934)	7,540	1,846			(7,581)		(7,581)		(13,934)					11/01/2032
86359A-HD-8	AMORTIZING RESIDENTIAL C-SERIES 2002-BC1		11/26/2018	PAYDOWN		26,862	26,862	20,831	24,252		2,610		2,610		26,862				430	01/25/2033
86359A-VY-6	STRUCTURED ASSET SECURIT-SERIES 2003-15A		05/01/2018	PAYDOWN		218,462	218,462	65,002	62,006		156,456		156,456		218,462				2,648	04/01/2033
86359A-WK-5	STRUCTURED ASSET SECURIT-SERIES 2003-18X		12/01/2018	PAYDOWN		387,317	387,317	346,528	366,322		20,995		20,995		387,317				5,845	06/01/2033
86359A-ZE-6	STRUCTURED ASSET SECURIT-SERIES 2003-22A		12/01/2018	PAYDOWN		66,542	66,542	16,798	19,019		47,523		47,523		66,542				1,312	06/01/2033
86359B-7K-1	STRUCTURED ASSET SECURIT-SERIES 2005-7XS		12/01/2018	PAYDOWN		11,703	11,703	8,238	8,934		2,769		2,769		11,703				264	04/01/2035
86359B-CV-1	STRUCTURED ASSET SECURIT-SERIES 2003-37A		03/26/2018	PAYDOWN		(5,141)	56,352	1,273			(8,014)		(8,014)		(5,141)				174	12/25/2033
86359B-KB-6	STRUCTURED ADJUSTABLE RA-SERIES 2004-3AC		04/01/2018	PAYDOWN		364,891	364,891	324,381	342,866		22,025		22,025		364,891				3,136	03/01/2034
86359B-LB-5	STRUCTURED ADJUSTABLE RA-SERIES 2004-2 C		12/01/2018	PAYDOWN		140,673	140,673	119,362	129,375		11,298		11,298		140,673				1,915	03/01/2034
86359B-LQ-2	STRUCTURED ADJUSTABLE RA-SERIES 2004-2 C		12/01/2018	PAYDOWN		1,536,393	1,621,101	144,294	359,447		1,182,844		1,182,844		1,536,393				2,822	03/01/2034
86359B-NX-6	WELLS FARGO HOME EQUITY -SERIES 2004-1 C		12/26/2018	PAYDOWN		245,393	245,393	209,198	233,138		12,255		12,255		245,393				2,619	04/25/2034
86359B-UB-2	STRUCTURED ASSET SECURIT-SERIES 2004-23X		11/26/2018	PAYDOWN		29,662	18,608	1,909	277		(126)		(126)		29,662				46	01/25/2035
86359D-DB-0	STRUCTURED ASSET SECURIT-SERIES 2005-WF2		12/26/2018	PAYDOWN		293,949	293,949	239,321	282,682		11,267		11,267		293,949				4,442	05/25/2035
86359D-MC-8	STRUCTURED ASSET SECURIT-SERIES 2005-RF3		12/25/2018	PAYDOWN		1,205,051	1,205,051	964,712	1,011,967		193,084		193,084		1,205,051				10,874	06/25/2035
86359D-ME-4	STRUCTURED ASSET SECURIT-SERIES 2005-RF3		12/01/2018	PAYDOWN		134,961	134,961	122,815	122,022		12,940		12,940		134,961				3,127	06/01/2035
86359D-UE-5	LEHMAN BROTHERS SMALL BA-SERIES 2005-2A		12/01/2018	PAYDOWN		125,420	125,420	120,193	125,420		(526)		(526)		125,420				3,128	09/01/2030
86359D-UL-9	LEHMAN XS TRUST-SERIES 2005-5N CLASS 1A1		12/26/2018	PAYDOWN		25,256	25,256	20,591	21,146		4,110		4,110		25,256				231	11/25/2035
86359D-XD-4	STRUCTURED ASSET SECURIT-SERIES 2006-S1		12/26/2018	PAYDOWN		481,009	481,009	15,977	45,357		435,653		435,653		481,009				3,969	03/25/2036
86359L-SM-2	STRUCTURED ASSET MORTGAG-SERIES 2006-AR2		12/26/2018	PAYDOWN		139,753	139,753	100,598	97,489		42,263		42,263		139,753				895	02/25/2036
86360N-AS-1	STRUCTURED ADJUSTABLE RA-SERIES 2006-5 C		12/01/2018	PAYDOWN		575	(58,063)	(4,563)	(3,514)		(6,006)		(6,006)		575				(2,063)	06/01/2036
86360P-AD-9	STRUCTURED ASSET SECURIT-SERIES 2006-NC1		12/26/2018	PAYDOWN		8,268	8,268	5,993	7,942		326		326		8,268				85	05/25/2036
86360U-AF-3	STRUCTURED ASSET MORTGAG-SERIES 2006-AAR		12/26/2018	PAYDOWN		567,705	567,705	402,276	387,320		180,385		180,385		567,705				4,803	07/25/2046
86362P-AD-7	STRUCTURED ASSET SECURIT-SERIES 2007-BC1		12/26/2018	PAYDOWN		87,382	87,382	29,372	71,755		15,626		15,626		87,382				1,181	02/25/2037
86363H-AB-8	STRUCTURED ASSET SECURIT-SERIES 2007-EQ1		12/26/2018	PAYDOWN		9,813	9,813	5,450	3,095		6,718		6,718							

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
86765L-AF-4	SUNOCO LP/FINANCE CORP-SENIOR UNSECURED		01/23/2018	CALL 103.99967		4,232,787	4,070,000	4,141,225	4,123,499		(1,360)		(1,360)		4,284,926		(52,139)	(52,139)	178,332	04/15/2021
86800B-AA-7	SUNVAIR INC SR SUB NT		10/01/2018	VARIOUS		2,185,935	2,205,298	2,192,483	2,058,446		2,264		2,264		2,185,935				(55,737)	07/31/2021
869507-AA-1	SUTTONPARK STRUCTURED SE-SERIES 17-1A CL		11/15/2018	PAYDOWN		116,481	116,481	116,422	116,405		76		76		116,481				3,621	01/15/2071
871829-AF-4	Sysco Corp-DEBENTURE		03/23/2018	TENDERED		11,355,982	9,561,000	9,631,751	9,601,648		(952)		(952)		9,600,696		1,755,286	1,755,286	619,606	08/01/2028
87186B-AA-9	Systec Corp. Senior Sub Note		01/01/2018	PIK BOND							(175)		(175)							05/19/2021
87222F-AB-1	TD Williamson, Inc. Senior Note Ser		03/31/2018	MATURITY		5,610,000	5,610,000	5,610,000	5,610,000						5,610,000				238,909	03/31/2018
872224-AD-2	TBW MORTGAGE BACKED PASS-SERIES 2006-4 C		04/25/2018	PAYDOWN		443,362	443,362	443,362	443,356		6		6		443,362				8,172	09/25/2036
87246A-AE-8	TIAA SEASONED COMMERCIAL-SERIES 2007-C4		12/10/2018	PAYDOWN		694,849	694,849	687,306	694,470		379		379		694,849				16,429	08/10/2039
87246Y-AA-4	TIAA ASSET MGMT FIN LLC-SENIOR UNSECURED		11/23/2018	CALL 100.001146		11,525,132	11,525,000	11,557,155	11,560,953		(17,382)		(17,382)		11,543,703		(18,571)	(18,571)	304,232	11/01/2019
87248N-AC-2	THC ESCROW CORP III-87248NAC2		01/05/2018	BANK OF AMERICA CORP		2,589,840	2,616,000	2,625,810	2,624,637		(51)		(51)		2,624,586		(34,746)	(34,746)	2,979	05/01/2025
87342R-AB-0	TACO BELL FUNDING LLC-SERIES 2016-1A CLA		11/08/2018	VARIOUS		8,159,258	8,207,625	8,280,749	8,262,769		(8,503)		(8,503)		8,254,266		(95,008)	(95,008)	345,338	05/25/2046
87342R-AC-8	TACO BELL FUNDING LLC-SERIES 2016-1A CLA		05/25/2018	PAYDOWN		73,000	73,000	73,215	73,160		(160)		(160)		73,000				1,814	05/25/2046
874074-AA-5	TAL ADVANTAGE LLC-SERIES 17-1A CLASS A		12/20/2018	PAYDOWN		4,453,967	4,453,967	4,507,999	4,511,042		(57,075)		(57,075)		4,453,967				179,891	04/20/2042
87407P-AR-1	TAL ADVANTAGE V LLC-ASSET BACKED NOTE CL		12/20/2018	PAYDOWN		623,000	623,000	620,262	621,208		1,792		1,792		623,000				11,035	11/21/2039
87511B-AA-5	TAMMAM MANU HSG CONTRACT TR PT CTF 2005-		12/01/2018	PAYDOWN		1,171,542	1,171,542	1,137,166	1,159,434		12,108		12,108		1,171,542				37,616	09/01/2034
87511B-AB-3	TAMMAM MANU HSG CONTRACT TR 2007-1 CL A		12/01/2018	PAYDOWN		1,191,878	1,191,878	1,169,264	1,198,074		(6,197)		(6,197)		1,191,878				34,249	02/01/2030
87511B-AC-1	TAMMAM MANU HSG CONTRACT TR 2007-1 CL B		12/01/2018	PAYDOWN		386,535	386,535	386,535	386,535						386,535				8,948	02/01/2030
87511B-AD-9	TAMMAM MANU HSG CONTRACT TR 2007-1 CL M-		12/01/2018	PAYDOWN		476,934	476,934	257,104	356,408	39,017	81,509		120,526		476,934				12,945	02/01/2030
87511B-AE-7	TAMMAM MANU HSG CONTRACT TR 2007-1 CL M-		12/01/2018	PAYDOWN		134,936	134,936	65,519	97,198	10,141	37,737		37,737		134,936				3,905	02/01/2030
87548A-AJ-6	TANGER PROPERTIES LP-SENIOR UNSECURED		08/09/2018	WELLS FARGO		139,857	155,000	154,388	154,460		36		36		154,460		(14,639)	(14,639)	4,602	09/01/2026
87612B-AM-4	TARGA RESOURCES PARTNERS-SENIOR UNSECURE		11/21/2018	VARIOUS		1,899,626	1,900,000	1,890,500	1,894,400		888		888		1,895,288		4,338	4,338	88,308	05/01/2023
87612F-AB-9	TARGET CORP-NOTE		05/15/2018	MATURITY		5,000,000	5,000,000	5,806,405	5,058,203		(58,203)		(58,203)		5,000,000				90,729	05/15/2018
88023J-AA-4	TEMPO ACQUISITION LLC/FI-SENIOR UNSECURE		07/26/2018	BANK OF AMERICA CORP		6,942,403	7,202,000	7,202,000	7,202,000						7,202,001		(259,598)	(259,598)	257,082	06/01/2025
88031N-AA-5	TENASKA ALABAMA PART-SENIOR NOTE		06/28/2018	VARIOUS		178,675	168,006	165,217	167,500		136		136		178,306		369	369	14,584	06/30/2021
88031V-AA-7	TENASKA GATEWAY PARTNERS-SENIOR SECURED		12/30/2018	SINKING PAYMENT		665,303	665,303	665,303	665,303						665,303				35,231	12/30/2023
88033G-BY-5	Tenet Healthcare Corp-SECURED NOTE		08/17/2018	VARIOUS		10,222,440	10,200,000	10,189,875	10,195,442		876		876		10,196,317		26,123	26,123	292,638	04/01/2021
88033G-CS-7	Tenet Healthcare Corp-FIRST LIEN		11/20/2018	VARIOUS		1,419,383	1,500,000	1,496,238	1,496,532		363		363		1,496,896		(77,513)	(77,513)	236,110	07/15/2024
880901-20-2	PROVIDENT INSTITUTIONAL FUNDS Temp Fund		01/01/2018	VARIOUS		(8,888)	(8,888)	(8,888)	(8,888)		(8,888)		(8,888)		(8,888)					10/01/2018
88104U-AA-1	TERRAFORM GLOBAL OPERATION LLC-SR NT 144		02/22/2018	CALL 110.713999		1,217,854	1,100,000	1,086,283	1,089,777		438		438		1,208,069		9,785	9,785	133,048	08/15/2022
881561-BU-7	TERWIN MORTGAGE TRUST-SERIES 2003-4HE CL		08/27/2018	PAYDOWN		8,173	8,173	8,200	8,256		(83)		(83)		8,173				55	09/25/2034
881561-CE-2	TERWIN MORTGAGE TRUST-SERIES 2003-6HE CL		07/25/2018	PAYDOWN		4,848	4,848	4,895	5,152		(304)		(304)		4,848					11/25/2033
881561-CX-0	TERWIN MORTGAGE TRUST-SERIES 2003-8HE CL		12/26/2018	PAYDOWN		8,089	8,089	8,146	8,153		(64)		(64)		8,089				162	12/25/2034
88163V-AD-1	TEVA PHARM FIN CO LLC-SENIOR NOTE		06/29/2018	VARIOUS		24,362,898	24,547,000	31,501,558	31,158,056		(127,263)		(127,263)		31,030,793		(6,667,895)	(6,667,895)	786,739	02/01/2036
88216A-AA-4	Texas Brine Company LLC Senior Secured		12/31/2018	SINKING PAYMENT		512,503	512,503	512,503	512,503						512,503				25,948	09/30/2019
88342F-AA-6	Therma-Stor LLC Senior Sub Note		10/01/2018	IN-KIND TRANSFER		4,457,441	4,457,441	4,457,441	4,457,441						4,457,441				1,300	11/30/2023
885220-FS-7	THORNBURG MORTGAGE SECUR-SERIES 2004-3 C		12/26/2018	PAYDOWN		334,731	334,731	318,843	328,109		6,622		6,622		334,731				5,486	09/25/2044
885220-HB-2	THORNBURG MORTGAGE SECUR-SERIES 2005-1 C		12/01/2018	PAYDOWN		476,889	476,889	481,658	481,724		(4,836)		(4,836)		476,889				1,289	04/01/2045
88576N-AJ-7	321 HENDERSON RECV II LLC-ASSET BKD NT 0		12/17/2018	PAYDOWN		374,727	374,727	341,426	351,021		23,705		23,705		374,727				3,865	03/15/2042
88576P-AE-3	321 HENDERSON RECEIVABLE-SERIES 05-1A CL		12/17/2018	PAYDOWN		4,629,036	4,629,036	4,380,226	4,415,156		213,880		213,880		4,629,036				49,090	11/15/2040
88606W-AA-0	Thunderbolt Aircraft Lea-SERIES 17-A CLA		12/15/2018	PAYDOWN		1,214,294	1,214,294	1,214,243	1,215,832		(1,538)		(1,538)		1,214,294				35,950	05/17/2032
887317-AG-0	Time Warner Inc-SENIOR UNSECURED NOTE		04/16/2018	CITIGROUP GLOBAL MAR		36,398	35,000	34,917	34,971		1		1		34,972				489	01/15/2021
88732J-AL-2	TIME WARNER CABLE INC-UNSECURED SENIOR N		07/01/2018	MATURITY		1,800,000	1,800,000	1,511,325	1,778,092		21,908		21,908		1,800,000				60,750	07/01/2018
88732J-AS-7	TIME WARNER CABLE INC-SENIOR UNSECURED N		08/08/2018	MILLENNIUM ADVISORS		103,196	100,000	121,192	103,421		(1,641)		(1,641)		101,781				1,415	04/01/2019
89148H-AF-5	Tortoise Pipeline & Ener Senior Note Ser		12/15/2018	MATURITY		3,550,000	3,550,000	3,550,000	3,550,000						3,550,000				118,389	12/15/2018
89171V-AK-3	TOWD POINT MORTGAGE TRUS-SERIES 2015-5 C		12/01/2018	PAYDOWN		940,156	940,156	941,813	940,990		(834)		(834)		940,156				13,621	05/01/2055
89236T-AY-1	TOYOTA MOTOR CREDIT CORP-SR UNSECURED		10/24/2018	MATURITY		300,000	300,000	302,306	300,670		(670)		(670)		300,000				4,883	10/24/2018
89236T-CA-1	TOYOTA MOTOR CREDIT CORP-SR UNSECURED		01/12/2018	MATURITY		205,000	205,000	204,818	204,997		3		3		205,000				1,911	01/12/2018
89236T-CP-8	TOYOTA MOTOR CREDIT CORP-SR UNSECURED		07/13/2018	MATURITY		100,000	100,000	99,806	99,959		41		41		100,000				827	07/13/2018
89334B-AA-6	Trans-Union Interstate P Senior Secured		12/31/2018	SINKING PAYMENT		1,388,957	1,388,957	1,388,957	1,388,957						1,388,957				31,017	12/31/2032
893570-BY-6	TRANSCONT GAS PIPE CORP-NOTE		06/15/2018	MATURITY		2,750,000	2,750,000	2,742,571	2,749,465		536		536		2,750,000				75,793	06/15/2018
893647-BB-2	TRANSIDGM INC-SR SUBORDINATED		12/17/2018	MARKETAXESS FINANCA		1,789,409	1,850,000	1,808,375	1,811,083		4,534		4,534		1,815,617		(26,208)	(26,208)	119,062	06/15/2026
89566E-A*9	Tri-State Generation & T Note Series 200		04/08/2018	SINKING PAYMENT		714,286	714,286	834,655	722,764											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
89838-AA-5	Dartmouth College Senior Secured		12/01/2018	SINKING PAYMENT		731,334	731,334	731,334	731,334						731,334				22,023	05/01/2023
89816-AA-3	TUCSON FBI LEASE-BKD PASS THRU CTF ISSUE		12/15/2018	SINKING PAYMENT		1,129,877	1,129,877	1,129,877	1,129,877						1,129,877				22,771	02/15/2032
89896-AC-8	TUPPERWARE BRANDS CORP-SENIOR UNSECURED		10/24/2018	JP MORGAN SECURITIES		2,450,315	2,403,000	2,386,393	2,396,014		1,533		1,533		2,397,547		52,768	52,768	103,045	06/01/2021
90226-AA-3	2014 REPLACEMENT PWIR STATUTORY TR SR SEC		12/31/2018	SINKING PAYMENT		4,177,456	4,177,456	4,177,456	4,177,456						4,177,456				99,895	05/31/2029
902494-AY-9	TYSON FOODS INC-SENIOR UNSECURED BOND		10/17/2018	CREDIT SUISSE SECURI		310,721	313,000	311,862	296,770		12		12		311,920		(1,199)	(1,199)	18,208	08/15/2044
902494-AZ-6	TYSON FOODS INC-SENIOR UNSECURED		10/17/2018	MARKETAXESS FINANCIA		250,090	250,000	269,450	178,001		(655)		(655)		267,688		(17,598)	(17,598)	9,967	08/15/2034
903293-BE-7	USG CORP-SENIOR UNSECURED		11/15/2018	MARKETAXESS FINANCIA		955,168	950,000	979,688	978,124		(2,861)		(2,861)		975,263		(20,095)	(20,095)	40,640	06/01/2027
90332U-AP-8	US AIRWAYS 2001-1C PASS-SERIES 2001-1 CL		09/20/2018	SINKING PAYMENT		217,120	217,120	241,003	239,482		(2,169)		(2,169)		217,120				24,346	03/20/2022
90345W-AA-2	US AIRWAYS 2012-1A PTT-FIRST LIEN		10/01/2018	SINKING PAYMENT		7,183	7,183	7,985	7,816		(76)		(76)		7,183				319	10/01/2024
90346W-AB-9	US AIRWAYS 2013-1B PTT-SERIES 2013-1 CLA		11/15/2018	SINKING PAYMENT		227,916	227,916	240,631	238,977		(1,251)		(1,251)		227,916				12,192	11/15/2021
90357-AA-6	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		44,168	44,168	44,168	44,168						44,168					04/01/2023
90357-AF-3	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		11,220	11,220	11,220	11,220						11,220					04/01/2023
90357-AG-1	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		109,483	109,483	109,483	109,483						109,483					04/01/2023
90357-AH-9	US BK TR NATL ASSN SER A BNSF 2005-W EQU		04/01/2018	SINKING PAYMENT		67,441	67,441	67,441	67,441						67,441					04/01/2023
90357-AJ-5	US BK TR NATL ASSN SER A BNSF 2005-X EQU		04/01/2018	SINKING PAYMENT		63,002	63,002	63,002	63,002						63,002				1,660	04/01/2023
90357-AK-2	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		47,058	47,058	47,058	47,058						47,058					04/01/2022
90357-AL-0	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		76,272	76,272	76,272	76,272						76,272				2,019	04/01/2022
90357-AM-8	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		33,079	33,079	33,079	33,079						33,079					04/01/2023
90357-AN-6	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		16,184	16,184	16,184	16,184						16,184					04/01/2021
90357-AP-1	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		36,203	36,203	36,203	36,203						36,203				954	04/01/2020
90357-AQ-9	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		29,746	29,746	29,746	29,746						29,746					04/01/2020
90357-AR-7	US BK TR NATL ASSN SER D BNSF 2005-AA EQ		04/01/2018	SINKING PAYMENT		34,735	34,735	34,735	34,735						34,735				915	04/01/2021
90357-AS-5	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		26,918	26,918	26,918	26,918						26,918					04/01/2020
90357-AT-3	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		69,027	69,027	69,027	69,027						69,027				1,819	04/01/2023
90357-AU-0	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		15,682	15,682	15,682	15,682						15,682				413	04/01/2023
90357-AV-8	U.S. Bank Trust National Equip Note 2005		04/01/2018	SINKING PAYMENT		69,290	69,290	69,290	69,290						69,290				1,826	04/01/2023
90363B-AA-8	USTA National Tennis Cen Senior Secured		07/08/2018	SINKING PAYMENT		632,111	632,111	632,111	632,111						632,111				14,782	09/08/2024
90363B-AB-6	USTA National Tennis Cen Senior Secured		07/08/2018	SINKING PAYMENT		382,819	382,819	382,819	382,819						382,819				11,754	09/08/2039
90521A-PJ-1	MUFG UNION BANK NA-SENIOR UNSECURED NOTE		09/26/2018	MATURITY		5,350,000	5,350,000	5,365,605	5,353,856		(3,856)		(3,856)		5,350,000				103,378	09/26/2018
90718-DA-3	UNION PACIFIC CORP-SENIOR UNSECURED NOTE		08/15/2018	MATURITY		10,000,000	10,000,000	12,136,280	10,246,354		(246,354)		(246,354)		10,000,000				354,667	08/15/2018
907833-AE-7	UNP RR CO 1998 PASS TRST-PASS-THRU CTF		08/23/2018	SINKING PAYMENT		122,968	122,968	122,968	122,968						122,968				5,018	02/23/2019
907833-AJ-6	UNP RR CO 2000 PASS TRST-PASS-THRU CTF		01/10/2018	SINKING PAYMENT		492,379	492,379	768,345	503,219		296,344		296,344		492,379				19,695	01/10/2021
90783V-AA-3	UNION PAC RR CO 2005-1 PASS THRU TR CTF		07/02/2018	SINKING PAYMENT		31,858	31,858	35,662	34,433		(18,726)		(18,726)		31,858				817	01/02/2029
908594-AB-0	Union Tank Car Co. Senior Note		06/01/2018	SINKING PAYMENT		2,000,000	2,000,000	2,265,817	2,027,951		(27,951)		(27,951)		2,000,000				56,400	06/01/2019
909287-AA-2	UAL 2007 PASS TRUST-FIRST LIEN		08/08/2018	VARIOUS		297,581	284,131	306,151	303,922		(3,975)		(3,975)		299,947		(2,366)	(2,366)	10,810	07/02/2022
909319-AA-3	UNITED AIR 2013-1 A PTT-FIRST LIEN		08/15/2018	SINKING PAYMENT		3,538	3,538	3,667	3,645		(7)		(7)		3,538				114	08/15/2025
90931Q-AA-5	UNITED AIR 2013-1 B PTT-PT CERTS CL B		08/15/2018	SINKING PAYMENT		130,830	130,830	134,301	37,157		(344)		(344)		130,830				3,999	08/15/2021
90932P-AA-6	UNITED AIR 2014-1 A PTT-SECURED NOTE		10/11/2018	SINKING PAYMENT		945,192	945,192	994,356	984,320		(3,749)		(3,749)		945,192				28,348	04/11/2026
90932P-AB-4	UNITED AIR 2014-1 B PTT-SERIES 2014-1 CL		10/11/2018	SINKING PAYMENT		583,825	583,825	606,500	603,504		(2,079)		(2,079)		583,825				13,842	04/11/2022
90932Q-AA-4	UNITED AIR 2014-2 A PASS THRU TR-1ST LIEN		09/03/2018	SINKING PAYMENT		31,137	31,137	32,493	28,520		(77)		(77)		31,137				841	09/03/2026
90932Q-AB-2	UNITED AIR 2014-2 B PTT-SERIES 2014-2 CL		09/03/2018	SINKING PAYMENT		100,233	100,233	103,992	103,693		(436)		(436)		100,233				3,475	09/03/2022
90933H-AA-3	UNITED AIRLINES 2016-1 C-FIRST LIEN		07/07/2018	SINKING PAYMENT		265,509	265,509	265,509	265,509						265,509				6,488	01/07/2026
90933J-AA-9	UNITED AIRLINES 2016-2 C-FIRST LIEN		10/07/2018	SINKING PAYMENT		770,833	770,833	770,833	770,833						770,833				18,835	10/07/2025
910637-Q*-1	United Illuminating Comp Senior Note Ser		11/03/2018	MATURITY		15,550,000	15,550,000	17,052,460	15,781,491		(231,491)		(231,491)		15,550,000				842,689	11/03/2018
910637-Q*-9	United Illuminating Comp Senior Note Ser		12/01/2018	MATURITY		7,550,000	7,550,000	7,550,000	7,550,000						7,550,000				450,546	12/01/2018
910748-AB-1	UNITED JERSEY BKS SEC2 BD SER 88 DELMARV		07/02/2018	SINKING PAYMENT		3,423,277	3,423,277	3,423,277	3,423,277						3,423,277				96,463	07/02/2018
913008-AB-7	United Stationers Supply Senior Secured		11/20/2018	CA CASH CLOSE		19,520,890	19,350,000	19,350,000	19,350,000						19,520,890				819,314	01/15/2021
913017-BS-7	UNITED TECHNOLOGIES CORP NT		05/31/2018	CREDIT SUISSE SECURI		5,220,758	4,590,000	5,468,517	5,380,047		(9,495)		(9,495)		5,370,552		(149,794)	(149,794)	166,426	04/15/2040
913017-BT-5	United Technologies Corp-SENIOR UNSECURE		06/13/2018	GOLDMAN		27,410,568	28,182,000	29,602,686	29,535,254		(14,231)		(14,231)		29,521,023		(2,110,455)	(2,110,455)	658,414	06/01/2042
913017-BV-0	United Technologies Corp-SENIOR UNSECURE		06/01/2018	VARIOUS		9,974,749	10,105,000	10,681,433	10,393,463		(42,341)		(42,341)		10,351,122		(376,373)	(376,373)	133,564	06/01/2022
91324P-BJ-0	UnitedHealth Group Inc-SENIOR UNSECURED		02/15/2018	MATURITY		10,835,000	10,835,000	10,950,378	10,837,862		(2,862)		(2,862)		10,835,000				79,457	02/15/2018
91324P-BK-7	UnitedHealth Group Inc-BOND		05/10/2018	BANK OF AMERICA CORP		67,024	50,000	65,974	63,873		(155)		(155)		63,718		3,306	3,306	2,558	02/15/2038
91324P-CL-4	UNITEDHEALTH GROUP INC-SR UNSECURED		07/16/2018	MATURITY		180,000	180,000	180,685	180,147		(147)		(147)		180,000				1,853	07/16/2018
91823K-AA-7	ORCHESTRA BORROWER/CO-1S-2ND LIEN		12/13/2018	MARKETAXESS FINANCIA																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
918498-AA-1	VA Bangor Lease Finance Lease Backed Ct		12/15/2018	SINKING PAYMENT		228,486	228,486	228,486	228,486						228,486				5,695	01/15/2031
918499-AA-8	VA Wilmington Lease Fin US Govt Lease B		11/20/2018	VARIOUS		20,234,794	18,608,749	18,608,749	18,608,749						20,234,794				2,422,285	12/15/2032
91851F-AA-3	VA Billings Lease Financ Lease Backed Pa		12/15/2018	SINKING PAYMENT		580,194	580,194	580,194	580,194						580,194				13,002	02/15/2034
91913Y-AN-0	VALERO ENERGY CORP-SENIOR UNSECURED NOTE		06/18/2018	CALL 104.93		5,246,500	5,000,000	6,877,395	5,389,744		(148,613)		(148,613)		5,487,631		(241,131)	(241,131)	463,948	03/15/2019
92276M-AY-1	VENTAS REALTY LP/CAP CRP-SENIOR UNSECURE		02/23/2018	TENDERED		9,368,360	9,200,000	9,152,988	9,189,669		1,032		1,032		9,190,701		177,659	177,659	53,156	04/30/2019
92343V-BJ-2	Verizon Communications I-SENIOR UNSECURE		12/19/2018	GOLDMAN		144,717	150,000	146,480	148,094		363		363		148,457		(3,740)	(3,740)	3,573	11/01/2022
92343V-EL-4	Verizon Communications I-SENIOR UNSECURE		05/09/2018	EXCHANGE OFFER		1,283,434	995,000	1,289,036	1,288,505		(5,071)		(5,071)		1,283,434				27,860	07/01/2032
92428F-AB-3	Vermont Transco LLC First Mtg Bond		04/01/2018	SINKING PAYMENT		585,000	585,000	585,000	585,000						585,000				8,409	04/01/2037
925524-BG-4	Viacom Inc-SENIOR UNSECURED NOTE		03/27/2018	MORGAN		2,689,922	2,602,000	2,756,090	2,674,747		(5,292)		(5,292)		2,669,455		20,467	20,467	28,622	03/01/2021
92553P-AJ-1	Viacom Inc-SENIOR UNSECURED NOTE		03/28/2018	WELLS FARGO		12,441,081	12,275,000	12,249,788	12,273,016		(274)		(274)		12,272,743		168,338	168,338	120,235	12/15/2021
92553P-AR-3	Viacom Inc-SENIOR UNSECURED NOTE		03/28/2018	GOLDMAN		5,779,710	5,960,000	5,817,243	5,874,518		3,893		3,893		5,878,411		(98,701)	(98,701)	48,963	03/15/2023
92553P-AT-9	Viacom Inc-SENIOR UNSECURED NOTE		03/28/2018	WELLS FARGO		5,844,072	5,766,000	5,711,113	5,731,891		1,442		1,442		5,733,334		110,738	110,738	61,944	09/01/2023
92553P-AZ-5	Viacom Inc-SENIOR UNSECURED		12/05/2018	TENDERED		6,806,015	7,164,000	7,111,229	7,114,297		1,812		1,812		7,116,109		(310,094)	(310,094)	322,360	12/15/2034
92704R-AA-4	VILLAGE AT GERMANTOWN RES CARE FAC MTG R		12/01/2018	SINKING PAYMENT		580,000	580,000	580,000	580,000						580,000				37,734	12/01/2020
92763A-AB-7	VIOLIN MEMORY INC-SR UNSECURED		02/02/2018	VARIOUS		8,960,602	8,960,602	391,881			(680,246)	59,152	(739,398)		(739,398)		739,398	739,398	(366,276)	10/01/2019
927804-FF-6	VIRGINIA ELEC & POWER CO-SENIOR UNSECURE		04/30/2018	MATURITY		5,200,000	5,200,000	6,257,916	5,269,048		(69,048)		(69,048)		5,200,000				92,820	04/30/2018
927804-FM-1	VIRGINIA ELEC & POWER CO-SR UNSECURED		01/15/2018	MATURITY		300,000	300,000	297,365	299,949		51		51		300,000				140	01/15/2018
92826C-AF-9	VISA INC-SR UNSECURED		08/03/2018	U. S. BANCORP		1,683,283	1,595,000	1,710,995	1,709,485		(1,469)		(1,469)		1,708,016		(24,733)	(24,733)	44,390	12/14/2045
92854V-AA-3	Vivint Solar Financing V-SERIES 2018-1A		10/30/2018	PAYDOWN		42,120	42,120	42,106			14		14		42,120					04/30/2048
92890H-AD-4	WEA FINANCE LLC/WESTFIELD-UNSECURED		10/18/2018	BANK OF AMERICA CORP		538,891	545,000	552,149	207,286		(120)		(120)		552,005		(13,114)	(13,114)	12,017	09/17/2044
929090-AA-6	VOYAGER BRSTN DELAWARE T-SERIES 2009-1 C		05/29/2018	PAYDOWN		522,565	522,565	175,914	499,246		23,318		23,318		522,565				381,542	12/25/2036
929227-6K-7	WAMU MORTGAGE PASS-THRU-SERIES 2003-AR7		12/01/2018	PAYDOWN		100,496	100,496	100,355	102,007		(1,512)		(1,512)		100,496				1,331	08/01/2033
929227-EN-2	WAMU MORTGAGE PASS-THRU-SERIES 2001-AR3		12/01/2018	PAYDOWN		47,696	47,696	10,226	11,064		36,632		36,632		47,696				289	11/01/2041
929227-OB-5	WAMU MORTGAGE PASS-THRU-SERIES 2002-AR6		12/01/2018	PAYDOWN		34,681	34,681	26,771	30,856		3,825		3,825		34,681				383	06/01/2042
929227-XH-4	WAMU MORTGAGE PASS-THRU-SERIES 2002-AR1		12/01/2018	PAYDOWN		8,779	8,779	2,889	4,407		4,372		4,372		8,779				47	11/01/2042
929227-ZF-6	WAMU MORTGAGE PASS-THRU-SERIES 2002-AR1		10/01/2018	PAYDOWN		7,925	7,925	791	1,487		6,438		6,438		7,925				133	01/01/2033
92922F-2G-2	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR1		12/25/2018	PAYDOWN		21,868	21,868	20,614	22,368		(500)		(500)		21,868				252	08/25/2045
92922F-ST-1	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR1		12/25/2018	PAYDOWN		507,307	507,307	457,997	494,360		12,948		12,948		507,307				5,389	11/25/2045
92922F-7A-0	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR1		12/01/2018	PAYDOWN		289,594	289,594	70,502	82,046		201,576		201,576		289,594				5,007	12/01/2035
92922F-7Q-5	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR1		12/25/2018	PAYDOWN		650,450	650,450	565,706	602,519		47,930		47,930		650,450				8,178	12/25/2045
92922F-B7-2	WAMU MORTGAGE PASS-THRU-SERIES 2004-AR1		12/25/2018	PAYDOWN		108,769	108,769	104,429	112,323		(3,555)		(3,555)		108,769				832	11/25/2034
92922F-BW-7	WAMU MORTGAGE PASS-THRU-SERIES 2003-AR9		12/01/2018	PAYDOWN		26,713	26,713	26,422	27,326		(613)		(613)		26,713				409	09/01/2033
92922F-J2-5	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR6		12/25/2018	PAYDOWN		549,044	549,044	528,784	565,229		(16,185)		(16,185)		549,044				4,126	04/25/2045
92922F-NW-4	WAMU MORTGAGE PASS-THRU-SERIES 2004-AR2		12/01/2018	PAYDOWN		121,987	121,987	75,137	93,645		28,342		28,342		121,987				499	04/01/2044
92922F-Q7-6	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR7		11/01/2018	PAYDOWN		58,129	40,683	1,037	2,748		133,560		133,560		58,129				47,757	08/01/2035
92922F-TJ-7	WAMU MORTGAGE PASS-THRU-SERIES 2004-AR8		12/25/2018	PAYDOWN		108,580	108,580	87,039	93,183		15,397		15,397		108,580				645	06/25/2044
92922F-W6-1	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR1		12/01/2018	PAYDOWN		148,537	148,537	56,117	41,858		106,679		106,679		148,537				1,343	09/01/2035
92922F-WU-8	WAMU MORTGAGE PASS-THRU-SERIES 2004-AR1		12/25/2018	PAYDOWN		325,413	325,413	275,123	296,570		28,843		28,843		325,413				1,030	07/25/2044
92922F-ZD-3	WAMU MORTGAGE PASS-THRU-SERIES 2004-RP1		12/01/2018	PAYDOWN		1,453,919	1,453,919	1,082,619	1,258,781		195,139		195,139		1,453,919				33,071	01/01/2034
92922F-ZF-8	WAMU MORTGAGE PASS-THRU-SERIES 2004-AR1		12/25/2018	PAYDOWN		610,870	610,870	529,063	586,395		24,475		24,475		610,870				3,667	10/25/2044
92925C-BB-7	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR1		12/25/2018	PAYDOWN		392,676	392,676	343,117	375,238		17,438		17,438		392,676				4,495	12/25/2045
92925V-AM-2	WAMU MORTGAGE PASS-THRU-SERIES 2007-HY1		12/01/2018	PAYDOWN		56,681	58,718	36,016	43,359		13,037		13,037		56,681				723	02/01/2037
92926S-AB-2	WAMU ASSET-BACKED CERTIF-SERIES 2007-HE2		12/26/2018	PAYDOWN		73	73		32		41		41		73					04/25/2037
92926U-AC-5	WAMU MORTGAGE PASS-THRU-SERIES 2007-HY2		12/01/2018	PAYDOWN		54,090	55,951	37,823	41,838		13,587		13,587		54,090				656	11/01/2036
92927K-A*-3	WABCO Holdings Inc Senior Note Ser		04/30/2018	CA CASH CLOSE		19,800,000	19,800,000	19,800,000	19,800,000						19,800,000				185,224	06/25/2022
92927X-AC-8	WAMU MORTGAGE PASS-THRU-SERIES 2007-HY6		12/01/2018	PAYDOWN		61,605	63,963	35,778	48,069		13,720		13,720		61,605				567	06/01/2037
92935J-BC-8	WF-RBS COMMERCIAL MORTGA-SERIES 2011-C2C		12/01/2018	PAYDOWN		698,018	698,018	711,088	704,099		(6,080)		(6,080)		698,018				18,816	02/01/2044
92964F-AA-5	WY Tennessee Holdings, L Senior Secured		12/17/2018	MATURITY		6,550,000	6,550,000	6,550,000	6,550,000						6,550,000				365,756	12/17/2018
92964F-AA-9	WY Carolina Holdings LLC Senior Secured		12/23/2018	MATURITY		14,100,000	14,100,000	14,100,000	14,100,000						14,100,000				777,568	12/23/2018
929766-GV-9	WACHOVIA BANK COMMERCIAL-SERIES 2003-C5C		09/01/2018	PAYDOWN		24,053	24,053	6,022	24,056		(216)		(216)		24,053				(14,588)	06/01/2035
929766-AJ-0	WELLS FARGO BANK NA-SUBORDINATED NOTE		12/03/2018	MARKETXESS FINANCA		30,314	25,000	33,237	32,266						32,050		(1,736)	(1,736)	2,292	01/15/2038
92977H-AG-3	WACHOVIA STUDENT LOAN TR-WSLT 2005-1 B		10/25/2018	PAYDOWN		2,														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
931142-CS-0	WAL-MART STORES INC-SENIOR NOTE		08/03/2018	BARCLAYS CAPITAL INC		6,155,650	5,000,000	6,485,185	6,314,463		(22,710)		(22,710)		6,291,753		(136,103)	(136,103)	239,063	04/01/2040
931142-CZ-4	WAL-MART STORES INC-SR UNSECURED		01/25/2018	TENDERED		195,792	200,000	212,384	207,341		(170)		(170)		207,171		(11,379)	(11,379)	433	10/25/2020
931142-DB-6	WAL-MART STORES INC-SR UNSECURED		01/09/2018	CA CASH_CLOSE		395,362	305,000	375,440	372,407		22,956		22,956		395,362				20,016	04/15/2041
931142-DF-7	WAL-MART STORES INC-SR UNSECURED		04/11/2018	MATURITY		350,000	350,000	348,051	349,760		240		240		350,000				1,094	04/11/2018
931142-DJ-9	WAL-MART STORES INC-SR UNSECURED		01/25/2018	TENDERED		308,721	325,000	329,438	326,443		(101)		(101)		326,342		(17,621)	(17,621)	423	12/15/2018
93143*-AA-1	WALGREENS CTL PASS THRU TR CTF 2006-A		08/15/2018	VARIOUS		3,667,899	3,075,933	3,535,726	3,383,062		(26,498)		(26,498)		3,948,531		(280,632)	(280,632)	706,142	03/15/2031
93362F-AF-0	WAMU MORTGAGE PASS-THRU-SERIES 2006-AR8		12/01/2018	PAYDOWN		59,391	58,661	29,397	39,620		14,535		14,535		59,391				896	08/01/2036
933636-AL-6	WAMU MORTGAGE PASS-THRU-SERIES 2007-HY4		12/01/2018	PAYDOWN		33,243	32,548	21,631	25,391		7,383		7,383		33,243				305	11/01/2036
93363N-AF-2	WAMU MORTGAGE PASS-THRU-SERIES 2006-AR1		12/01/2018	PAYDOWN		104,542	119,995	75,732	85,472		29,139		29,139		104,542				1,246	10/01/2036
939335-P9-0	WASHINGTON MUTUAL MSC MO-SERIES 2002-AR1		12/01/2018	PAYDOWN		8,688	8,688	507	507		6,499		6,499		8,688				116	02/01/2031
939336-5V-1	WASHINGTON MUTUAL MORTGA-SERIES 2005-4 C		12/25/2018	PAYDOWN		102,696	120,652	95,589	96,714		19,636		19,636		102,696				477	06/25/2035
939336-KZ-5	WASHINGTON MUTUAL MSC MO-SERIES 2002-AR3		12/01/2018	PAYDOWN		208,715	208,715	214,368	215,398		(6,684)		(6,684)		208,715				2,941	12/01/2032
939336-X6-5	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR1		12/25/2018	PAYDOWN		963,719	963,719	809,573	906,311		57,408		57,408		963,719				5,158	01/25/2045
939336-Z4-8	WAMU MORTGAGE PASS-THRU-SERIES 2005-AR3		09/01/2018	PAYDOWN		31,263	31,263	24,113	28,722		2,541		2,541		31,263				356	03/01/2035
93934X-AB-9	WASHINGTON MUTUAL ASSET-SERIES 2006-HES		12/26/2018	PAYDOWN		21,935	21,935	12,067	5,094		16,842		16,842		21,935				201	10/25/2036
93935P-AH-2	WASHINGTON MUTUAL MORTGA-SERIES 2007-1 C		12/01/2018	PAYDOWN		34,905	46,223	32,548	36,655		2,401		2,401		34,905				965	02/01/2037
941130-AA-4	WATCO COS LLC/FINANCE CO-SENIOR UNSECURE		12/12/2018	VARIOUS		6,317,655	6,250,000	6,250,825	6,250,464		(106)		(106)		6,250,358		67,297	67,297	356,979	04/01/2023
942683-AF-0	ACTAVIS INC-SENIOR UNSECURED NOTE		05/09/2018	VARIOUS		17,925,373	18,542,000	18,231,730	18,344,075		13,380		13,380		18,357,454		(432,081)	(432,081)	205,207	10/01/2022
94353W-AA-3	WAVE 2017-1 TRUST-WAIV 2017-1A A		12/15/2018	PAYDOWN		2,569,460	2,569,460	2,569,451	2,569,457		3		3		2,569,460				53,474	11/15/2042
94353W-AB-1	WAVE 2017-1 Trust-SERIES 2017-1A CLASS B		12/15/2018	PAYDOWN		284,928	284,928	290,099			(5,171)		(5,171)		284,928				4,675	11/15/2042
94403*-AZ-9	Wana, Inc. Senior Note Ser		09/09/2018	SINKING PAYMENT		3,466,666	3,466,666	3,466,666	3,466,666						3,466,666				144,244	09/09/2018
948214-AC-5	WEBSTER PK CLO SR SEC ND CL A-2		07/20/2018	PAYDOWN		13,750,000	13,750,000	13,653,750	13,862,911		(112,911)		(112,911)		13,750,000				323,425	01/20/2027
948741-AH-6	WEINGARTEN REALTY INVEST-SENIOR UNSECURE		08/09/2018	WELLS FARGO		103,599	105,000	104,597	104,781		28		28		104,808				3,229	10/15/2022
94973V-AS-6	Anthem Inc-SENIOR UNSECURED NOTE		04/16/2018	MORGAN		66,786	65,000	64,906	64,906		2		2		64,971		1,815	1,815	1,909	08/15/2020
94973V-AT-4	Anthem Inc-SENIOR UNSECURED NOTE		01/01/2018	TENDERED					464		464		464		464				(464)	08/15/2040
94974B-EV-8	Wells Fargo & Co-SENIOR UNSECURED NOTE		04/16/2018	GOLDMAN		46,818	45,000	49,017	46,565		(135)		(135)		46,430		388	388	615	04/01/2021
94974B-FG-0	WELLS FARGO & COMPANY-SR UNSECURED		01/16/2018	MATURITY		200,000	200,000	199,152	199,982		18		18		200,000				125	01/16/2018
94974B-FP-0	Wells Fargo & Co-SUBORDINATED BOND		12/04/2018	WELLS FARGO		155,084	150,000	160,212	159,567		(173)		(173)		159,394		(4,310)	(4,310)	8,824	11/02/2043
94974B-FY-1	Wells Fargo & Co-SUBORDINATED		12/04/2018	GOLDMAN		106,615	110,000	111,307	111,106		(103)		(103)		111,003		(4,388)	(4,388)	4,548	06/03/2026
949779-AC-6	WELLS FARGO MORTGAGE BAC-SERIES 2004-EE		12/01/2018	PAYDOWN		4,730	4,730	4,182	4,622		108		108		4,730				71	12/01/2034
949779-AL-6	WELLS FARGO MORTGAGE BAC-SERIES 2004-EE		12/01/2018	PAYDOWN		11,351	11,351	10,144	11,149		201		201		11,351				195	12/01/2034
94978F-BQ-9	Wells Fargo Bank Northwe Senior Secured		01/02/2018	SINKING PAYMENT		262,163	262,163	262,163	262,163						262,163				9,126	01/02/2021
94978F-BS-5	Wells Fargo Bank Northwe Senior Secured		01/02/2018	SINKING PAYMENT		240,640	240,640	240,640	240,640						240,640				53,994	01/02/2021
94978F-BT-3	Wells Fargo Bank Northwe Senior Secured		01/02/2018	SINKING PAYMENT		270,952	270,952	270,952	270,952						270,952				11,876	01/02/2022
94978F-EF-0	Wells Fargo Bank Northwe Senior Secured		01/03/2018	SINKING PAYMENT		55,352	55,352	55,352	55,352						55,352				2,967	01/03/2025
94978F-EL-7	Wells Fargo Bank Northwe Senior Secured		01/03/2018	SINKING PAYMENT		89,878	89,878	89,878	89,878						89,878				2,640	01/03/2029
94978F-EN-3	Wells Fargo Bank Northwe Senior Secured		01/03/2018	SINKING PAYMENT		127,376	127,376	127,376	127,376						127,376				14,490	01/03/2029
94978F-FB-8	Wells Fargo Bank Northwe Senior Secured		01/03/2018	SINKING PAYMENT		57,349	57,349	57,349	57,349						57,349				5,107	01/03/2029
94978F-GK-7	Wells Fargo Bank Northwe Senior Secured		01/15/2018	SINKING PAYMENT		150,256	150,256	150,256	150,256						150,256				8,392	01/30/2030
94978F-GL-5	Wells Fargo Bank Northwe Senior Secured		01/15/2018	SINKING PAYMENT		9,558	9,558	9,558	9,558						9,558				525	01/30/2030
94978F-GM-3	Wells Fargo Bank Northwe Senior Secured		01/15/2018	SINKING PAYMENT		107,661	107,661	107,661	107,661						107,661				5,916	01/30/2030
94978F-GN-1	Wells Fargo Bank Northwe Senior Secured		01/15/2018	SINKING PAYMENT		44,965	44,965	44,965	44,965						44,965				2,482	01/30/2030
94978F-GP-6	Wells Fargo Bank Northwe Senior Secured		01/15/2018	SINKING PAYMENT		135,959	135,959	135,959	135,959						135,959				7,504	01/30/2030
94978F-GQ-4	Wells Fargo Bank Northwe Senior Secured		01/03/2018	SINKING PAYMENT		152,836	152,836	152,836	152,836						152,836				8,191	07/03/2029
94978F-GU-5	Wells Fargo Bank Northwe Senior Secured		01/15/2018	SINKING PAYMENT		163,688	163,688	163,688	163,688						163,688				8,838	01/15/2024
94978F-GV-3	Wells Fargo Bank Northwe Senior Secured		01/15/2018	SINKING PAYMENT		249,857	249,857	249,857	249,857						249,857				52,588	01/15/2024
94978F-HY-6	Wells Fargo Bank Northwe Senior Secured		01/15/2018	SINKING PAYMENT		340,161	340,161	340,161	340,161						340,161				18,349	01/15/2024
94978F-JJ-7	Wells Fargo Bank Northwe Note N319-115/N		12/26/2018	SINKING PAYMENT		1,570,980	1,570,980	1,570,980	1,570,980						1,570,980				36,988	09/26/2024
94978F-JK-4	Wells Fargo Bank Northwe Note A319-115/		12/09/2018	SINKING PAYMENT		1,570,980	1,570,980	1,570,980	1,570,980						1,570,980				30,420	09/09/2024
949803-AA-8	WELLS FARGO MORTGAGE BAC-SERIES 2004-U C		12/01/2018	PAYDOWN		16,361	16,361	13,712	15,597		764		764		16,361				159	10/01/2034
94980G-BC-4	WELLS FARGO HOME EQUITY -SERIES 2004-2 C		06/25/2018	PAYDOWN		4,525	4,525	4,533	4,526		(1)		(1)		4,525				23	10/25/2034
949810-AA-3	WELLS FARGO MORTGAGE BAC-SERIES 2004-V C		12/01/2018	PAYDOWN		27,082	27,082	25,292	26,597		485		485		27,082				273	10/01/2034
94981G-AF-7	WELLS FARGO MORTGAGE BAC-SERIES 2004-R C		12/01/2018	PAYDOWN		4,483	4,483	3,687	4,279		203		203		4,483				81	09/01/2034
94981N-AH-8	WELLS FARGO MORTGAGE BAC-SERIES 2005-AR4		12/01/2018	PAYDOWN		88,468	88,468	72,182	83,148											

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
94982H-AC-1	WELLS FARGO MORTGAGE BAC-SERIES 2005-AR9		12/01/2018	PAYDOWN		65,577	65,577	64,696	65,577						65,577				651	10/01/2033
94983K-AG-4	WELLS FARGO MORTGAGE BAC-SERIES 2006-AR2		12/01/2018	PAYDOWN		99,601	102,338	71,678	84,223		14,339		14,339		99,601				1,388	03/01/2036
94983Y-AD-1	WELLS FARGO MORTGAGE BAC-SERIES 2006-AR1		12/01/2018	PAYDOWN		50,757	51,424	27,191	37,813		11,736		11,736		50,757				665	07/01/2036
94984G-AD-9	WELLS FARGO MORTGAGE BAC-SERIES 2006-AR1		12/01/2018	PAYDOWN		74,046	74,443	50,972	60,524		13,736		13,736		74,046				866	09/01/2036
94987M-AA-9	WELLS FARGO COMMERCIAL M-WFCM 2010-C1 CL		12/01/2018	PAYDOWN		20,074	20,074	21,102	20,478		(404)		(404)		20,074				333	11/01/2043
94988Y-AA-2	Wells Fargo Bank Northwe Class A Senior		11/25/2018	SINKING PAYMENT		334,489	334,489	333,248	333,548		116		116		334,489				781	08/25/2027
94988Y-AB-0	Wells Fargo Bank Northwe Class B Senior		11/25/2018	SINKING PAYMENT		143,352	143,352	142,817	142,944		51		51		143,352				3,008	08/25/2027
94988Y-AC-8	Wells Fargo Bank Northwe Class A Senior		11/25/2018	SINKING PAYMENT		392,289	392,289	390,958	391,284		124		124		392,289				911	08/25/2027
94988Y-AD-6	Wells Fargo Bank Northwe Class B Senior		11/25/2018	SINKING PAYMENT		168,124	168,124	167,554	167,692		54		54		168,124				444	08/25/2027
94988Y-AE-4	WELLS FARGO BK NW AVIANCA NT TRANCHE A-1		11/25/2018	SINKING PAYMENT		394,548	394,548	392,788	393,199		166		166		394,548				877	08/25/2027
94988Y-AF-1	WELLS FARGO BK NW AVIANCA NT TRANCHE A-2		11/25/2018	VARIOUS		332,138	332,138	330,636	330,938		(10)		(10)		332,138				9,653	08/25/2027
94988Y-AG-9	WELLS FARGO BK NW AVIANCA NT TRANCHE A-1		11/25/2018	SINKING PAYMENT		877,893	877,893	873,843	874,714		377		377		877,893				2,075	11/25/2027
94988Y-AH-7	Wells Fargo Bank Northwe Class B Senior		11/25/2018	SINKING PAYMENT		376,240	376,240	374,501	374,869		163		163		376,240				7,983	11/25/2027
94989F-AA-2	Wells Fargo Bank Northwe Class A Senior		11/25/2018	SINKING PAYMENT		335,408	335,408	334,292	334,581		106		106		335,408				826	05/25/2027
94989F-AB-0	Wells Fargo Bank Northwe Class B Senior		11/25/2018	SINKING PAYMENT		143,746	143,746	143,257	143,382		47		47		143,746				399	05/25/2027
94989F-AC-8	Wells Fargo Bank Northwe Class A Senior		11/25/2018	SINKING PAYMENT		279,505	279,505	278,652	278,866		79		79		279,505				638	08/25/2027
94989F-AD-6	Wells Fargo Bank Northwe Class B Senior		11/25/2018	SINKING PAYMENT		119,788	119,788	119,423	119,513		34		34		119,788				2,464	08/25/2027
94989F-AE-4	WELLS FARGO BK NW NT TRANCHE CL A-1 SER		11/25/2018	SINKING PAYMENT		333,680	333,680	332,622	332,884		98		98		333,680				793	08/25/2027
94989F-AF-1	Wells Fargo Bank Northwe Class B Senior		11/25/2018	SINKING PAYMENT		143,006	143,006	142,552	142,662		43		43		143,006				385	08/25/2027
94989F-AG-9	Wells Fargo Bank Northwe Class A Senior		11/25/2018	SINKING PAYMENT		891,388	891,388	887,702	888,574		347		347		891,388				15,989	08/25/2027
94989F-AH-7	Wells Fargo Bank Northwe Class B Senior		11/25/2018	SINKING PAYMENT		382,023	382,023	380,426	380,798		151		151		382,023				987	08/25/2027
95058X-AA-6	WENDYS FUNDING LLC-SERIES 2015-1A CLASS		01/19/2018	PAYDOWN		30,234,075	30,234,075	30,188,948	30,210,885		23,190		23,190		30,234,075				221,154	06/15/2045
95058X-AB-4	WENDYS FUNDING LLC-SERIES 2015-1A CLASS		09/15/2018	PAYDOWN		150,000	150,000	150,000	150,000						150,000				3,060	06/15/2045
95058X-AC-2	WENDYS FUNDING LLC-SERIES 2015-1A CLASS		09/15/2018	PAYDOWN		120,000	120,000	120,000	120,000						120,000				2,698	06/15/2045
959802-AP-4	WESTERN UNION CO/THE-SENIOR UNSECURED NO		08/22/2018	MATURITY		2,750,000	2,750,000	2,930,015	2,769,311		(19,311)		(19,311)		2,750,000				64,407	08/22/2018
96030B-AA-2	WESTGATE RESORTS-SERIES 2015-1A A		08/01/2018	PAYDOWN		625,523	625,523	625,310	625,523						625,523				7,693	05/20/2027
96030L-AA-0	WESTGATE RESORTS-SERIES 2015-2A CLASS A		12/01/2018	PAYDOWN		1,899,426	1,899,426	1,896,903	1,899,426						1,899,426				32,106	07/01/2028
961548-AQ-7	MEADWESTVACO CORP-DEBENTURE		03/22/2018	VARIOUS		1,987,000	1,987,000	1,969,002	2,002,017		(2,868)		(2,868)		1,987,000				(32,563)	03/15/2020
96189F-AA-6	WETT Holdings, LLC Senior Secured		12/31/2018	SINKING PAYMENT		281,111	281,111	281,111	281,111						281,111				6,815	12/18/2024
962166-BV-5	WEYERHAEUSER CO-SENIOR UNSECURED		12/18/2018	MARKETACROSS FINANCA		334,523	325,000	374,124	351,893		(14,763)		(14,763)		337,131				29,229	10/01/2019
966387-AL-6	Whiting Petroleum Corp-SR UNSECURED		12/12/2018	VARIOUS		13,187,838	13,825,000	14,940,292	14,324,828		(191,562)		(191,562)		14,133,266				152,864	04/01/2020
96808E-AA-8	Wild Jack Solar LLC Senior Secured		07/31/2018	SINKING PAYMENT		1,203,749	1,203,749	1,203,749	1,203,749						1,203,749				33,429	12/31/2034
96924F-AA-5	William Blair & Company, Pass-Through Tr		02/25/2018	SINKING PAYMENT		3,767,053	3,767,053	3,767,053	3,767,053						3,767,053				31,342	02/25/2018
96928F-AD-9	William Blair & Company, CTL Pass Thru C		12/15/2018	SINKING PAYMENT		798,927	798,927	798,927	798,927						798,927				28,716	12/15/2025
96950F-AG-9	WILLIAMS PARTNERS LP-NOTE		12/11/2018	WELLS FARGO		7,635,872	7,600,000	7,599,316	7,599,488		160		160		7,599,649		36,223		337,883	11/15/2020
970631-AA-5	WILLIS ENGINE SECURITIZA-SERIES 2012-A C		11/15/2018	PAYDOWN		427,286	427,286	427,286	427,286						427,286				11,976	09/15/2037
97063Q-AA-0	WILLIS ENGINE STRUCTURED-SERIES 17-A CLA		12/15/2018	PAYDOWN		1,356,375	1,356,375	1,355,220	1,357,134		(759)		(759)		1,356,375				46,012	08/15/2042
97064E-AA-6	Willis Engine Structured-WESTF 2018-A A		12/15/2018	PAYDOWN		159,211	159,211	159,203	159,203		8		8		159,211				1,534	09/15/2043
97314E-AA-3	Wind Energy Transmission Senior Secured		12/31/2018	SINKING PAYMENT		503,333	503,333	503,333	503,333						503,333				15,009	12/18/2034
97651F-AE-4	WinWholesale, Inc. Senior Note		08/11/2018	SINKING PAYMENT		3,000,000	3,000,000	3,000,000	3,000,000						3,000,000				163,921	02/11/2024
976656-CF-3	WISC ELEC POWER-SR UNSECURED		06/15/2018	MATURITY		100,000	100,000	99,746	99,952		48		48		100,000				774	06/15/2018
97771F-AF-0	Wolf-Gordon, Inc. Senior Sub Note		08/20/2018	PREPAYMENTS W/O PENA		4,165,229	4,165,229	4,167,690	4,167,327		(325)		(325)		4,167,001				(1,772)	07/22/2021
980745-BB-1	Woodward, Inc. Senior Note Ser		10/01/2018	MATURITY		7,650,000	7,650,000	7,650,000	7,650,000						7,650,000				366,626	10/01/2018
98235T-AE-7	WRIGHT MEDICAL GROUP INC-SR UNSECURED		12/11/2018	VARIOUS		8,288,979	7,790,000	7,085,568	7,401,034		166,344		166,344		7,567,378				145,277	02/15/2020
98310W-AF-5	WYNDHAM WORLDWIDE CORP-SENIOR UNSECURED		02/01/2018	MATURITY		3,000,000	3,000,000	2,998,470	2,999,805		195		195		3,000,000				14,375	02/01/2018
983793-AD-2	XPO LOGISTICS INC-SR UNSECURED		08/28/2018	VARIOUS		2,236,430	2,168,000	2,094,830	2,116,312		6,227		6,227		2,140,219				107,227	06/15/2022
98385X-AT-3	XTO ENERGY INC-SENIOR UNSECURED NOTE		12/15/2018	MATURITY		10,000,000	10,000,000	13,070,870	10,506,886		(506,886)		(506,886)		10,000,000				621,111	12/15/2018
98478F-AP-2	YANKEE GAS SVCS CO 1ST MTG SR J		10/01/2018	MATURITY		15,800,000	15,800,000	15,800,000	15,800,000						15,800,000				817,650	10/01/2018
C1467F-AA-5	CSL Group, Inc. Senior Secured		03/15/2018	SINKING PAYMENT		1,500,000	1,500,000	1,500,000	1,500,000						1,500,000				40,800	03/15/2021
C6781F-AA-3	Nustef Banking USD SR SUB NT		10/01/2018	IN-KIND TRANSFER		2,306,866	2,307,223	2,307,221	2,307,221						2,306,866				149,959	11/23/2023
EK7136-6B-3	PSPC ESCROW CORP-SR UNSECURED		06/04/2018	VARIOUS		3,329,512	3,207,876	2,645,041	2,951,636		24,589		24,589		2,887,554				554,068	02/01/2023
LW4152-3B-0	PVH CORP-SENIOR UNSECURED		06/04/2018	VARIOUS		5,085,940	4,485,000	4,485,200	4,808,800						4,685,000				73,509	07/15/2024
QJ9911-6Q-4	Ball Corp-SR UNSECURED		06/05/2018	VARIOUS		3,943,625	3,502,020	3,175,500	3,606,600						3,502,020				441,605	12/15/2021
U4468E-AE-8	HUNTSMAN INTERNATIONAL L-SR UNSECURED																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
U87128-AH-2	WIG ACQUISITION CORP-SECURED		06/07/2018	VARIOUS		7,172,142	6,871,343	6,459,092	7,032,870					(573,778)	6,871,345	412,253	300,797	713,050	129,226	11/01/2024
U8737-AE-6	ZF NA CAPITAL-SR UNSECURED		06/05/2018	VARIOUS		8,994,255	8,420,010	7,643,451	8,453,825		15,554		15,554	(734,131)	8,238,384	503,136	755,871	1,259,007	103,357	04/27/2023
008916-AG-3	AGRIUM INC-SENIOR UNSECURED	A	04/12/2018	EXCHANGE OFFER		20,411,649	16,000,000	21,127,792	20,454,465		(42,816)		(42,816)		20,411,649			335,833	05/23/2036	
008916-AJ-7	AGRIUM INC-SENIOR UNSECURED NOTE	A	04/12/2018	EXCHANGE OFFER		30,910,643	26,601,000	31,431,068	30,942,386		(31,743)		(31,743)		30,910,643			483,013	01/15/2041	
008916-AK-4	AGRIUM INC-SENIOR UNSECURED NOTE	A	04/12/2018	EXCHANGE OFFER		8,292,035	8,300,000	8,283,732	8,291,377		659		659		8,292,035			81,651	10/01/2022	
008916-AM-0	AGRIUM INC-SENIOR UNSECURED	A	04/12/2018	EXCHANGE OFFER		12,302,901	11,720,000	12,315,098	12,306,702		(3,801)		(3,801)		12,302,901			172,837	06/01/2043	
008916-AO-1	AGRIUM INC-SENIOR UNSECURED	A	04/12/2018	EXCHANGE OFFER		421,395	435,000	420,913	421,232		163		163		421,395			5,469	03/15/2035	
009088-AC-9	AIR CANADA 2015-2B PTT-3RD LIEN	A	12/15/2018	SINKING PAYMENT		51,238	51,238	53,210	53,048		(157)		(157)		51,238			1,281	12/15/2023	
009089-AB-9	AIR CANADA 2013-1B PTT-2ND LIEN	A	11/15/2018	SINKING PAYMENT		352,974	352,974	371,357	370,197		(2,668)		(2,668)		352,974			9,857	05/15/2021	
06366R-E7-6	BANK OF MONTREAL-SR UNSECURED	A	04/10/2018	MATURITY		350,000	350,000	346,291	349,546		454		454		350,000			1,348	04/10/2018	
06366R-HS-1	BANK MONTREAL TRANCHE TR 2B1	A	04/09/2018	MATURITY		200,000	200,000	198,714	199,844		156		156		200,000			789	04/09/2018	
064159-BZ-8	BANK OF NOVA SCOTIA-SR UNSECURED	A	04/25/2018	MATURITY		350,000	350,000	347,259	349,620		380		380		350,000			1,607	04/25/2018	
064159-GM-2	BANK OF NOVA SCOTIA-SR UNSECURED	A	06/11/2018	MATURITY		200,000	200,000	198,808	199,780		220		220		200,000			1,511	06/11/2018	
11283W-AA-2	BROOKFIELD RES PPTYS INC SR NT	A	11/14/2018	BMO CAPITAL MARKETS		2,638,162	2,635,000	2,523,013	2,563,085		19,553		19,553		2,582,639		55,523	55,523	149,866	12/15/2020
136375-BT-8	CANADIAN NATL RAILWAY-NOTE	A	08/30/2018	CALL 101.390495		10,798,088	10,650,000	11,862,396	10,892,804		(137,290)		(137,290)		10,903,602		(105,514)	(105,514)	540,496	03/01/2019
15135U-AD-1	CENOVUS ENERGY INC-SENIOR UNSECURED NOTE	A	10/29/2018	CALL 102.512		13,004,907	12,686,229	13,717,774	12,964,782		(26,967)		(26,967)		13,156,493		(151,586)	(151,586)	751,296	10/15/2019
335934-AK-1	FIRST QUANTUM MINERALS L-SENIOR UNSECURE	A	06/14/2018	DTCYID		501,250	500,000	502,250	502,072		(200)		(200)		501,872		(622)	(622)	25,878	04/01/2023
386435-AB-7	Grand Renewable Solar, L Senior Secured	A	07/31/2018	SINKING PAYMENT		2,294,540	2,294,540	2,293,922	2,321,520					(27,932)	2,294,540			71,733	01/31/2035	
496902-AP-2	KINROSS GOLD CORP-SENIOR UNSECURED	A	07/18/2018	CONVERSION		4,128,882	4,132,000	4,128,535	4,128,704		178		178		4,128,882			101,751	07/15/2027	
654677-AB-9	KINROSA GAS STORAGE CAN/FI-SR UNSECURED	A	03/01/2018	CALL 101.625		8,587,313	8,450,000	8,228,130	8,376,597		9,797		9,797		8,523,707		63,606	63,606	228,854	04/01/2019
66977W-AP-4	NOVA CHEMICALS CORP-SENIOR UNSECURED	A	05/01/2018	BANK OF AMERICA CORP		394,625	410,000	416,150	415,358		(192)		(192)		415,166		(20,541)	(20,541)	6,947	05/01/2025
73755L-AD-9	POTASH CORP-SASKATCHEWAN-SENIOR UNSECURE	A	04/18/2018	EXCHANGE OFFER		14,750,126	12,820,000	15,100,328	14,771,162		(21,037)		(21,037)		14,750,126			238,505	12/01/2036	
73755L-AF-4	POTASH CORP-SASKATCHEWAN-SENIOR UNSECURE	A	04/12/2018	EXCHANGE OFFER		442,684	475,000	561,384	491,918		(3,388)		(3,388)		488,529		(45,845)	(45,845)	8,662	05/15/2019
73755L-AH-0	POTASH CORP-SASKATCHEWAN-SENIOR UNSECURE	A	04/12/2018	EXCHANGE OFFER		3,057,093	3,000,000	3,239,310	3,064,767		(7,675)		(7,675)		3,057,093			41,031	03/30/2020	
73755L-AL-1	POTASH CORP-SASKATCHEWAN-SR UNSECURED	A	04/12/2018	EXCHANGE OFFER		147,106	150,000	146,149	146,982		124		124		147,106			1,526	03/15/2024	
73755L-AM-9	POTASH CORP-SASKATCHEWAN-SR UNSECURED	A	04/12/2018	EXCHANGE OFFER		190,261	200,000	187,558	189,915		346		346		190,261			1,683	04/01/2025	
775109-AK-7	ROGERS COMMUNICATIONS IN-NOTE	A	04/13/2018	CALL 101.540911		8,478,666	8,350,000	9,701,878	8,469,603		(54,425)		(54,425)		8,543,844		(65,178)	(65,178)	289,543	08/15/2018
78008S-7D-2	ROYAL BANK OF CANADA-SR UNSECURED	A	07/27/2018	MATURITY		425,000	425,000	428,599	425,806		(806)		(806)		425,000			5,350	07/27/2018	
78008S-VD-5	ROYAL BANK OF CANADA-SR UNSECURED	A	01/16/2018	MATURITY		250,000	250,000	248,653	249,972		28		28		250,000			156	01/16/2018	
89114Q-AG-3	TORONTO-DOMINION BANK-SR UNSECURED	A	04/30/2018	MATURITY		350,000	350,000	347,855	349,692		308		308		350,000			1,620	04/30/2018	
89114Q-AZ-1	TORONTO-DOMINION BANK-SR UNSECURED	A	03/13/2018	MATURITY		300,000	300,000	299,611	299,962		38		38		300,000			975	03/13/2018	
893526-DK-6	TransCanada Pipelines Lt-Senior UNSECURE	A	03/12/2018	WELLS FARGO		11,233,062	11,030,000	12,295,302	11,505,374		(34,856)		(34,856)		11,470,518		(237,456)	(237,456)	87,321	10/01/2020
89352H-AF-6	TRANS-CANADA PIPELINES-SR UNSECURED	A	08/15/2018	MATURITY		150,000	150,000	165,068	153,629		(3,629)		(3,629)		150,000			6,067	08/15/2018	
89352H-AN-9	TRANS-CANADA PIPELINES-SR UNSECURED	A	01/12/2018	MATURITY		350,000	350,000	349,164	349,986		14		14		350,000			201	01/12/2018	
91831A-AC-5	Valeant Pharmaceuticals -SR UNSECURED	A	06/05/2018	BARCLAYS CAPITAL INC		2,520,300	2,710,000	2,584,663	2,606,740		4,873		4,873		2,611,613		(91,313)	(91,313)	71,928	04/15/2025
91911K-AJ-1	VALEANT PHARMACEUTICALS-FIRST LIEN	A	11/19/2018	VARIOUS		1,963,199	1,903,000	1,903,000	1,903,000						1,903,000		60,199	60,199	109,384	03/15/2022
91911K-AK-8	VALEANT PHARMACEUTICALS-FIRST LIEN	A	12/13/2018	STIFEL NICOLAUS		611,948	587,000	587,000	587,000						587,000		24,948	24,948	51,591	03/15/2024
91911K-AN-2	VALEANT PHARMACEUTICALS-SECURED	A	12/14/2018	VARIOUS		3,025,190	3,054,000	3,054,000	3,054,000						3,054,000		(28,810)	(28,810)	165,778	11/01/2025
C0079H-AA-7	Admiral AcquireCo, Inc. Senior Sub Note	A	06/20/2018	CORPORATE ACTION			2,864,081													06/30/2021
C0445H-AG-1	ARC Resources Ltd. Senior Secured	A	04/14/2018	SINKING PAYMENT		900,000	900,000	900,000	900,000						900,000				36,945	04/14/2021
C0445H-AK-2	ARC Resources Ltd. Senior Note Ser	A	05/27/2018	SINKING PAYMENT		3,440,000	3,440,000	3,440,000	3,440,000						3,440,000				92,192	05/27/2022
C1466H-AA-6	CPR Leasing Ltd Senior Secured	A	09/03/2018	SINKING PAYMENT		680,133	680,133	680,133	680,133						680,133				27,719	03/03/2024
C3222H-AE-8	Enermark, Inc. Senior Note Ser	A	06/18/2018	SINKING PAYMENT		3,780,000	3,780,000	3,780,000	3,780,000						3,780,000				150,633	06/18/2021
C3222H-AB-5	ENTERTAINMENT ONE LTD-SECURED	A	11/13/2018	CITIGROUP		4,964,308	4,795,760	5,628,279	5,045,242		(321)		(321)	582,726	4,796,204	(831,443)	168,104	(663,339)	299,443	12/15/2022
C4111H-AG-6	Graymont Western Canada, Gtd Senior Note	D	06/21/2018	SINKING PAYMENT		657,143	657,143	657,143	657,143						657,143				15,443	06/21/2027
C96729-AD-7	BAUSCH HEALTH COS INC-SR UNSECURED	D	11/08/2018	CITIGROUP		7,960,624	8,024,799	7,541,832	8,262,281		22,066		22,066	(666,119)	7,900,079	281,850	60,523	342,373	321,162	05/15/2023
00077T-AA-2	ROYAL BK SCOTLAND NV/NY-SUBORDINATED	D	06/29/2018	MARKETAXESS FINANCIA		519,124	4,700,000	527,945	517,597		(3,913)		(3,913)		513,684		5,440	5,440	18,415	05/15/2023
00084D-AG-5	ABN AMRO BANK NV-SR UNSECURED	D	10/30/2018	MATURITY		840,000	840,000	849,939	842,926		(2,926)		(2,926)		840,000				17,442	10/30/2018
00105D-AE-5	AES GENER SA-UNSECURED	D	01/01/2018	CA CASH CLOSE		199,500	200,000	199,144	199,313		187		187		199,500				5,694	07/14/2025
00131L-AE-5	AIA GROUP LTD-SENIOR UNSECURED	D	01/26/2018	DTCYID		326,370	300,000	296,202	296,295		9		9		296,303		30,067	30,067	4,988	03/16/2046
00162L-CE-5	ALM LOAN FUNDING-SERIES 15-16A CLASS A2R	D	06/29/2018	PAYDOWN		3,550,000	3,550,000	3,550,000	3,550,000						3,550,000				91,462	07/15/2027
00162L-CG-0	ALM LOAN FUNDING-SERIES 15-16A CLASS BR	D	06/29/2018	P																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
00164M-DG-5	ALM LOAN FUNDING-SERIES 15-12A CLASS A1R	D.	05/17/2018	PAYDOWN		16,900,000	16,900,000	16,900,000	16,900,000						16,900,000				260,424	04/16/2027
00164M-DH-3	ALM LOAN FUNDING-SERIES 15-12A CLASS A2A	D.	05/17/2018	PAYDOWN		7,200,000	7,200,000	7,200,000	7,200,000						7,200,000				138,049	04/16/2027
00183F-AA-3	ANNO 2017 JOINT HOLDING (UK) LTD	B.	12/31/2018	CA CASH CLOSE		785,193	785,192	872,189							785,193	(86,996)		(86,996)	6,711	05/31/2033
00191L-AQ-5	ARES CLO LTD-SERIES 13-3A CLASS B1R	D.	09/14/2018	PAYDOWN		20,000,000	20,000,000	20,000,000	20,000,000						20,000,000				380,188	10/17/2024
00289L-AA-3	Abengoa Transmission Sur -SECURED NOTE	D.	10/31/2018	SINKING PAYMENT		181,475	181,475	187,453	186,983		(111)		(111)		181,475				9,818	04/30/2043
00507U-AP-6	ACTAVIS FUNDING SCS-SR UNSECURED	D.	08/08/2018	VARIOUS		2,839,311	2,855,000	2,912,875	2,904,702		(9,444)		(9,444)		2,835,258		(55,947)	(55,947)	36,062	03/12/2020
00507U-AR-2	ACTAVIS FUNDING SCS-SR UNSECURED	D.	04/18/2018	CREDIT SUISSE SECURI		15,783,135	15,900,000	16,053,090	16,023,897		(8,555)		(8,555)		16,015,343		(232,208)	(232,208)	166,089	03/15/2022
00507U-AS-0	ACTAVIS FUNDING SCS-SR UNSECURED NOT	D.	05/30/2018	CREDIT SUISSE SECURI		19,313,000	20,000,000	19,975,958	19,981,538		906		906		19,982,444		(669,444)	(669,444)	532,000	03/15/2025
00652M-AD-4	ADANI PORTS AND SPECIAL-SR UNSECURED	D.	10/01/2018	VARIOUS		5,435,740	6,000,000	5,893,370	5,235,828		4,533		4,533		5,899,774		(464,034)	(464,034)	164,902	07/30/2027
00774P-AB-4	Aerborne Funding Limited Senior Secured	D.	12/25/2018	SINKING PAYMENT		1,412,903	1,412,903	1,405,839	1,406,310		642		642		1,412,903				35,640	01/25/2030
00774P-AF-5	Aerborne Funding Limited Senior Secured	D.	12/25/2018	SINKING PAYMENT		1,296,774	1,296,774	1,290,290	1,290,695		591		591		1,296,774				33,074	01/25/2030
00774P-AK-4	Aerborne Funding Limited Senior Secured	D.	12/25/2018	SINKING PAYMENT		3,870,968	3,870,968	3,851,613	3,852,821		1,764		1,764		3,870,968				98,729	01/25/2030
00774P-AM-0	Aerborne Funding Limited Senior Secured	D.	12/25/2018	SINKING PAYMENT		1,393,548	1,393,548	1,386,581	1,386,995		636		636		1,393,548				36,160	01/25/2030
00776A-AA-7	Aerborne Funding II Limi Senior Secured	D.	12/25/2018	SINKING PAYMENT		3,038,730	3,038,730	3,038,730							3,038,730				16,442	05/25/2030
00786P-AC-8	AEROPUERTOS ARGENT 2000-SECURED	D.	07/26/2018	STIF NIC EURO LTD		1,450,250	1,500,000	1,522,335	1,519,407		(1,888)		(1,888)		1,517,519		(67,269)	(67,269)	76,007	02/01/2027
009279-AC-4	AIRBUS SE-SR UNSECURED	D.	08/03/2018	BANK OF AMERICA CORP		6,585,497	6,700,000	6,617,523	6,618,247		918		918		6,619,164		(33,667)	(33,667)	218,336	04/10/2047
00971Y-AB-6	AKBANK TAS-SR UNSECURED	D.	03/09/2018	MATURITY		8,000,000	8,000,000	8,370,600	8,045,455		(45,455)		(45,455)		8,000,000				98,222	03/09/2018
01609W-AP-7	ALIBABA GROUP HOLDING-SR UNSECURED	D.	01/08/2018	MERRILL LYNCH INTERN		3,308,281	3,260,000	3,381,011	3,349,606		(582)		(582)		3,349,025		(40,744)	(40,744)	11,885	11/28/2021
01609W-AQ-5	ALIBABA GROUP HOLDING-SR UNSECURED	D.	01/08/2018	MERRILL LYNCH INTERN		3,809,742	3,700,000	3,749,543	3,740,972		(153)		(153)		3,740,819		68,923	68,923	15,540	11/28/2024
02014P-AC-8	ALM XVII LTD-SR SECURED NOTE CLASS A2L	D.	07/16/2018	PAYDOWN		13,750,000	13,750,000	13,750,000	13,750,000						13,750,000				325,715	01/15/2028
02109T-AC-6	ALROSA FIN S A GTD NT	D.	10/18/2018	VARIOUS		853,911	800,000	906,000	869,856		(18,718)		(18,718)		851,138		2,773	2,773	59,417	11/03/2020
02154C-AD-5	ALTICE FINANCING SA-1ST LIEN	D.	11/14/2018	VARIOUS		7,601,250	7,680,000	7,762,050	7,724,546		(12,219)		(12,219)		7,712,327		(111,077)	(111,077)	568,896	02/15/2023
02154V-AB-7	Altice Luxembourg SA-SR UNSECURED	D.	06/25/2018	DTCYD		1,202,500	1,300,000	1,281,500	1,281,676		958		958		1,282,633		(80,133)	(80,133)	48,461	02/15/2025
03286E-AN-5	ANCHORAGE CAPITAL CLO LT-ANCHC 2014-5A B	D.	01/16/2018	PAYDOWN		17,000,000	17,000,000	17,000,000	17,000,000						17,000,000				20,961	10/15/2026
03290E-AN-7	ANCHORAGE CAPITAL CLO LT-ANCHC 2012-1A A	D.	04/13/2018	PAYDOWN		5,100,000	5,100,000	5,100,000	5,100,000						5,100,000				54,450	01/13/2027
03292K-AA-1	ANCHORAGE CAPITAL CLO LT-SERIES 2016-8A	D.	07/30/2018	PAYDOWN		16,500,000	16,500,000	16,483,500	16,689,283		(189,283)		(189,283)		16,500,000				348,297	07/28/2028
03763Y-AQ-9	APIDOS CLO-APID 2012-11A BR	D.	12/26/2018	PAYDOWN		10,850,000	10,850,000	10,850,000	10,850,000						10,850,000				452,959	01/17/2028
03763Y-AS-5	APIDOS CLO-SERIES 12-11A CLASS CR	D.	12/26/2018	PAYDOWN		4,200,000	4,200,000	4,200,000	4,200,000						4,200,000				203,848	01/17/2028
03764D-AB-7	APIDOS CLO XII SR SEC NT CL B-1	D.	02/22/2018	PAYDOWN		24,400,000	24,400,000	24,062,500	24,687,897		(287,897)		(287,897)		24,400,000				118,668	04/15/2025
03764D-AD-3	APIDOS CLO XII MEZZ DEF NT CL C	D.	02/22/2018	PAYDOWN		12,300,000	12,300,000	12,260,640	12,687,931		(387,931)		(387,931)		12,300,000				78,475	04/15/2025
03764D-AE-1	APIDOS CLO-APID 2013-12A D	D.	02/22/2018	PAYDOWN		500,000	500,000	476,901	484,167		15,833		15,833		500,000				3,542	04/15/2025
03764Q-AQ-5	APIDOS CLO-SERIES 13-15A CLASS A2AR	D.	04/20/2018	PAYDOWN		10,800,000	10,800,000	10,800,000	10,800,000						10,800,000				103,695	10/20/2025
03764Q-AU-6	APIDOS CLO-SERIES 13-15A CLASS B1R	D.	04/20/2018	PAYDOWN		5,750,000	5,750,000	5,750,000	5,750,000						5,750,000				67,395	10/20/2025
03764X-AJ-6	APIDOS CLO-SERIES 2014-17A CLASS A2R	D.	10/17/2018	PAYDOWN		8,850,000	8,850,000	8,850,000	8,850,000						8,850,000				280,546	04/17/2026
03765D-AN-0	APIDOS CLO-APID 2014-18A A2AR	D.	10/22/2018	PAYDOWN		34,000,000	34,000,000	34,000,000	34,000,000						34,000,000				1,226,175	07/22/2026
03765D-AS-9	APIDOS CLO-APID 2014-18A BR	D.	10/22/2018	PAYDOWN		10,500,000	10,500,000	10,500,000	10,500,000						10,500,000				446,047	07/22/2026
03765L-AG-7	APIDOS CLO XX-MEZZ DEF NT CL C	D.	07/16/2018	PAYDOWN		4,560,000	4,560,000	4,322,985	4,497,474		62,526		62,526		4,560,000				141,127	01/16/2027
03765L-AL-6	APIDOS CLO-SERIES 2015-20A CLASS BR	D.	07/16/2018	PAYDOWN		4,000,000	4,000,000	4,000,000	4,000,000						4,000,000				102,340	01/16/2027
03765P-AC-7	APIDOS CLO XX1-SR SECURED NOTE CL A-2	D.	07/18/2018	PAYDOWN		12,000,000	12,000,000	12,000,000	12,000,000						12,000,000				256,532	07/18/2027
03765P-AG-8	APIDOS CLO-APID 2015-21A C	D.	07/18/2018	PAYDOWN		500,000	500,000	478,127	484,481		15,519		15,519		500,000				15,576	07/18/2027
03965U-AB-6	ARCOS DORADOS HOLDINGS I-SR UNSECURE	D.	11/14/2018	BARCLAYS CAPITAL INC		869,125	850,000	906,975	901,323		(6,844)		(6,844)		864,480		(25,355)	(25,355)	49,273	09/27/2023
03965U-AC-4	ARCOS DORADOS HOLDINGS I-SR UNSECURE	D.	11/19/2018	VARIOUS		3,232,223	3,553,000	3,553,000	3,553,000						3,553,001		(320,778)	(320,778)	234,577	04/04/2027
04014J-AA-2	ARES XXVI CLO LTD SR NT CL A	D.	01/01/2018	PAYDOWN					(3,570,585)											04/15/2025
04015B-AL-4	ARES CLO LTD-ARES 2014-31A A2R	D.	05/29/2018	PAYDOWN		14,400,000	14,400,000	14,400,000	14,400,000						14,400,000				292,025	08/28/2025
04363U-AC-0	ASCIANO FINANCE LTD-SR UNSECURED NOT	D.	04/07/2018	MATURITY		13,977,000	13,977,000	14,437,345	14,001,759		(24,759)		(24,759)		13,977,000				186,360	04/07/2018
046353-AH-1	ASTRAZENECA PLC-SR UNSECURED	D.	11/16/2018	MATURITY		300,000	300,000	298,989	299,687		313		313		300,000				4,594	11/16/2018
04684L-AA-6	ATENTO LUXCO 1 SA-FIRST LIEN	D.	01/08/2018	DTCYD		418,200	400,000	400,000	400,000						400,000		18,200	18,200	612	08/10/2022
049255-AE-2	ATLAS COPCO AB-NOTE	D.	04/23/2018	CALL 107.386		11,490,302	10,700,000	14,334,841	11,713,808		(186,244)		(186,244)		12,317,866		(827,564)	(827,564)	1,064,935	09/01/2019
04941R-AL-8	ATLAS SENIOR LOAN FUND L-ATCLO 2014-6A B	D.	02/16/2018	PAYDOWN		19,200,000	19,200,000	19,200,000	19,200,000						19,200,000				78,589	10/15/2026
04941T-AE-0	ATLAS SENIOR LOAN FUND L-ATCLO 2016-7A B	D.	11/01/2018	PAYDOWN		8,850,000	8,850,000	8,850,000	8,850,000						8,850,000				310,700	11/30/2028
04964W-AL-9	ATRIUM CDO CORP-ATRM 11A A1R	D.	12/11/2018	PAYDOWN																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
053635-AG-3	AVERY POINT II CLO LTD-SR SEC DEF NT CL	D	03/26/2018	PAYDOWN		9,000,000	9,000,000	9,000,000	9,000,000						9,000,000				92,596	07/17/2025
05363J-AS-2	AVERY POINT CLO LTD-SERIES 14-1A CLASS A	D	10/25/2018	PAYDOWN		46,245,178	46,245,178	46,245,178	46,245,178						46,245,178				1,537,133	04/25/2026
05389L-AA-1	Avolon Aerospace Leasing Secured Note A3	D	12/15/2018	SINKING PAYMENT		594,452	594,452	594,452	594,452						594,452				11,089	07/15/2028
05389L-AB-9	Avolon Aerospace Leasing Secured Note B7	D	12/15/2018	SINKING PAYMENT		1,879,441	1,879,441	1,879,441	1,879,441						1,879,441				41,611	07/15/2028
05389L-AD-5	Avolon Aerospace Leasing Secured Note A3	D	12/15/2018	SINKING PAYMENT		583,336	583,336	583,336	583,336						583,336				10,958	08/15/2028
05389L-AF-0	Avolon Aerospace Leasing Secured Note A3	D	12/15/2018	SINKING PAYMENT		687,880	687,880	687,880	687,880						687,880				12,922	08/15/2028
05389L-AH-6	Avolon Aerospace Leasing Secured Note B7	D	12/15/2018	SINKING PAYMENT		603,908	603,908	603,908	603,908						603,908				11,342	08/15/2028
05389L-AK-9	Avolon Aerospace Leasing Secured Note B7	D	12/15/2018	SINKING PAYMENT		632,340	632,340	632,340	632,340						632,340				11,678	10/15/2028
05389L-AM-5	Avolon Aerospace Leasing Secured Note B7	D	12/15/2018	SINKING PAYMENT		611,917	611,917	611,917	611,917						611,917				22,792	11/15/2028
05400F-AA-9	Avolon Aerospace Funding Senior Secured	D	12/20/2018	SINKING PAYMENT		(6,393,977)	(6,393,977)	(6,393,977)		36,650			36,650		(6,393,977)				9,939	11/20/2028
05400F-AC-5	Avolon Aerospace Funding Senior Secured	D	12/20/2018	SINKING PAYMENT		434,260	434,260	434,260	434,260						434,260				10,648	12/20/2028
05400F-AE-1	Avolon Aerospace Funding Senior Secured	D	12/20/2018	SINKING PAYMENT		466,758	466,758	466,758	466,758						466,758				10,980	12/20/2028
05400F-AG-6	Avolon Aerospace Funding Senior Secured	D	12/20/2018	SINKING PAYMENT		462,000	462,000	462,000	462,000						462,000				10,520	12/20/2028
05400F-AJ-0	Avolon Aerospace Funding Senior Secured	D	12/20/2018	SINKING PAYMENT		429,480	429,480	429,480	429,480						429,480				9,823	12/20/2028
05400F-AL-5	Avolon Aerospace Funding Senior Secured	D	12/20/2018	SINKING PAYMENT		313,324	313,324	313,324	313,324						313,324				6,665	01/20/2029
05454Y-AA-3	AWAS Aviation Capital Lt Pass Thru Cfts	C	10/07/2018	SINKING PAYMENT		6,560,636	6,560,636	6,560,636	6,560,636						6,560,636				298,933	10/07/2021
05462G-AJ-3	Axtel SAB de CV-SENIOR UNSECURED	D	01/04/2018	CITIGROUP GLOBAL MAR		887,188	850,000	850,000	850,000						850,000		37,188	37,188	1,054	11/14/2024
05464H-AA-8	AXIS SPECIALTY FINAN PLC-SENIOR UNSECURE	D	08/03/2018	GOLDMAN		29,915	30,000	29,969	29,991		4		4		29,995		(80)	(80)	477	04/01/2019
055650-CE-6	BP CAPITAL MARKETS PLC-SR UNSECURED	D	05/10/2018	MATURITY		250,000	250,000	245,907	249,370		630		630		250,000				1,232	05/10/2018
055650-CY-2	BP CAPITAL MARKETS PLC-SR UNSECURED	D	02/13/2018	MATURITY		200,000	200,000	200,079	200,003		(3)		(3)		200,000				391	02/13/2018
055724-AB-0	BR PROPERTIES SA NTS PERP	D	01/10/2018	CALL 100		403,000	403,000	420,752	420,625						420,625		(17,625)	(17,625)	8,967	01/01/9989
05574L-PT-9	BNP PARIBAS-SR UNSECURED	D	08/20/2018	MATURITY		150,000	150,000	152,259	150,550		(550)		(550)		150,000				2,576	08/20/2018
05578B-AB-2	BPCE SA-SR UNSECURED	D	12/10/2018	MATURITY		1,465,000	1,465,000	1,482,213	1,470,544		(5,544)		(5,544)		1,465,000				34,489	12/10/2018
05578D-AQ-5	BPCE SA-SR UNSECURED	D	01/26/2018	MATURITY		250,000	250,000	248,791	249,958		42		42		250,000				282	01/26/2018
05578D-AR-3	BPCE SA-SR UNSECURED	D	08/08/2018	GOLDMAN		370,163	375,000	374,524	374,636		106		106		374,742		(4,579)	(4,579)	5,133	01/27/2020
05873L-AJ-5	BALLYROCK LTD-SERIES 14-1A CLASS A1R	D	04/20/2018	PAYDOWN		5,420,000	5,420,000	5,420,000	5,420,000						5,420,000				46,302	04/20/2026
05873L-AK-2	BALLYROCK LTD-BALLY 2014-1A A2R	D	04/20/2018	PAYDOWN		18,100,000	18,100,000	18,100,000	18,100,000						18,100,000				315,425	10/20/2026
05874P-AC-0	BALLYROCK LTD-SERIES 2013-1A CLASS B	D	12/07/2018	PAYDOWN		16,600,000	16,600,000	16,600,000	16,600,000						16,600,000				620,384	05/20/2025
05874P-AE-6	BALLYROCK LTD-SERIES 2013-1A CLASS C	D	12/07/2018	PAYDOWN		11,200,000	11,200,000	10,989,843	11,479,241		(279,241)		(279,241)		11,200,000				524,325	05/20/2025
059501-AB-2	BANCO DAVIVIENDA SA-SR UNSECURED	D	01/29/2018	MATURITY		8,000,000	8,000,000	7,775,000	7,990,827		9,173		9,173		8,000,000				18,356	01/29/2018
05956P-AB-3	Banco Daycoval SA-SR UNSECURED	D	12/13/2018	VARIOUS		5,362,188	5,350,000	5,563,475	5,424,536		(57,319)		(57,319)		5,367,217		(5,029)	(5,029)	288,123	03/19/2019
059597-AE-4	BANCO GENERAL SA-SENIOR UNSECURED	D	10/10/2018	DTCYID		188,700	200,000	198,126	198,180		119		119		198,299		(9,599)	(9,599)	9,740	08/07/2027
05960B-AB-8	BANCO INTL DEL PERU/PANAMA-SR UNSECURED	D	02/01/2018	EXCHANGE OFFER		3,845,048	3,700,000	4,011,625	3,849,291		(4,243)		(4,243)		3,845,048				17,729	10/07/2020
059613-AA-7	BANCO NAL COSTA RICA-SENIOR UNSECURED NO	D	11/01/2018	VARIOUS		5,000,700	5,000,000	5,093,750	5,018,933		(18,630)		(18,630)		5,000,303		397	397	199,604	11/01/2018
05968D-AB-6	Banco Internacional del -UNSECURED	D	04/05/2018	DTCYID		104,027	107,800	101,167	101,388		221		221		101,388		2,639	2,639	819	01/18/2023
05968L-AG-7	BANCOLOMBIA SA SR NT	D	04/05/2018	DTCYID		954,450	900,000	961,938	932,916		(2,463)		(2,463)		930,453		23,997	23,997	18,743	06/03/2021
05968L-AH-5	BANCOLOMBIA SA-SUBORDINATED	D	11/20/2018	JEFFERIES INTL LTD		215,266	216,000	223,722	222,594		(1,157)		(1,157)		221,437		(6,171)	(6,171)	9,902	09/11/2022
05990G-AB-1	BANCO DE CREDITO DEL PER-SENIOR UNSECURE	D	01/09/2018	MATURITY		572,000	572,000	550,772	571,853		147		147		572,000				350	01/09/2018
05990L-AA-2	BANCO DE COSTA RICA-SENIOR UNSECURED NOT	D	08/12/2018	MATURITY		7,000,000	7,000,000	7,138,750	7,021,937		(21,937)		(21,937)		7,000,000				225,604	08/12/2018
061199-AA-3	BANK OF CHINA HONG KONG-SUBORDINATED	D	09/14/2018	TENDERED		7,235,340	7,000,000	7,701,810	7,334,597		(108,970)		(108,970)		7,235,627		9,713	9,713	273,029	02/11/2020
066716-AB-7	Banque Centrale de Tunis-SENIOR UNSECURE	D	11/14/2018	VARIOUS		2,401,750	2,500,000	2,537,500	2,534,136		(2,041)		(2,041)		2,532,094		(130,344)	(130,344)	178,429	09/19/2027
08861J-AA-7	BHARTI AIRTEL INTL NETH BV GTD SR NT	D	11/07/2018	VARIOUS		5,300,660	5,500,000	5,389,500	5,429,354		10,242		10,242		5,439,596		(138,936)	(138,936)	240,484	03/11/2023
09073V-AS-3	BIRCHWOOD PARK CLO LTD-BRCHW 2014-1A B1R	D	09/20/2018	PAYDOWN		11,350,000	11,350,000	11,350,000	11,350,000						11,350,000				299,303	07/15/2026
09228Y-AB-8	Blackbird Capital Aircra-BBIRD 2016-1A A	D	12/15/2018	PAYDOWN		1,913,125	1,913,125	1,920,209	1,924,116		(10,991)		(10,991)		1,913,125				43,658	12/16/2041
09228Y-AC-6	Blackbird Capital Aircra-SERIES 2016-1A	D	12/15/2018	PAYDOWN		214,062	214,062	219,730	219,730		(5,667)		(5,667)		214,062				3,818	12/16/2041
09625J-AW-4	BLUEMOUNTAIN CLO LTD-SERIES 2013-34 CLAS	D	10/29/2018	PAYDOWN		6,200,000	6,200,000	6,200,000	6,200,000						6,200,000				258,188	10/29/2025
09626R-AQ-8	BLUEMOUNTAIN CLO LTD-BLUEM 2012-2A BR	D	11/20/2018	PAYDOWN		13,850,000	13,850,000	13,850,000	13,850,000						13,850,000				498,617	11/20/2028
09626R-AS-4	BLUEMOUNTAIN CLO LTD-BLUEM 2012-2A CR	D	11/20/2018	PAYDOWN		4,000,000	4,000,000	4,000,000	4,000,000						4,000,000				169,127	11/20/2028
09627D-AQ-8	BLUEMOUNTAIN CLO LTD-BLUEM 2013-4A B1R	D	10/15/2018	PAYDOWN		13,560,000	13,560,000	13,560,000	13,560,000						13,560,000				388,844	04/15/2025
09627L-AJ-6	BLUEMOUNTAIN CLO 2014-1 LTD SR SEC DEF N	D	07/30/2018	PAYDOWN		5,875,000	5,875,000	5,707,968	5,820,970		54,030		54,030		5,875,000				186,129	04/30/2026
09627L-AN-7	BLUEMOUNTAIN CLO LTD-BLUEM 2014-1A B1R	D	07/30/2018	PAYDOWN		21,300,000	21,300,000	21,300,000	21,300,000						21,300,000				443,532	04/30/2026
09627R-AJ-3	BLUEMOUNTAIN CLO LTD-BLUEM 2014-3A A1R	D	10/15/2018	PAYDOWN		22,600,000	22,600,000	22,600,000	22,600,000						22,600,000				580	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
096290-AC-9	BLUEMOUNTAIN CLO 2016-1 LTD -SR SEC NT C	D.	06/04/2018	PAYDOWN		7,150,000	7,150,000	7,150,000	7,150,000						7,150,000				127,605	04/20/2027
096570-AA-7	BM&FBOVESPA SA-SENIOR UNSECURED 144A	D.	12/13/2018	ZKB		3,315,000	3,250,000	3,381,700	3,342,658		(33,952)		(33,952)		3,308,706		6,294	6,294	171,799	07/16/2020
09681L-AC-4	BOC AVIATION LTD-SENIOR UNSECURED	D.	04/09/2018	DTCYID		1,156,500	1,200,000	1,193,496	1,195,082		362		362		1,195,444		(38,944)	(38,944)	7,917	09/15/2021
09939P-AA-9	BOPARAN FINANCE PLC-SR UNSECURED	B.	06/11/2018	VARIOUS		3,397,781	3,702,502	3,954,007	3,531,399		23,421		23,421	543,011	3,524,368	(573,464)	(126,587)	(700,051)	93,643	07/15/2021
09973B-AA-7	BORETS FINANCE DAC-SENIOR UNSECURED	D.	05/31/2018	LIQUIDITY FINANCE LL		4,077,450	4,100,000	4,100,000	4,100,000						4,100,000			(22,550)	113,263	04/07/2022
10010Y-AA-0	BOSPHORUS 2015 LLC PASSTHRU CTF SER 2015	D.	09/15/2018	SINKING PAYMENT		2,216,513	2,216,513	2,148,746	2,098,968		4,407		4,407		2,216,513				71,088	03/15/2021
10553Y-AD-7	BRASKEM FINANCE LTD-SENIOR UNSECURED NOT	D.	10/18/2018	VARIOUS		468,293	453,000	448,832	450,052		696		696		450,748		17,545	17,545	26,265	04/15/2021
10554T-AB-1	BRASKEM NETHERLANDS FINA-SENIOR UNSECURE	D.	01/26/2018	DTCYID		611,250	600,000	593,970	594,037		22		22		594,059		17,191	17,191	2,175	01/10/2028
111013-AG-3	Sky PLC-UNSECURED SENIOR NOTE	D.	02/15/2018	MATURITY		5,800,000	5,800,000	5,793,562	5,799,402		598		598		5,800,000				43,242	02/15/2018
111013-AH-1	Sky PLC-NOTE	D.	11/15/2018	MATURITY		12,700,000	12,700,000	13,186,326	12,757,102		(57,102)		(57,102)		12,700,000				1,052,336	11/15/2018
11102A-AA-9	BRITISH TELECOM PLC-SENIOR UNSECURED NOT	D.	01/15/2018	MATURITY		10,000,000	10,000,000	11,217,050	10,007,283		(7,283)		(7,283)		10,000,000				23,139	01/15/2018
12479L-AA-8	CAL FUNDING II LTD-SERIES 2012-1A CLASS	D.	12/25/2018	PAYDOWN		230,000	230,000	229,950	229,980		20		20		230,000				4,323	10/25/2027
12503G-AB-7	CBQ FINANCE LTD-SUBORDINATED	D.	10/18/2018	VARIOUS		2,061,500	2,000,000	2,147,000	2,128,300		(53,271)		(53,271)		2,075,028		(13,528)	(13,528)	137,500	11/18/2019
12644V-AA-6	CSN RESOURCES SA GTD SR NT	D.	10/18/2018	VARIOUS		974,878	1,000,000	440,000	440,000						440,000		534,878	534,878	42,680	07/21/2020
126611-AL-6	CVP CASCADE CLO LTD-CVPC 2014-2A A1R	D.	10/18/2018	PAYDOWN		1,089,820	1,089,820	1,089,820	1,089,820						1,089,820				42,161	07/18/2026
126612-AJ-9	CVP CASCADE CLO LTD-CVPC 2013-CLO1 A1R	D.	10/16/2018	PAYDOWN		34,276,336	34,276,336	34,276,336	34,276,336						34,276,336				981,536	01/16/2026
12805P-AJ-5	CAL Funding III Ltd-CAI 2018-2A A	D.	12/25/2018	PAYDOWN		373,750	373,750	373,708	373,708		42		42		373,750				2,974	09/25/2043
140274-AA-9	CAPLEASE CDO-SERIES 2005-1 CL A REID	D.	07/29/2018	PAYDOWN		5,998,331	5,998,331	5,611,743	5,907,619		90,712		90,712		5,998,331				162,174	01/29/2040
140274-AC-5	CAPITAL LEASE CDO 2005-1 LTD SEC2 NT CL	D.	07/29/2018	PAYDOWN		4,500,000	4,500,000	3,150,000	4,431,349		68,651		68,651		4,500,000				130,936	01/29/2040
14308L-AS-2	CARLYLE GLOBAL MARKET ST-CGMS 2014-3A A2	D.	06/12/2018	PAYDOWN		9,600,000	9,600,000	9,600,000	9,600,000						9,600,000				147,549	07/27/2026
14310K-AC-5	CARLYLE GLOBAL MKT CLO 2013-4 SR SEC NT	D.	03/01/2018	PAYDOWN		18,000,000	18,000,000	18,000,000	18,000,000						18,000,000				97,709	10/15/2025
14310M-AQ-0	CARLYLE GLOBAL MARKET ST-SERIES 2014-1A	D.	04/06/2018	PAYDOWN		10,000,000	10,000,000	10,000,000	10,000,000						10,000,000				94,927	04/17/2025
14310M-AS-6	CARLYLE GLOBAL MARKET ST-SERIES 2014-1A	D.	04/06/2018	PAYDOWN		10,000,000	10,000,000	10,000,000	10,000,000						10,000,000				119,997	04/17/2025
14310U-AQ-2	CARLYLE GLOBAL MARKET ST-CGMS 2014-4A BR	D.	06/29/2018	PAYDOWN		13,760,000	13,760,000	13,760,000	13,760,000						13,760,000				293,287	10/15/2026
14310V-AM-9	CARLYLE GLOBAL MARKET ST-CGMS 2014-2A BR	D.	05/15/2018	PAYDOWN		11,040,000	11,040,000	11,040,000	11,040,000						11,040,000				135,474	05/15/2025
14310V-AN-7	CARLYLE GLOBAL MARKET ST-SERIES 2014-2A	D.	05/15/2018	PAYDOWN		8,000,000	8,000,000	8,000,000	8,000,000						8,000,000				119,014	05/15/2025
14311A-AJ-1	CARLYLE GLOBAL MARKET ST-SERIES 14-5A CL	D.	09/14/2018	PAYDOWN		75,000,000	75,000,000	75,000,000	75,000,000						75,000,000				1,727,724	10/16/2025
14311A-AN-2	CARLYLE GLOBAL MARKET ST-SERIES 14-5A CL	D.	09/14/2018	PAYDOWN		6,500,000	6,500,000	6,500,000	6,500,000						6,500,000				255,076	10/16/2025
14312L-AC-1	CARLYLE GLOBAL MKT CLO 2016-2 SR SEC NT	D.	08/03/2018	PAYDOWN		12,070,000	12,070,000	12,070,000	12,070,000						12,070,000				302,377	07/15/2027
151191-BC-6	CELULOSA ARAUCO Y CONSTI-SENIOR UNSECURE	D.	04/16/2018	DTCYID		916,875	900,000	897,372	897,304		60		60		897,364		19,511	19,511	14,713	11/02/2047
15132H-AD-3	Cencosud SA-SENIOR UNSECURED NOTE	D.	01/01/2018	TENDERED							262		262						1,612	01/20/2023
15136G-AQ-2	CENT CLO 16 LP NT CL A-2-R	D.	06/08/2018	PAYDOWN		14,000,000	14,000,000	14,000,000	14,000,000						14,000,000				251,074	08/01/2024
15136R-AE-5	CENT CLO 18 LP-NT SER 2013-18A CL B 144A	D.	06/06/2018	PAYDOWN		7,850,000	7,850,000	7,850,000	7,850,000						7,850,000				116,155	07/23/2025
15136R-AJ-4	CENT CLO 18 LP-DEF NT SER 2013-18A CL C-	D.	06/06/2018	PAYDOWN		4,900,000	4,900,000	4,851,000	5,068,429		(168,429)		(168,429)		4,900,000				93,101	07/23/2025
18912A-AA-4	Cloud Leasing 39659 Desi Senior Secured	D.	12/14/2018	SINKING PAYMENT		4,680,595	4,680,595	4,661,872	4,661,949		1,502		1,502		4,680,595				96,528	05/14/2029
191229-AB-9	COCA-COLA ICECEK AS-SENIOR UNSECURED	D.	11/14/2018	VARIOUS		3,100,125	3,300,000	3,300,000	3,300,000						3,300,000		(199,875)	(199,875)	118,301	09/19/2024
20271R-AD-2	COMMONWEALTH BK AUSTR NY-SR UNSECURED	D.	09/20/2018	MATURITY		500,000	500,000	507,808	502,081		(2,081)		(2,081)		500,000				8,993	09/20/2018
20271R-AJ-9	COMMONWEALTH BK AUSTR NY-SR UNSECURED	D.	03/12/2018	MATURITY		500,000	500,000	499,193	499,923		77		77		500,000				1,602	03/12/2018
204474-AA-8	CO MINERA ARES SAC-SENIOR UNSECURED NOTE	D.	01/23/2018	CALL 103,875		5,193,750	5,000,000	5,338,750	5,194,404		(654)		(654)		5,387,500		(193,750)	(193,750)	217,431	01/23/2021
20914U-AB-2	CONSOLIDATED ENERGY FIN-SENIOR UNSECURED	D.	06/06/2018	VARIOUS		4,420,241	4,350,000	4,152,875	4,255,979		8,129		8,129		4,279,401		140,840	140,840	85,817	10/15/2019
21688A-AF-9	RABOBANK NEDERLAND NY-SENIOR UNSECURED	D.	04/16/2018	HSBC SECURITIES INC		369,060	375,000	383,558	381,289		(601)		(601)		380,688		(11,628)	(11,628)	2,786	01/19/2021
22289R-AA-4	COVERIS HOLDINGS SA-SR UNSECURED	D.	05/07/2018	CALL 101,969		6,315,960	6,194,000	6,037,195	6,116,042		(546)		(546)		6,237,456		78,504	78,504	292,682	11/01/2019
22541H-CC-4	CREDIT SUISSE NEW YORK-SUB NOTE	D.	02/15/2018	MATURITY		10,625,000	10,625,000	12,215,265	10,665,276		(40,276)		(40,276)		10,625,000				77,917	02/15/2018
225433-AD-3	CRED SUIS GP FUN LTD-SENIOR UNSECURED	D.	12/19/2018	MILLENNIUM ADVISORS		370,999	375,000	377,835	377,213		(950)		(950)		376,262		(5,263)	(5,263)	10,026	03/26/2020
225460-AF-4	CREDIT SUISSE NEW YORK-SENIOR UNSECURED	D.	04/16/2018	GOLDMAN		360,269	350,000	380,828	370,844		(2,338)		(2,338)		368,507		(8,238)	(8,238)	4,551	08/05/2020
225460-AT-4	CREDIT SUISSE NEW YORK-SR UNSECURED	D.	01/29/2018	MATURITY		200,000	200,000	199,145	199,967		33		33		200,000				272	01/29/2018
225460-AV-9	CREDIT SUISSE NEW YORK-SR UNSECURED	D.	04/27/2018	MATURITY		600,000	600,000	596,447	599,498		502		502		600,000				3,282	04/27/2018
227170-AG-2	CRONOS CONTAINERS PROGRA-SERIES 2014-2A	D.	11/18/2018	PAYDOWN		835,185	835,185	834,926	835,077		108		108		835,185				13,766	11/18/2029
232323-AA-8	DORIC NINROD 2013-1 CL A-FIRST LIEN	D.	11/30/2018	SINKING PAYMENT		212,233	212,233	220,888	219,569		(1,312)		(1,312)		219,569				5,652	05/30/2023
232323-AB-6	DORIC NINROD 2013-1 CL B-SERIES 2013-1 C	D.	11/30/2018	SINKING PAYMENT		949,917	949,917	984,114	971,563		(14,334)		(14,334)		949,917				29,605	11/30/2019
24668P-AE-7	DELHAIZE GROUP SA-SENIOR UNSECURED NOTE	D.	12/06/2018	TENDERED		31,846,38														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
25380W-AF-3	DIGICEL GROUP LTD-SR UNSECURED	D	04/03/2018	VARIOUS		3,330,945	4,000,000	3,386,250	3,550,347		19,540		19,540		3,569,887		(238,942)	(238,942)	62,934	04/01/2022	
25461C-AA-0	DirectRoute (Tuan) Limit Senior Secured	B	12/31/2018	SINKING PAYMENT		1,560,413	1,560,414	1,516,005	1,626,514				(110,509)		1,560,413				38,038	11/30/2040	
25773Q-AA-2	DONG FANG CONTAINER FIN II SPV ASSET BKO	D	11/25/2018	PAYDOWN		1,361,250	1,361,250	1,361,116	1,361,250						1,361,250				12,830	11/25/2039	
25773Q-AB-0	DONG FANG CONTAINER FIN II SPV ASSET BKO	D	11/25/2018	PAYDOWN		2,928,250	2,928,250	2,925,130	2,926,624		1,626		1,626		2,928,250				89,705	11/25/2039	
25809U-AA-1	Doosan Heavy Industries -SR UNSECURED	D	12/13/2018	NOIMURA INTL PLC		7,842,000	8,000,000	7,949,600	7,975,778		9,731		9,731		7,985,509		(143,509)	(143,509)	161,510	04/27/2020	
258257-AA-2	DORIC NIMROD AIR 2012-1B-SERIES 2012 CLA	D	11/30/2018	SINKING PAYMENT		121,914	121,914	125,876	124,117		(1,751)		(1,751)		121,914				8,015	05/30/2019	
258258-AA-0	DORIC NIMROD AIR 2012-1A-FIRST LIEN	D	11/30/2018	SINKING PAYMENT		107,564	107,564	112,674	111,977		(833)		(833)		107,564				2,802	11/30/2022	
26244E-AQ-3	DRYDEN SENIOR LOAN FUND-SERIES 2014-34A	D	06/07/2018	PAYDOWN		6,250,000	6,250,000	6,250,000	6,250,000						6,250,000				141,537	10/15/2026	
26244M-AC-6	DRYDEN SENIOR LOAN FUND-DRSLF 2016-45A B	D	10/24/2018	PAYDOWN		4,500,000	4,500,000	4,500,000	4,500,000						4,500,000				144,570	07/15/2027	
26244Y-AC-0	DRYDEN 42 SR LN FD-SR SEC NT CL B	D	07/16/2018	PAYDOWN		13,000,000	13,000,000	13,000,000	13,000,000						13,000,000				292,576	07/15/2027	
26244Y-AE-6	DRYDEN 42 SR LN FD-SR SEC DEF NT CL C	D	07/16/2018	PAYDOWN		4,500,000	4,500,000	4,512,222	4,512,113		(12,113)		(12,113)		4,500,000				125,773	07/15/2027	
26244Y-AG-1	DRYDEN SENIOR LOAN FUND-SERIES 16-42A CL	D	07/16/2018	PAYDOWN		500,000	500,000	503,966	506,845		(6,845)		(6,845)		500,000				17,652	07/15/2027	
26249E-AN-5	DRYDEN SENIOR LOAN FUND-SERIES 14-31A CL	D	03/28/2018	PAYDOWN		24,750,000	24,750,000	24,750,000	24,750,000						24,750,000				162,041	04/18/2026	
26249E-AQ-8	DRYDEN SENIOR LOAN FUND-SERIES 14-31A CL	D	03/28/2018	PAYDOWN		15,000,000	15,000,000	15,000,000	15,000,000						15,000,000				113,257	04/18/2026	
26249E-AS-4	DRYDEN SENIOR LOAN FUND-SERIES 14-31A CL	D	03/28/2018	PAYDOWN		7,000,000	7,000,000	7,000,000	7,000,000						7,000,000				62,886	04/18/2026	
26249Q-AG-3	DRYDEN 38 SR LN FD SR SEC NT CL B	D	08/23/2018	PAYDOWN		9,475,000	9,475,000	9,475,000	9,475,000						9,475,000				248,943	07/15/2027	
26250U-AC-9	DRYDEN XXVI SR LN FD SR SEC NT CL A	D	04/16/2018	PAYDOWN		38,367,628	38,367,628	37,641,345	38,460,006		(92,378)		(92,378)		38,367,628				285,231	07/15/2025	
26829C-AC-1	ECP CLO 2015-7 LTD SR SEC NT CL A-2 144	D	03/20/2018	PAYDOWN		8,625,000	8,625,000	8,625,000	8,625,000						8,625,000				73,663	04/20/2027	
26829C-AJ-6	ECP CLO 2015-7 LTD SR SEC DEF NT CL B-1	D	03/20/2018	PAYDOWN		8,600,000	8,600,000	8,544,358	8,689,687		(89,687)		(89,687)		8,600,000				88,356	04/20/2027	
27829K-AD-9	EATON VANCE CDO X PLC-EURO 2ND PRIORITY	B	02/22/2018	PAYDOWN		336,688	336,688	312,997	322,197		6,026		6,026	65,413	336,688	(56,948)		(56,948)	25	02/22/2027	
27829K-AE-7	EATON VANCE CDO LTD-SERIES 2007-10A CLAS	D	02/22/2018	PAYDOWN		14,837,130	14,837,130	13,557,427	14,769,622		67,508		67,508		14,837,130				39,561	02/22/2027	
282523-AB-5	1828 CLO LTD-SR SEC NT CL A-1-S 144A	D	10/15/2018	PAYDOWN		16,040,000	16,040,000	16,040,000	16,040,000						16,040,000				472,748	04/15/2028	
28257V-AA-0	Eirles Three Ltd Senior Secured	D	12/19/2018	MATURITY		10,000,000	10,000,000	9,880,700	9,985,852		14,148		14,148		10,000,000				568,400	12/19/2018	
29246B-AC-2	EMPRESAS PUBLIC MEDELLIN-SENIOR UNSECURE	B	05/21/2018	STANDARD CHARTERED B		671,335	664,030	999,746	847,183					352,563	664,031	(335,716)	7,304	(328,412)	20,036	09/10/2024	
29246N-AA-0	EMPRESA DE ENERGIA DE BO-SENIOR UNSECURE	D	01/23/2018	CALL 102.042		13,418,523	13,150,000	14,010,400	13,407,327		(8,850)		(8,850)		13,667,000		(248,477)	(248,477)	317,744	11/10/2021	
29246T-AA-7	EMPRESA ELECTRICA ANGAMO SR SEC NT	D	11/25/2018	SINKING PAYMENT		226,200	226,200	213,770	216,388		1,134		1,134		226,200				8,270	05/25/2029	
293580-AA-7	Enso PLC-SENIOR UNSECURED NOTE	D	01/26/2018	TENDERED		58,806,000	59,400,000	61,484,739	60,429,019		(20,490)		(20,490)		60,408,529		(1,602,529)	(1,602,529)	1,975,875	03/15/2021	
294829-AA-4	ERICSSON LM-NOTE	D	07/10/2018	VARIOUS		23,788,715	24,150,000	24,287,954	24,254,092		(11,044)		(11,044)		24,243,048		(454,333)	(454,333)	491,350	05/15/2022	
298785-DV-5	EUROPEAN INVESTMENT BANK-SR UNSECURED	D	11/19/2018	BNP PARIBAS		237,010	200,000	276,884	272,446		(2,873)		(2,873)		269,572		(32,562)	(32,562)	12,350	02/15/2036	
31503A-AA-2	FERRIACA ENTERPRISES SR SEC NT	D	09/30/2018	SINKING PAYMENT		631,493	631,493	658,095	470,793		(842)		(842)		631,493				28,693	03/30/2038	
316044-AB-2	FIDELITY BANK PLC-SENIOR UNSECURED	D	01/29/2018	DTCYD		840,400	800,000	792,416	792,392		94		94		792,486				47,914	10/16/2022	
36164Q-MS-4	GE CAPITAL INTL FUNDING-SENIOR UNSECURED	D	02/13/2018	MARKETAXESS FINANCA		3,434,422	3,493,000	3,314,169	3,370,892		4,801		4,801		3,375,692				9,999	11/15/2020	
36164Q-NA-2	GE CAPITAL INTL FUNDING-SENIOR UNSECURED	D	12/10/2018	VARIOUS		59,211,540	67,000,000	63,020,880	63,186,497		131,757		131,757		63,318,254		(4,106,714)	(4,106,714)	2,353,076	11/15/2035	
36248M-AA-5	GT LOAN FINANCING LTD-SERIES 2013-1A CLA	D	07/30/2018	PAYDOWN		40,000,000	40,000,000	39,796,000	40,539,368		(539,368)		(539,368)		40,000,000				274,243	10/28/2024	
36248M-AB-3	GT LOAN FINANCING LTD-SERIES 2013-1A CLA	D	07/30/2018	PAYDOWN		12,275,000	12,275,000	11,939,750	12,301,833		(26,833)		(26,833)		12,275,000				266,272	10/28/2024	
36254V-AA-6	Go Finance Inc-SENIOR UNSECURED	D	02/01/2018	CITIGROUP GLOBAL MAR		399,600	400,000	394,416	394,424		28		28		394,452			5,148	5,148	2,644	01/31/2025
36256W-AA-2	GMR HYDERABAD INTERNATIO-FIRST LIEN	D	01/10/2018	DTCYD		296,550	300,000	300,000	300,000						300,000		(3,450)	(3,450)	2,656	10/27/2027	
36294B-AD-6	GS CALTEX CORP-SR UNSECURED	D	10/01/2018	MATURITY		5,000,000	5,000,000	5,073,030	5,027,685		(27,685)		(27,685)		5,000,000				121,875	10/01/2018	
36319G-AP-9	GALAXY CLO LTD-GALXY 2014-18A AR	D	08/14/2018	PAYDOWN		12,800,000	12,800,000	12,800,000	12,800,000						12,800,000				426,792	10/15/2026	
36320D-AG-3	GALAXY CLO LTD-GALXY 2014-17A D	D	07/16/2018	PAYDOWN		750,000	750,000	705,611	717,593		32,407		32,407		750,000				23,212	07/15/2026	
37255B-AA-7	GEOPARK LTD-FIRST LIEN	D	02/06/2018	EXCHANGE OFFER		650,000	1,300,000	1,300,000	1,300,000						1,300,000		(650,000)	(650,000)	8,215	09/21/2024	
37373W-AD-2	GERDAU TRADE INC-SENIOR UNSECURED	D	01/26/2018	DTCYD		405,000	400,000	396,104	396,132		23		23		396,155				5,200	10/24/2027	
37890R-AE-5	GLOBAL CONTAINER ASSET L-SERIES 2015-1A	D	12/05/2018	PAYDOWN		403,302	403,302	402,841	403,136		167		167		403,302				5,255	02/05/2030	
37952U-AD-5	GLOBAL SC FINANCE SRL-SER 2014-1A CL A	D	12/17/2018	PAYDOWN		300,000	300,000	299,937	299,960		40		40		300,000				5,184	07/17/2029	
37956A-AA-1	GLOBAL SC FINANCE SRL-SEACO 2017-1A A	D	12/17/2018	PAYDOWN		4,658,587	4,658,587	4,656,918	4,653,351		5,235		5,235		4,658,587				111,527	04/15/2037	
38060A-AA-2	GOLD FIELDS OROGEN HLDG BVI LTD GTD NT	D	11/14/2018	VARIOUS		5,983,300	6,000,000	6,178,500	6,165,225		(49,602)		(49,602)		6,115,624		(132,324)	(132,324)	252,146	10/07/2020	
38123H-AJ-3	GOLDENTREE LOAN OPPORTUN-SERIES 14-9D CL	D	10/29/2018	PAYDOWN		500,000	500,000	486,846	491,677		8,323		8,323		500,000				23,330	10/29/2026	
38137D-AA-5	GOLDENTREE LOAN OPP VII LTD-SR SEC NT CL	D	06/08/2018	PAYDOWN		20,144,170	20,144,170	19,852,080	20,327,238		(183,068)		(183,068)		20,144,170				160,069	04/25/2025	
38137D-AC-1	GOLDENTREE LOAN OPP VII LTD-SR SEC NT CL	D	06/08/2018	PAYDOWN		18,300,000	18,300,000	18,300,000	18,300,000						18,300,000				289,855	04/25/2025	
38137D-AG-2	GOLDENTREE LOAN OPP VII LTD-SR SEC NT CL	D	06/08/2018	PAYDOWN		5,400,000	5,400,000	5,400,000	5,400,000						5,400,000						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
39808P-AA-4	GREYWOLF CLO V LTD SR SEC'D NT CL A-1	D	01/25/2018	PAYDOWN		21,750,000	21,750,000	21,750,000	21,750,000						21,750,000				43,028	04/25/2027
39808P-AC-0	GREYWOLF CLO V LTD SR SEC'D NT CL A-2 144	D	01/25/2018	PAYDOWN		8,625,000	8,625,000	8,562,038	8,727,962		(102,962)		(102,962)		8,625,000				21,663	04/25/2027
40049J-AZ-0	GRUPO TELEVISIA SAB-SENIOR UNSECURED BOND	D	04/12/2018	UBS LIMITED		5,720,140	5,000,000	5,971,713	5,881,270		(6,820)		(6,820)		5,874,450		(154,310)	(154,310)	248,253	01/15/2040
40049J-BC-0	GRUPO TELEVISIA SAB SR UNSECURED	D	01/16/2018	DTCYID		708,000	600,000	598,062	598,209		21		21		598,200		109,770	109,770	17,150	01/31/2046
40053L-AA-3	GRUPO IDESA SA DE CV-SENIOR UNSECURED NO	D	10/18/2018	VARIOUS		172,502	200,000	216,400	206,650		(2,706)		(2,706)		203,944		(31,442)	(31,442)	13,125	12/18/2020
40066N-AA-4	GUANAY FINANCE LTD-SECURED NOTE	D	12/15/2018	SINKING PAYMENT		1,001,560	1,001,560	1,001,560	1,001,560						1,001,560				26,206	12/15/2020
404142-AH-7	HBOS PLC-SUBORDINATED	D	05/21/2018	MATURITY		100,000	100,000	107,872	101,725		(1,725)		(1,725)		100,000				2,625	05/21/2018
404280-AK-5	HSBC Holdings PLC-SENIOR UNSECURED NOTE	D	08/08/2018	CITIGROUP GLOBAL MAR		57,372	55,000	59,406	56,746		(309)		(309)		56,438		934	934	1,706	04/05/2021
404280-AY-5	HSBC HOLDINGS PLC-SENIOR UNSECURED	D	08/08/2018	MILLENNIUM ADVISORS		369,960	375,000	376,845	376,492		(261)		(261)		376,231		(6,271)	(6,271)	6,730	05/25/2021
40436Q-AC-6	HIGHBRIDGE LOAN MANAGEM-HLM 9A-2016 A2	D	08/02/2018	PAYDOWN		12,100,000	12,100,000	12,100,000	12,100,000						12,100,000				326,573	07/19/2027
42771L-AB-8	HERO Funding Trust 2017--SERIES 17-2A CL	C	12/20/2018	PAYDOWN		1,016,416	1,016,416	1,016,283	1,021,955		(5,539)		(5,539)		1,016,416				3,178	09/20/2048
42771L-AC-6	HERO Funding Trust 2017--SERIES 17-2A CL	C	12/20/2018	PAYDOWN		817,589	817,589	837,926	842,404		(24,815)		(24,815)		817,589				2,090	09/20/2048
43132R-AQ-4	HILDENE CLO LTD-SERIES 13-1A CLASS AR	D	01/17/2018	PAYDOWN		95,000,000	95,000,000	95,000,000	95,000,000						95,000,000				104,287	01/17/2026
43132R-AS-0	HILDENE CLO LTD-SERIES 13-1A CLASS BR	D	01/17/2018	PAYDOWN		18,100,000	18,100,000	18,100,000	18,100,000						18,100,000				24,077	01/17/2026
43132V-AN-2	HILDENE CLO LTD-HLDN 2014-3A AR	D	07/20/2018	PAYDOWN		36,775,000	36,775,000	36,775,000	36,775,000						36,775,000				869,527	10/20/2026
43132W-AC-4	HILDENE CLO IV LTD-SR SEC'D NT SER 2015-4	D	07/23/2018	PAYDOWN		10,000,000	10,000,000	10,000,000	10,000,000						10,000,000				240,957	07/23/2027
43132W-AE-0	HILDENE CLO IV LTD-DEF MEZZ NT SER 2015-4	D	07/23/2018	PAYDOWN		6,000,000	6,000,000	5,942,340	6,076,167		(76,167)		(76,167)		6,000,000				173,313	07/23/2027
443293-AB-1	HRVATSKA ELEKTROPRIVREDA-SR UNSECURED	D	05/31/2018	VARIOUS		20,568,510	19,678,000	19,965,572	19,890,695		(16,142)		(16,142)		19,874,552		693,958	693,958	488,398	10/23/2022
45112E-AC-3	ICICI BANK LTD/DUBAI-SENIOR UNSECURED NO	D	02/21/2018	MATURITY		10,575,000	10,575,000	11,071,362	10,589,652		(14,652)		(14,652)		10,575,000				69,031	02/21/2018
45112E-AG-4	ICICI BK LTD/DUBAI-MTN TRANCHE 00007	D	11/06/2018	VARIOUS		9,247,000	10,000,000	9,959,200	9,964,850		3,175		3,175		9,968,025		(721,025)	(721,025)	340,000	03/18/2026
45112F-AG-1	ICICI BANK LTD/DUBAI-SR UNSECURED	D	11/01/2018	CITIGROUP		4,970,700	5,000,000	5,033,658	5,015,055		(5,641)		(5,641)		5,009,415		(38,715)	(38,715)	147,778	03/18/2020
45303P-AA-5	INTERNATIONAL AUTOMOTIVE-SENIOR SECURED	D	05/23/2018	VARIOUS		11,074,783	11,079,000	10,524,200	11,029,887		42,393		42,393		11,072,280		2,503	2,503	369,555	06/01/2018
46062N-AA-5	INTEROCEANICA IV FINANCE-FIRST LIEN	D	11/30/2018	SINKING PAYMENT		67,977	67,977	66,915	67,333		644		644		67,977				2,985	11/30/2018
46137N-AB-4	Inversiones Latin Americ Senior Secured	C	09/30/2018	SINKING PAYMENT		62,799	62,799	62,799	62,799						62,799				2,985	03/31/2033
46507M-AD-4	ISRAEL ELECTRIC CORP LTD-SECURED NOTE	D	06/21/2018	MATURITY		2,000,000	2,000,000	2,117,500	2,014,141		(14,141)		(14,141)		2,000,000				53,125	06/21/2018
46507N-AD-2	ISRAEL ELECTRIC CORP LTD-SECURED	D	05/01/2018	DTCYID		1,111,590	1,100,000	1,148,400	1,116,604		(4,379)		(4,379)		1,112,225		(635)	(635)	7,688	06/21/2018
46556L-AK-0	ITAU UNIBANCO HLDG SA/KY-SR UNSECURED	D	05/26/2018	MATURITY		13,500,000	13,500,000	13,496,085	13,499,241		759		759		13,500,000				154,969	05/26/2018
466112-AH-2	JBS USA LLC/JBS USA FINA-SENIOR UNSECURE	D	02/12/2018	WELLS FARGO		8,195,084	8,170,000	8,587,700	8,180,178		93,726		93,726		8,273,904		(78,820)	(78,820)	78,636	02/01/2020
466112-AR-0	JBS USA LLC/JBS USA FINA-SENIOR UNSECURE	D	11/14/2018	BAMLINTLTD		2,421,875	2,500,000	2,500,000	2,500,000						2,500,000		(78,125)	(78,125)	125,781	06/15/2025
46611D-AA-3	JBS INVESTMENTS GMBH-SENIOR UNSECURED NO	D	10/29/2018	VARIOUS		8,779,937	8,610,000	8,638,932	8,626,791		(14,122)		(14,122)		8,770,248		9,689	9,689	925,726	10/28/2020
46619T-AA-0	JFIN CLO 2016 LTD - Sr Sec'd Nt Cl A-1	D	11/27/2018	PAYDOWN		15,000,000	15,000,000	15,000,000	15,000,000						15,000,000				532,749	07/27/2028
46639U-AB-1	KazMunayGas National Co -SENIOR UNSECURE	D	05/11/2018	VARIOUS		22,741,600	21,700,000	21,309,211	21,327,914		3,877		3,877		22,133,391		608,209	608,209	1,387,915	04/30/2043
47215T-AA-6	JB Y CO SA DE CV-SR UNSECURED	D	04/16/2018	DTCYID		300,000	300,000	297,015	297,683		85		85		297,768				3,344	05/13/2025
478375-AP-3	JOHNSON CONTROLS INTL PL-SENIOR UNSECURE	D	01/15/2018	MATURITY		5,000,000	5,000,000	5,090,833	5,003,375		(3,375)		(3,375)		5,000,000				7,292	01/15/2018
48244X-AA-0	KDAC Aircraft Finance Lt-SERIES 17-1A CL	D	11/15/2018	PAYDOWN		2,252,721	2,252,721	2,252,643	2,252,640		81		81		2,252,721				46,460	12/20/2042
48250W-AA-3	KKR CLO 14 LTD-SR SEC'D NT SER 14 CL A-1A	D	08/23/2018	PAYDOWN		13,000,000	13,000,000	13,000,000	13,000,000						13,000,000				312,055	07/15/2028
49638W-AB-2	KINGSLAND VI LTD-SR SEC'D NT CL A1 144A	D	04/30/2018	PAYDOWN		161,500,000	161,500,000	159,885,000	163,766,619		(2,266,619)		(2,266,619)		161,500,000				1,505,408	10/28/2024
49638W-AD-8	KINGSLAND VI LTD-SEC'D DEF MEZZ NT CL C 1	D	04/30/2018	PAYDOWN		41,800,000	41,800,000	41,536,660	42,988,525		(1,188,525)		(1,188,525)		41,800,000				493,323	10/28/2024
49638W-AE-6	KINGSLAND LTD-SERIES 2013-6A CLASS C	D	04/30/2018	PAYDOWN		23,750,000	23,750,000	23,595,625	24,507,560		(757,560)		(757,560)		23,750,000				398,057	10/28/2024
49638Y-AA-0	KINGSLAND VII LTD-SR SEC'D NT CL A 144A	D	01/24/2018	PAYDOWN		143,000,000	143,000,000	142,413,700	145,193,337		(2,193,337)		(2,193,337)		143,000,000				261,728	07/24/2026
49638Y-AC-6	KINGSLAND VII LTD-SR SEC'D NT CL B 144A	D	01/24/2018	CALL 100		18,500,000	18,500,000	18,327,950	18,885,720		1,634		1,634		18,887,355		(387,355)	(387,355)	42,133	07/24/2026
49835W-AA-5	KKR PM L.P. - CorpBond	C	08/20/2018	CA CASH CLOSE		4,050,000	4,050,000	4,050,000	4,050,000						4,050,000				212,321	06/17/2031
50181G-AS-9	LCM LTD PARTNERSHIP-SERIES 16A CLASS BR	D	12/04/2018	PAYDOWN		10,100,000	10,100,000	10,100,000	10,100,000						10,100,000				344,844	07/15/2026
50181G-AU-4	LCM LTD PARTNERSHIP-SERIES 16A CLASS CR	D	12/04/2018	PAYDOWN		8,500,000	8,500,000	8,500,000	8,500,000						8,500,000				326,021	07/15/2026
50184V-AC-8	LCM XIV LTD PARTNERSHIP-SR NT SER 14A CL	D	06/06/2018	PAYDOWN		31,389,004	31,389,004	31,070,942	31,788,141		(399,137)		(399,137)		31,389,004				313,020	07/15/2025
50184V-AE-4	LCM XV LTD PARTNERSHIP-SR SEC'D NT SER 15	D	06/06/2018	PAYDOWN		14,500,000	14,500,000	14,275,250	14,845,139		(345,139)		(345,139)		14,500,000				222,517	07/15/2025
50184V-AG-9	LCM XIV LTD PARTNERSHIP-DEF MEZZ NT CL C	D	06/06/2018	PAYDOWN		12,800,000	12,800,000	12,194,560	12,954,178		(154,178)		(154,178)		12,800,000				257,442	07/15/2025
50188G-AE-3	LCM XVIII LTD PARTNERSHIP-SR NT SER 18A	D	05/01/2018	PAYDOWN		12,500,000	12,500,000	12,500,000	12,500,000						12,500,000				168,088	04/20/2027
50188G-AN-3	LCM XVIII LTD PARTNERSHIP-DEF MEZZ NT CL	D	05/01/2018	PAYDOWN		6,500,000	6,500,000	6,485,112	6,583,567		(83,567)		(83,567)		6,500,000				119,906	04/20/2027
50189C-AE-1	LCM XXI LTD PARTNERSHIP-SR NT SER 21A CL	D	04/20/2018	PAYDOWN																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
55818R-AT-3	MADISON PARK FUNDING LTD-SERIES 14-14A C	D	10/22/2018	PAYDOWN		11,380,000	11,380,000	11,380,000	11,380,000						11,380,000				385,718	07/20/2026
55819T-AG-6	MADISON PARK FDG XX LTD-SECD DEF NT CL C	D	06/29/2018	PAYDOWN		5,850,000	5,850,000	5,787,990	5,850,000						5,850,000				151,633	04/27/2027
55951P-AR-8	MAGNETITE CLO LTD-MAGNE 2012-7A A2R	D	02/13/2018	PAYDOWN		6,850,000	6,850,000	6,850,000	6,850,000						6,850,000				(18,670)	01/15/2025
55952Y-AK-3	MAGNETITE CLO LTD-SERIES 14-8A CLASS BR	D	05/14/2018	PAYDOWN		13,900,000	13,900,000	13,900,000	13,900,000						13,900,000				182,943	04/15/2026
55952Y-AL-1	MAGNETITE CLO LTD-MAGNE 2014-8A CLASS CR	D	05/14/2018	PAYDOWN		7,200,000	7,200,000	7,200,000	7,200,000						7,200,000				87,565	04/15/2026
55953H-AL-7	MAGNETITE CLO LTD-SERIES 2015-12A CLASS	D	09/06/2018	PAYDOWN		10,000,000	10,000,000	10,000,000	10,000,000						10,000,000				212,859	04/15/2027
55953M-AG-7	MAGNETITE CLO LTD-MAGNE 2015-15A D	D	06/13/2018	PAYDOWN		2,750,000	2,750,000	2,742,831	2,750,000						2,750,000				49,339	10/25/2027
55954E-AJ-8	MAGNETITE XVII LTD-DEF MEZZ NT SER 16-17	D	07/03/2018	PAYDOWN		4,330,000	4,330,000	4,330,000	4,330,000						4,330,000				118,839	04/20/2028
56564R-AB-6	MAPS 2018-1 Ltd-SERIES 18-1A CLASS B	D	12/15/2018	PAYDOWN		221,842	221,842	224,203			(2,361)		(2,361)		221,842				2,380	05/15/2043
56565U-AH-5	MARFRIG HOLDING EUROPE B-SENIOR UNSECURE	D	10/18/2018	VARIOUS		762,750	750,000	740,175	741,848		921		921		742,768		19,982	19,982	51,667	06/08/2023
59126L-AA-6	METALLOINVEST FINANCE-SENIOR UNSECURE	D	12/13/2018	JPMILON		9,462,500	10,000,000	10,000,000	10,000,000						10,000,000		(537,500)	(537,500)	466,139	05/02/2024
59146Q-AA-0	Metcash Trading Ltd Gtd Senior Note	D	10/26/2018	CA CASH CLOSE		18,746,000	18,200,000	18,200,000	18,200,000						18,746,000				1,290,203	09/11/2023
59146Q-AB-2	Metcash Trading Ltd Gtd Senior Note	D	10/26/2018	CA CASH CLOSE		4,550,000	4,550,000	4,550,000	4,550,000						4,550,000				162,561	09/09/2019
59284B-AB-4	MEXIICHEM SAB DE CV SR NT	D	11/23/2018	HSBC SECURITIES INC		995,000	1,000,000	972,500	983,328		2,881		2,881		986,209		8,791	8,791	44,146	09/19/2022
59284M-AA-2	MEXICO CITY ARPT TRUST-SECURED	D	12/03/2018	CITIGROUP		3,382,000	3,800,000	3,762,342	3,766,145		3,022		3,022		3,769,167		(387,167)	(387,167)	149,836	10/31/2026
59284M-AB-0	MEXICO CITY ARPT TRUST-SECURED	D	10/19/2018	DEUTSCHE BANK AG		998,280	1,180,000	1,163,846	1,164,104		268		268		1,164,373		(166,093)	(166,093)	94,382	10/31/2046
59284M-AD-6	MEXICO CITY AIRPORT TRUS-SECURED	D	10/19/2018	DEUTSCHE BANK AG		1,127,175	1,330,000	1,321,993	1,321,902		(10)		(10)		1,321,892		(194,717)	(194,717)	80,059	07/31/2047
603374-AB-5	MINERVA LUXEMBOURG SA GTD NT	D	01/01/2018	TENDERED		7,725,400	7,600,000	7,877,800	7,753,279		1,988		1,988		7,755,267		(29,867)	(29,867)	(27,814)	01/31/2023
603374-AE-9	Minerva Luxembourg SA-SENIOR UNSECURE	D	02/01/2018	CITIGROUP GLOBAL MAR		291,000	300,000	294,393	294,398		21		21		294,419		(3,419)	(3,419)	1,665	01/19/2028
62856R-AB-1	MYRIAD INTL HOLDINGS BV-SENIOR UNSECURE	D	01/08/2018	GOLDMAN SACHS INTERN		6,438,000	6,000,000	6,518,250	6,230,195		(2,055)		(2,055)		6,238,140		209,860	209,860	9,000	07/18/2020
62856R-AC-9	Myriad International Hoi-SR UNSECURE	D	09/21/2018	DTCCYD		929,250	900,000	899,658	899,692		(22)		(22)		899,670		29,580	29,580	58,300	07/21/2025
62877B-AB-1	NORWEGIAN AIR 16-1 B PTT-SECURED	D	11/10/2018	VARIOUS		5,638,474	5,469,507	5,905,282	5,865,886		(41,632)		(41,632)		5,727,084		(88,610)	(88,610)	235,506	11/10/2023
62878B-AA-9	NORWEGIAN AIR 16-1 A PTT-SECURED	D	11/10/2018	SINKING PAYMENT		139,920	139,920	136,030			132		132		139,920				3,411	05/10/2028
62953G-AC-5	NZCG FUNDING LTD-SERIES 2015-2A CLASS A2	D	01/29/2018	PAYDOWN		10,725,000	10,725,000	10,627,295	10,851,760		(126,760)		(126,760)		10,725,000				31,068	04/27/2027
63745E-AA-2	NATIONAL SAVINGS BANK-SENIOR UNSECURE	D	09/18/2018	MATURITY		9,600,000	9,600,000	10,426,500	9,804,071		(204,071)		(204,071)		9,600,000				608,233	09/18/2018
63859U-BC-6	NATIONWIDE BLDG SOC TRANCHE SR 00027	D	08/14/2018	TORONTO DOMINION SEC		197,550	200,000	199,934	199,971		8		8		199,979		(2,429)	(2,429)	2,938	01/21/2020
64129X-AG-4	NEUBERGER BERMAN CLO XVI-SR SECD NT CL B	D	01/16/2018	PAYDOWN		13,300,000	13,300,000	13,217,540	13,607,381		(307,381)		(307,381)		13,300,000				18,615	04/15/2026
66934B-AB-0	Norwegian Air Shuttle AS Pass Thur Cifs	D	12/27/2018	SINKING PAYMENT		2,913,305	2,913,305	2,905,820	2,908,434		778		778		2,913,305					12/31/2026
67092R-AA-6	OCF CLO 2016-12 Ltd-SERIES 16-12A CLASS	D	10/18/2018	PAYDOWN		10,500,000	10,500,000	10,489,500	10,566,068		(66,068)		(66,068)		10,500,000				310,129	10/18/2028
67104C-AB-3	OAK HILL CREDIT PARTNERS-SERIES 2013-8	D	07/20/2018	PAYDOWN		14,675,000	14,675,000	14,362,344	14,861,953		(186,953)		(186,953)		14,675,000				296,266	04/20/2025
67104C-AC-1	OAK HILL CREDIT PARTNERS-SERIES 2013-8A	D	07/20/2018	PAYDOWN		9,000,000	9,000,000	9,000,000	9,000,000						9,000,000				234,197	04/20/2025
67104L-AA-5	OHA LN FDG 2013-2 LTD-SR SECD NT CL A	D	05/23/2018	PAYDOWN		31,920,568	31,920,568	31,757,773	32,475,681		(555,114)		(555,114)		31,920,568				353,293	08/23/2024
67104L-AB-3	OHA LN FDG 2013-2 LTD-SR SECD NT CL B	D	05/23/2018	PAYDOWN		23,550,000	23,550,000	23,479,350	24,310,955		(760,955)		(760,955)		23,550,000				333,351	08/23/2024
67104L-AC-1	OHA LN FDG 2013-2 LTD-MEZZ SECD DEF NT C	D	05/23/2018	PAYDOWN		6,600,000	6,600,000	6,454,800	6,749,581		(149,581)		(149,581)		6,600,000				131,172	08/23/2024
67106J-AN-0	OHA CREDIT PARTNERS LTD-OAKC 2014-10A AR	D	12/12/2018	PAYDOWN		50,000,000	50,000,000	50,000,000	50,000,000						50,000,000				1,951,638	07/20/2026
67106J-AO-3	OHA CREDIT PARTNERS LTD-OAKC 2014-10A BR	D	12/12/2018	PAYDOWN		38,750,000	38,750,000	38,750,000	38,750,000						38,750,000				1,732,224	07/20/2026
67106J-AS-9	OHA CREDIT PARTNERS LTD-OAKC 2014-10A CR	D	12/12/2018	PAYDOWN		7,000,000	7,000,000	7,000,000	7,000,000						7,000,000				365,010	07/20/2026
675757-AA-6	Odebrecht Drilling Norbe-1ST LIEN	D	01/03/2018	VARIOUS		1,021,482	1,529,322	396,109	187,044		238,617		238,617		(210,482)				49,342	06/30/2021
675757-AB-4	Odebrecht Drilling Norbe-FIRST LIEN	D	12/01/2018	VARIOUS		370,391	373,681	195,323			69,006		69,006		321,049				241	12/01/2021
67576G-AA-5	Odebrecht Offshore Drlll FIN SR SECD NT	D	01/01/2018	VARIOUS		560,630	1,383,009	790,170	455,637		326,611	12,574	344,037		566,604		(5,974)	(5,974)	(115,586)	10/01/2022
67576G-AB-3	Odebrecht Offshore Drlll FIN SR SECD NT	D	01/01/2018	VARIOUS		254,145	633,280	546,451	205,584		335,052	7,819	327,233		259,274		(5,129)	(5,129)	(25,353)	10/01/2022
67576G-AC-1	Odebrecht Offshore Drlll-FIRST LIEN	D	12/01/2018	SINKING PAYMENT		107,222	107,222	103,469			859		859		107,222				2,806	12/01/2022
67590B-AA-8	OCTAGON INV PARTNERS XVI LTD-SR SECD NT	D	07/17/2018	PAYDOWN		30,907,470	30,907,470	30,397,099	31,137,796		(230,326)		(230,326)		30,907,470				348,154	07/17/2025
67590B-AC-4	OCTAGON INV PARTNERS XVI LTD-SR SECD NT	D	07/17/2018	PAYDOWN		10,950,000	10,950,000	10,950,000	10,950,000						10,950,000				214,979	07/17/2025
67590B-AE-0	OCTAGON INV PARTNERS XVI LTD-SR SECD NT	D	07/17/2018	PAYDOWN		5,400,000	5,400,000	5,400,000	5,400,000						5,400,000				139,999	07/17/2025
69033C-AA-7	OVERSEA-CHINESE BANKING-SUBORDINATED NOT	D	03/12/2018	CALL 100		4,000,000	4,000,000	4,030,540	4,001,582		8,190		8,190		4,009,771			(9,771)	24,850	03/11/2023
69342N-AA-9	PKO FIN AB PUBL LN PARTN NT	D	11/14/2018	ING BANK NV		4,973,500	4,900,000	5,232,250	5,162,581		(45,408)		(45,408)		5,117,173		(143,673)	(143,673)	198,511	09/26/2022
69688X-AL-5	PALMER SQUARE CLO LTD-SERIES 2014-14 CLA	D	01/17/2018	PAYDOWN		10,600,000	10,600,000	10,600,000	10,600,000						10,600,000				22,386	01/17/2027
716420-AB-3	PETRA DIAMONDS US TREAS-2ND LIEN	D	10/18/2018	VARIOUS		632,938	650,000	645,125	645,348		800		800		646,149		(13,211)	(13,211)	45,423	05/01/2022
71645H-AO-4	PETROBRAS GLOBAL FINANCE-SENIOR UNSECURE	D	06/26/2018	VARIOUS		7,708,615	8,408,000	8,649,921	8,632,195		(2,706)		(2,706)		8,629,489					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
71647N-AA-9	PETROBRAS GLOBAL FINANCE-SENIOR UNSECURE	D	09/21/2018	EXCHANGE OFFER		10,439,530	11,072,500	10,396,297			33,222		33,222		10,439,530				479,736	01/27/2028
71647X-AA-5	PETROBRAS ARGENTINA SA-SENIOR UNSECURED	D	07/25/2018	BARCLAYS CAPITAL INC		2,165,625	2,250,000	2,348,438	2,341,046		(9,994)		(9,994)		2,331,052		(165,427)	(165,427)	168,703	07/21/2023
716540-BB-7	PETROLEOS MEXICANOS-SENIOR UNSECURED NOT	D	10/18/2018	VARIOUS		361,304	356,000	342,472	346,210		1,731		1,731		347,941		13,363	13,363	21,405	01/24/2022
716540-BQ-4	PETROLEOS MEXICANOS-SR UNSECURED	D	02/16/2018	TENDERED		14,695	15,000	15,000	15,000						15,000		(305)	(305)	59	01/23/2019
71656L-BP-5	PETROLEOS MEXICANOS-SENIOR UNSECURED	D	03/28/2018	EXCHANGE OFFER		14,934	15,000	14,917	14,929		4		4		14,934				195	03/13/2022
72349B-AK-0	PINNACLE PARK CLO LTD-SERIES 2014-1A CLA	D	04/16/2018	PAYDOWN		18,700,000	18,700,000	18,700,000	18,700,000						18,700,000				205,107	04/15/2026
72349B-AL-8	PINNACLE PARK CLO LTD-SERIES 2014-1A CLA	D	04/16/2018	PAYDOWN		6,100,000	6,100,000	6,100,000	6,100,000						6,100,000				81,140	04/15/2026
74734L-AA-9	QOGG ATLANTIC/ALASKAN RI-SECURED BOND	D	07/30/2018	SINKING PAYMENT		2,656,250	2,656,250	4,023,450	2,656,250						2,656,250				73,021	07/30/2018
74951P-BT-4	RESI FINANCE LIMITED PAR-SERIES 2003-C C	D	12/10/2018	PAYDOWN		155,098	155,098	23,102	63,122		91,976		91,976		155,098				2,232	09/10/2035
74951P-BV-9	RESI FINANCE LIMITED PAR-SERIES 2003-C C	D	12/10/2018	PAYDOWN		34,923	34,923		7,085		27,837		27,837		34,923				695	09/10/2035
74973D-AH-2	OJSC RUSS AGRIC BK(RSHB)-SENIOR UNSECURE	D	07/25/2018	MATURITY		1,000,000	1,000,000	1,020,000	1,005,044		(5,044)		(5,044)		1,000,000				28,900	07/25/2018
74977E-PZ-0	RABOBANK NEDERLAND NY-MT DEP NTS TRO0036	D	03/19/2018	MATURITY		300,000	300,000	299,625	299,961		39		39		300,000				1,105	03/19/2018
74983D-AA-5	RACE POINT X CLO LTD SR SEC ND CL A	D	07/25/2018	PAYDOWN		41,400,000	41,400,000	41,400,000	41,400,000						41,400,000				842,495	07/25/2028
74983D-AC-1	RACE POINT X CLO LTD SR SEC ND CL B-1	D	07/25/2018	PAYDOWN		8,060,000	8,060,000	8,060,000	8,060,000						8,060,000				198,445	07/25/2028
751020-AC-2	RAIT CRE CDO I LTD-3RD PRIORITY SR SEC	D	12/20/2018	PAYDOWN		1,175,161	1,175,161	846,116	1,173,121		2,040		2,040		1,175,161				23,593	11/20/2046
75405T-AA-7	RAS LAFFAN LNG II-SECURED BOND	D	09/30/2018	SINKING PAYMENT		1,686,224	1,686,224	1,907,801	1,742,114		(30,584)		(30,584)		1,686,224				67,193	09/30/2020
75735K-AA-7	Rede D'or Finance Sarl-SENIOR UNSECURED	D	02/06/2018	DTCYD		778,300	800,000	800,000							800,000		(21,700)	(21,700)	2,241	01/17/2028
75887N-AC-3	REGATTA VI FUNDING LTD-SER 2016-1A CL A	C	10/22/2018	PAYDOWN		8,230,000	8,230,000	8,224,239	8,299,747		(69,747)		(69,747)		8,230,000				254,744	07/20/2028
75887V-AC-5	REGATTA IX FUNDING LTD-SERIES 17-1A CLAS	C	04/11/2018	JP MORGAN SECURITIES		8,568,560	8,560,000	8,560,000	8,560,000						8,560,000		8,560	8,560	8,560	04/17/2030
76720A-AF-3	RIO TINTO FIN USA PLC GTD NT	D	04/19/2018	CALL 100.115369		34,039	34,000	30,948	31,782		130		130		31,951		2,088	2,088	332	08/21/2022
775371-AG-2	ROHM & HAAS HOLDINGS LTD-DEBENTURE	D	10/15/2018	SINKING PAYMENT		600,000	600,000	600,000	600,000						600,000				44,100	04/15/2020
77879R-AB-2	ROTOR Engines Securitization - Senior Se	D	12/17/2018	VARIOUS		21,321,397	21,321,397	20,681,755			602,396		602,396		21,321,397				102,165	06/15/2046
780097-AY-7	ROYAL BK SOTLND GRP PLC-SUBORDINATED	D	06/29/2018	JP MORGAN SECURITIES		831,127	790,000	823,317	817,428		(2,234)		(2,234)		815,193		15,934	15,934	24,363	06/10/2023
780099-OH-8	ROYAL BK SOTLND GRP PLC-SUBORDINATED	D	06/29/2018	JP MORGAN SECURITIES		1,371,914	1,360,000	1,354,064	1,354,987		331		331		1,355,319		16,595	16,595	35,237	05/28/2024
780153-AJ-1	ROYAL CARIBBEAN CRUISES-SENIOR UNSECURED	D	03/15/2018	MATURITY		1,815,000	1,815,000	2,050,950	1,825,205		(10,205)		(10,205)		1,815,000				27,049	03/15/2018
78406J-AE-4	SB CAP SA LN PARTN NTE	D	10/18/2018	VARIOUS		860,129	860,000	871,825	868,553		(5,066)		(5,066)		863,486		(3,357)	(3,357)	54,132	02/26/2024
78520L-AB-6	SABIC Capital II BV-SENIOR UNSECURED	D	12/20/2018	VARIOUS		10,000,000	10,000,000	9,917,400			728		728		9,918,128		81,872	81,872	92,500	10/10/2028
79410U-AC-5	SALEM FIELDS CLO LTD-SERIES 16-2A CLASS	D	10/25/2018	PAYDOWN		9,150,000	9,150,000	9,150,000	9,150,000						9,150,000				314,129	10/25/2028
79586K-AC-5	SAMARCO MINERACAO SA NT	D	06/14/2018	BARCLAYS CAPITAL INC		3,431,250	5,000,000	1,556,250	1,911,449		112,344		112,344		2,023,794		1,407,456	1,407,456		10/24/2023
796050-AE-2	Samsung Electronics Co L-DEBENTURE	D	10/01/2018	SINKING PAYMENT		259,850	259,850	280,270	267,933		(1,175)		(1,175)		259,850				20,008	10/01/2027
80283L-AA-1	SANTANDER UK PLC-SUBORDINATED	D	11/15/2018	CREDIT AGRICOLE CIB		1,401,501	1,415,000	1,472,578	1,462,746		(6,419)		(6,419)		1,456,328		(54,827)	(54,827)	2,008	11/07/2023
80283L-AF-0	SANTANDER UK PLC-NOTE	D	08/24/2018	MATURITY		183,000	183,000	182,992	182,997		3		3		183,000				2,369	08/24/2018
80306A-AB-6	SAPPHIRE AVIATION FINANC-SERIES 18-1A CL	D	12/15/2018	PAYDOWN		172,222	172,222	176,799			(4,577)		(4,577)		172,222				2,065	03/15/2040
804133-AB-2	SAUDI ELEC GLOBAL SUKUK-UNSECURED CTF 14	D	10/22/2018	GOLDMAN SACHS INTERN		238,125	250,000	261,947	261,345		(182)		(182)		261,163		(23,038)	(23,038)	10,296	04/08/2043
817176-AL-4	SENECA PARK CLO LTD-SPARK 2014-1A AR	D	10/17/2018	PAYDOWN		1,780,513	1,780,513	1,780,513	1,780,513						1,780,513				65,557	07/17/2026
81725H-AH-6	SENSATA TECHNOLOGIES BV-SENIOR UNSECURED	D	05/07/2018	MORGAN		1,372,800	1,320,000	1,320,000	1,320,000						1,320,000		52,800	52,800	28,380	11/01/2024
81789G-AA-9	SEVEN STICKS CLO LTD-SR SEC ND CL A-1 1	D	07/16/2018	PAYDOWN		17,400,000	17,400,000	17,400,000	17,400,000						17,400,000				349,046	07/15/2028
81789G-AC-5	SEVEN STICKS CLO LTD-SR SEC ND CL A-2 1	D	07/16/2018	PAYDOWN		7,370,000	7,370,000	7,370,000	7,370,000						7,370,000				171,918	07/15/2028
822538-AC-8	SHELF DRILL HOLD LTD-SHLFDI 9 1/2 11/02/	D	02/23/2018	VARIOUS		(1)	(1)	(1)	(1)						(1)					11/02/2020
83238P-AB-0	Smiths Group PLC-SENIOR UNSECURED NOTE	D	09/04/2018	CALL 102.90792		4,479,237	4,350,000	4,239,467	4,328,890		9,707		9,707		4,467,834		11,403	11,403	340,647	05/15/2019
83609J-AA-7	SOUND POINT CLO XI LTD-SR SEC ND CL A 1	D	12/06/2018	PAYDOWN		22,220,000	22,220,000	22,173,294	22,220,000						22,220,000				794,924	07/20/2028
84302L-AA-0	SOUTHERN GAS CORRIDOR-SENIOR UNSECURED	D	11/15/2018	ING BANK NV		5,306,750	5,000,000	5,372,542	5,347,033		(29,877)		(29,877)		5,317,157		(10,407)	(10,407)	396,267	03/24/2026
846502-AC-6	SPARC EM SPC SR SEC ND SER 2017-1	D	12/05/2018	VARIOUS		1,088,281	1,175,859	1,055,979			18,006		18,006		1,088,368		(87)	(87)		12/05/2022
85572R-AB-5	Start Ltd/Bermuda-STARR 2018-1 B	D	12/15/2018	PAYDOWN		666,667	666,667	662,330			4,338		4,338		666,667				7,002	05/15/2043
85628U-AF-3	STATE BANK INDIA/LONDON-SENIOR UNSECURED	D	10/02/2018	VARIOUS		13,699,300	13,500,000	14,004,080	13,856,020		(37,448)		(37,448)		13,818,572		(119,272)	(119,272)	498,401	04/17/2024
856899-AA-7	STATE GRID OVERSEAS INV-SENIOR UNSECURED	D	05/22/2018	MATURITY		105,000	105,000	103,404	104,853		147		147		105,000				720	05/22/2018
85805R-AC-2	STEEL CAP SA LN PARTN NT PROG TRANCHE TR	D	03/19/2018	MATURITY		2,500,000	2,500,000	2,475,000	2,497,641		2,359		2,359		2,500,000				24,104	03/19/2018
858102-AD-8	STEELE CREEK CLO 2016-1 LTD-SR SEC ND C	D	06/15/2018	PAYDOWN		17,325,000	17,325,000	17,303,344	17,527,147		(202,147)		(202,147)		17,325,000				284,858	06/15/2028
85815X-AQ-6	STEELE CREEK CLO LTD-STOR 2014-1A A1R	D	02/21/2018	PAYDOWN		135,000,000	135,000,000	135,000,000	135,000,000						135,000,000				529,891	08/21/2026
860444-AC-2	Stewart Park CLO Ltd -SR SECURED NOTE CL	D	01/16/2018	PAYDOWN		8,610,000	8,610,000	8,610,000	8,610,000						8,610,000				12,051	04/15/2026
86358E-DS-2	STRUCTURED ASSET INVESTM-SERIES 2003-BC9	C	12/26/2018	PAYDOWN		3,793	3,793	3,798	3,793						3,793				43	08/2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
87154E-AN-0	SYMPHONY CLO LTD-SERIES 14-15A CLASS CR	D	12/24/2018	PAYDOWN		2,700,000	2,700,000	2,700,000	2,700,000						2,700,000				116,886	10/17/2026
87154E-AQ-3	SYMPHONY CLO LTD-SYMP 2014-15A DR	D	12/24/2018	PAYDOWN		3,600,000	3,600,000	3,600,000	3,600,000						3,600,000				253,229	10/17/2026
87165V-AE-9	SYMPHONY CLO LTD-SYMP 2015-16A D	D	09/07/2018	PAYDOWN		4,000,000	4,000,000	3,936,672	3,976,790		23,210		23,210		4,000,000				159,345	07/15/2028
872455-AN-0	TICP CLO LTD-TICP 2014-1A A1R	D	04/26/2018	PAYDOWN		110,000,000	110,000,000	110,000,000	110,000,000						110,000,000				1,001,267	04/26/2026
872455-AS-9	TICP CLO LTD-TICP 2014-1A A2BR	D	04/26/2018	PAYDOWN		20,000,000	20,000,000	20,000,000	20,000,000						20,000,000				208,882	04/26/2026
87247C-AN-3	TICP CLO LTD-TICP 2014-2A A1AR	D	04/20/2018	PAYDOWN		38,550,000	38,550,000	38,550,000	38,550,000						38,550,000				333,539	07/20/2026
87247C-AQ-6	TICP CLO LTD-TICP 2014-2A A2AR	D	04/20/2018	PAYDOWN		15,375,000	15,375,000	15,375,000	15,375,000						15,375,000				149,948	07/20/2026
87247U-AS-2	TICP CLO LTD-TICP 2014-3A AR	D	04/20/2018	PAYDOWN		40,000,000	40,000,000	40,000,000	40,000,000						40,000,000				606,073	01/20/2027
87247U-AU-7	TICP CLO LTD-TICP 2014-3A B1R	D	04/20/2018	PAYDOWN		15,000,000	15,000,000	15,000,000	15,000,000						15,000,000				264,027	01/20/2027
87261G-AF-2	ROSNEFT FINANCE SA-SR UNSECURED	D	03/13/2018	MATURITY		9,470,000	9,470,000	10,119,288	9,530,928		(60,928)		(60,928)		9,470,000				149,153	03/13/2018
87261P-AD-7	ROSNEFT FINANCE SA-SR UNSECURED	D	10/18/2018	VARIOUS		389,121	376,000	391,040	383,815		(2,902)		(2,902)		380,913		8,208	8,208	33,015	02/02/2020
87288Z-AC-9	TSMC GLOBAL LTD-SENIOR UNSECURED NOTE	D	04/03/2018	MATURITY		5,000,000	5,000,000	4,949,100	4,996,244		3,756		3,756		5,000,000				20,764	04/03/2018
87939H-AP-8	TELEFONICA EMISIONES SAU-SENIOR NOTE	D	04/16/2018	CREDIT AGRICOLE CIB		31,847	30,000	30,000	30,000						30,000		1,847	1,847	1,102	02/16/2021
87973P-AA-2	TEMASEK FINANCIAL I LTD-SENIOR UNSECURED	D	11/09/2018	AUSTRALIA & NEW ZEAL		7,582,650	7,500,000	8,620,943	7,813,225		(148,510)		(148,510)		7,664,715		(82,065)	(82,065)	280,396	10/25/2019
88039H-AA-6	NEMAK SAB DE CV-SENIOR UNSECURED NOTE	D	02/28/2018	CALL 102.75		5,651,250	5,500,000	5,637,500	5,570,306		(2,878)		(2,878)		5,718,677		(67,427)	(67,427)	199,146	02/28/2023
88167A-AC-5	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D	08/30/2018	VARIOUS		2,343,165	2,500,000	2,403,950	2,410,297		16,006		16,006		2,426,302		(83,137)	(83,137)	61,081	07/21/2021
88167A-AE-1	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D	04/13/2018	MARKETAXESS FINANCA		186,392	230,000	210,273	210,915		540		540		211,455		(25,063)	(25,063)	3,945	10/01/2026
88167A-AF-8	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D	04/13/2018	VARIOUS		22,866	30,000	29,750	29,758		2		2		29,760		(6,894)	(6,894)	670	10/01/2046
88315F-AA-9	TEXTAINER MARINE CONTAIN-SERIES 17-1A CL	D	12/20/2018	PAYDOWN		958,307	958,307	958,265	958,542		(235)		(235)		958,307				21,936	05/20/2042
88315F-AE-1	TEXTAINER MARINE CONTAIN-SERIES 17-2A CL	D	12/20/2018	PAYDOWN		832,041	832,041	831,893	831,294		747		747		832,041				17,679	06/20/2042
88315L-AA-6	Textainer Marine Contain-TMCL 2018-1A A	D	12/20/2018	PAYDOWN		969,000	969,000	957,546	957,546		11,454		11,454		969,000				8,186	08/20/2043
88390A-AF-7	THL CR WIND RIV 2014-2 CLO SR SEC2 NT CL	D	01/16/2018	PAYDOWN		14,000,000	14,000,000	13,729,100	14,179,655		(179,655)		(179,655)		14,000,000				20,178	07/15/2026
88432C-AS-5	WIND RIVER CLO LTD-WINDR 2014-1A B1R	D	05/31/2018	PAYDOWN		15,000,000	15,000,000	15,000,000	15,000,000						15,000,000				213,688	04/18/2026
88432C-AW-6	WIND RIVER CLO LTD-WINDR 2014-1A CR	D	05/31/2018	PAYDOWN		3,800,000	3,800,000	3,800,000	3,800,000						3,800,000				65,218	04/18/2026
88432D-AS-3	WIND RIVER CLO LTD-SERIES 14-3A CLASS BR	D	10/03/2018	PAYDOWN		11,400,000	11,400,000	11,400,000	11,400,000						11,400,000				320,236	01/22/2027
88432D-AU-8	WIND RIVER CLO LTD-SERIES 14-3A CLASS C1	D	10/03/2018	PAYDOWN		2,600,000	2,600,000	2,600,000	2,600,000						2,600,000				84,953	01/22/2027
88433A-AC-3	THL CR WIND RIV 2016-1 CLO-SR SEC2 NT CL	D	07/20/2018	PAYDOWN		12,625,000	12,625,000	12,625,000	12,625,000						12,625,000				297,937	07/15/2028
88433A-AE-9	THL CR WIND RIV 2016-1 CLO-SR SEC2 NT CL	D	07/20/2018	PAYDOWN		6,585,000	6,585,000	6,585,000	6,585,000						6,585,000				185,873	07/15/2028
88433B-AC-1	WIND RIVER CLO LTD-SERIES 16-2A CLASS B	D	11/01/2018	PAYDOWN		5,750,000	5,750,000	5,750,000	5,750,000						5,750,000				213,224	11/01/2028
886065-AB-7	Thunderbolt Aircraft Lea-TBOLT 2018-A B	D	12/15/2018	PAYDOWN		214,286	214,286	214,844	214,844		(558)		(558)		214,286				3,139	09/15/2038
89365*-AC-6	Transfield Services Hold Gtd Senior Note	D	09/24/2018	CA CASH CLOSE		13,875,233	13,200,000	13,200,000	13,200,000						13,875,233				1,378,232	12/29/2019
893830-BB-4	TRANSOCEAN INC SR NT	D	06/08/2018	BB&T CAPITAL MARKETS		4,397,250	4,100,000	4,097,786	4,221,097		(11,814)		(11,814)		4,209,283		187,967	187,967	148,440	12/15/2021
893830-BC-2	TRANSOCEAN INC-SENIOR UNSECURED NOTE	D	06/05/2018	CREDIT AGRICOLE CIB		4,812,000	4,800,000	4,582,032	4,631		4,631		4,631		4,767,765		44,235	44,235	120,640	10/15/2022
89387Y-AA-9	TRANSPORTRORA DE GAS INTL-SR UNSECURED	D	11/01/2018	VARIOUS		15,182,620	14,900,000	15,302,375	15,162,576		(94,784)		(94,784)		15,312,892		(130,272)	(130,272)	948,733	03/20/2027
89473L-AB-0	TREMIAN PK CLO LTD SR SEC2 NT CL B-1	D	11/20/2018	PAYDOWN		4,825,000	4,825,000	4,825,000	4,825,000						4,825,000				187,592	04/20/2027
89641U-AD-3	TRINITY ACQUISITION PLC-SENIOR UNSECURED	D	04/24/2018	U. S. BANCORP		248,990	250,000	260,835	257,923		(668)		(668)		257,255		(8,265)	(8,265)	2,795	09/15/2021
89675*-AP-2	Triton Container Interna Senior Secured	D	04/30/2018	SINKING PAYMENT		2,380,000	2,380,000	2,380,000	2,380,000						2,380,000				78,540	04/30/2022
89675*-AR-8	Triton Container Interna Senior Secured	D	04/30/2018	SINKING PAYMENT		1,020,000	1,020,000	1,020,000	1,020,000						1,020,000				33,915	04/30/2022
89852T-AC-2	TRYON PARK CLO LTD-SR SEC2 NT CL A-2 144	D	04/16/2018	PAYDOWN		17,900,000	17,900,000	17,900,000	17,900,000						17,900,000				168,098	07/15/2025
899415-AA-1	TULLOW OIL PLC-GTD SR NT 144A	D	03/23/2018	CALL 101.5		203,000	200,000	204,250	200,797		(215)		(215)		203,582		(582)	(582)	5,733	11/01/2020
900140-AA-5	TURKIYE GARANTI BANKASI AS-TRANCHE TR 1	D	10/18/2018	VARIOUS		977,650	1,000,000	1,017,500	1,010,184		(4,400)		(4,400)		1,005,784		(28,134)	(28,134)	43,860	10/17/2019
90016A-AA-8	TURK SISE VE CAM FABRIKA-SENIOR UNSECURE	D	10/18/2018	VARIOUS		314,015	327,000	320,460	323,428		1,168		1,168		324,596		(10,581)	(10,581)	13,087	05/09/2020
90016B-AA-6	Turkiye Is Bankasi-SENIOR UNSECURED NOTE	D	10/18/2018	VARIOUS		604,461	648,000	651,564	650,761		(894)		(894)		649,868		(45,407)	(45,407)	31,320	04/30/2020
90261X-HH-8	UBS AG STAMFORD CT-SR UNSECURED	D	03/28/2018	MATURITY		550,000	550,000	548,822	549,869		131		131		550,000				2,338	03/26/2018
904845-AA-2	UNION ANDINA DE CEMENTOS-SENIOR UNSECURE	D	10/30/2018	VARIOUS		8,569,922	8,497,600	8,488,100	8,482,607		457		457		8,484,463		85,459	85,459	285,813	10/30/2021
91821X-AB-9	VEB FIN LTD LN PARTN NT	D	10/18/2018	VARIOUS		356,722	355,000	382,069	372,313		(5,281)		(5,281)		367,032		(10,310)	(10,310)	31,240	07/09/2020
91832C-AA-4	VM HOLDING SA-SENIOR UNSECURED	D	04/16/2018	DTCYID		612,000	600,000	594,288	594,529		163		163		594,692		17,308	17,308	14,692	05/04/2027
918370-AB-3	VTR FINANCE BV SR SEC2 NT	D	02/06/2018	VARIOUS		9,209,250	9,410,000	9,328,021	9,339,585		315		315		9,209,250				62,897	01/15/2024
91911T-AH-6	VALE OVERSEAS LIMITED GTD NT	D	06/26/2018	VARIOUS		1,389,826	1,140,000	1,308,890	1,305,460		(933)		(933)		1,304,527		85,299	85,299	20,468	11/21/2036
91911T-AK-9	VALE OVERSEAS LIMITED-SENIOR UNSECURED	D	06/26/2018	VARIOUS		1,172,892	1,030,000	1,233,528	1,232,714		(2,083)		(2,083)		1,230,631		(57,739)	(57,739)	40,150	11/10/2039
9																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
927651-AB-3	VIRGIN AUST 2013-1B TRST-SECURED	D.	10/23/2018	SINKING PAYMENT		127,234	127,234	129,778			(1,255)		(1,255)		127,234				4,133	10/23/2020	
92857W-AS-9	VODAFONE GROUP PLC-SENIOR UNSECURED NOTE	D.	06/16/2018	CALL 102.724		17,514,442	17,050,000	17,005,841	17,041,425		2,864		2,864		17,508,731		5,711	5,711	890,337	06/10/2019	
92863U-AA-4	VOLCAN COMPANIA MINERA SAA SR NT	D.	05/02/2018	DTCYID		102,550	100,000	91,861	95,353		337		337		95,690		6,860	6,860	4,061	02/02/2022	
92914R-AS-1	VOYA CLO LTD-SERIES 14-4A CLASS BR	D.	07/16/2018	PAYDOWN		3,400,000	3,400,000	3,400,000	3,400,000						3,400,000				73,758	10/14/2026	
92914R-AU-6	VOYA CLO LTD-SERIES 14-4A CLASS CR	D.	07/16/2018	PAYDOWN		4,200,000	4,200,000	4,200,000	4,200,000						4,200,000				113,979	10/14/2026	
92915P-AB-1	VOYA CLO LTD-INGIM 2014-1A A2AR	D.	04/18/2018	PAYDOWN		13,900,000	13,900,000	13,900,000	13,900,000						13,900,000				145,577	04/18/2026	
92916X-AA-5	VOYA CLO LTD-INGIM 2013-3A A1R	D.	09/20/2018	PAYDOWN		24,090,000	24,090,000	24,090,000	24,090,000						24,090,000				630,718	01/18/2026	
92940Q-AA-0	WTT Investment Ltd/Hong -SENIOR UNSECURE	D.	01/31/2018	DTCYID		710,375	700,000	700,000	700,000						700,000		10,375	10,375	6,738	11/21/2022	
93677P-AB-7	WASATCH LTD-SERIES 2006-1A CLASS A1B	D.	02/14/2018	PAYDOWN		3,800,722	3,800,722	3,705,704	3,823,203		(22,481)		(22,481)		3,800,722				7,678	11/14/2022	
93921B-AU-7	WASHINGTON MILL CLO LTD-WAMI 2014-1A A1R	D.	04/20/2018	PAYDOWN		25,000,000	25,000,000	25,000,000	25,000,000						25,000,000				405,660	04/20/2026	
941574-AG-0	WATERFRONT CLO LTD-SUB NT SER 2007-1A	D.	09/04/2018	VARIOUS			9,000,000												3,451,790	08/02/2020	
94707V-AA-8	WEATHERFORD INTL LTD-SENIOR UNSECURED NO	D.	06/14/2018	JP MORGAN SECURITIES		201,500	200,000	217,964	207,022		(1,157)		(1,157)		205,865		(4,365)	(4,365)	4,755	09/15/2020	
949496-AC-7	WELLFLEET CLO 2015-1 LTD-SR SEC NT CL A	D.	10/22/2018	PAYDOWN		115,000,000	115,000,000	115,000,000	115,000,000						115,000,000				3,522,039	10/20/2027	
94949L-AA-8	WELLFLEET CLO LTD-WELF 2016-2A A1	D.	11/08/2018	PAYDOWN		10,500,000	10,500,000	10,500,000	10,500,000						10,500,000				342,001	10/20/2028	
94949L-AC-4	WELLFLEET CLO 2016-2 LTD-WELF 2016-2A A2	D.	11/08/2018	PAYDOWN		6,875,000	6,875,000	6,854,375	6,964,046		(89,046)		(89,046)		6,875,000				256,595	10/20/2028	
94949L-AE-0	WELLFLEET CLO LTD-WELF 2016-2A B	D.	11/08/2018	PAYDOWN		2,500,000	2,500,000	2,500,000	2,500,000						2,500,000				112,478	10/20/2028	
94949R-AC-1	WELLFLEET CLO 2016-1 LTD-SR SEC NT CL	C.	05/10/2018	PAYDOWN		17,750,000	17,750,000	17,540,550	17,744,243		5,757		5,757		17,750,000				224,376	04/20/2028	
961214-BZ-5	WESTPAC BANKING CORP-SR UNSECURED	D.	01/12/2018	MATURITY		350,000	350,000	348,972	349,984		16		16		350,000				171	01/12/2018	
961214-CN-3	WESTPAC BANKING CORP-SR UNSECURED	D.	05/25/2018	MATURITY		400,000	400,000	397,307	399,546		454		454		400,000				2,480	05/25/2018	
961214-CQ-4	WESTPAC BANKING CORP-SR UNSECURED	D.	11/23/2018	MATURITY		100,000	100,000	99,836	99,948		52		52		100,000				1,744	11/23/2018	
97342V-AJ-3	WINNIM GMBH SR SEC NT SER E	B.	12/30/2018	SINKING PAYMENT		10,767,402	10,767,407	10,078,079	11,198,694				(1,278,895)		10,767,402				247,704	12/31/2021	
98313R-AC-0	WYNN MACAU LTD-SENIOR UNSECURED	D.	05/08/2018	DTCYID		193,750	200,000	200,000	200,000						200,000		(6,250)	(6,250)	6,229	10/01/2024	
98372P-AG-3	XLIT LTD-SR UNSECURED	D.	12/27/2018	CALL 118.355339		12,930,321	10,925,000	12,804,310	12,460,538		(196,031)		(196,031)		14,269,828		(1,339,507)	(1,339,507)	2,694,051	11/15/2024	
98372P-AM-0	XLIT LTD-SENIOR UNSECURED	D.	12/21/2018	CALL 106.93		4,908,087	4,590,000	5,138,268	5,102,028		(128,063)		(128,063)		5,292,053		(383,966)	(383,966)	574,681	10/01/2021	
98420E-AC-9	XLIT LTD GTD SUB NT	D.	12/19/2018	MILLENNIUM ADVISORS		54,280	55,000	54,798	54,837		19		19		54,856		(576)	(576)	15,285	03/31/2025	
984245-AM-2	YPF SOCIEDAD ANONIMA-SENIOR UNSECURED	D.	10/18/2018	VARIOUS		351,918	348,000	385,062	380,935		(7,614)		(7,614)		373,320		(21,402)	(21,402)	31,634	03/23/2021	
984245-AG-3	YPF SA-SENIOR UNSECURED	D.	03/21/2018	CITIGROUP GLOBAL MAR		895,050	900,000	956,250	956,086		(1,057)		(1,057)		955,028		(59,978)	(59,978)	42,048	07/21/2027	
984245-AR-1	YPF SA-SENIOR UNSECURED	D.	02/01/2018	CITIGROUP GLOBAL MAR		379,000	400,000	400,000	400,000						400,000		(21,000)	(21,000)	2,644	12/15/2047	
985083-AA-2	YASAR HOLDINGS-SENIOR UNSECURED NOTE	D.	02/05/2018	STANDARD CHARTERED B		407,200	400,000	433,500	414,524		(669)		(669)		413,855		(6,655)	(6,655)	8,974	05/06/2020	
A35868-AD-9	SAPPI PAPIER HOLDING GMBH EURO ISSUE BOND	B.	11/14/2018	HSBC SECURITIES INC		574,101	563,950	530,450	601,100				(70,650)		563,950	33,500	10,151	43,651	22,514	04/01/2022	
A35868-AH-0	SAPPI PAPIER HLDG GMBH NOTES	B.	12/13/2018	VARIOUS		9,291,807	9,076,403	8,888,800	9,617,600				(728,800)		9,076,400	187,600	215,407	403,007	447,913	04/01/2023	
000000-00-0	Dubai Drydocks - Profit Participating Lo	D.	01/11/2018	CORPORATE ACTION		481,160	2,300,000	483,000	490,282		1,408		1,408		491,690		(10,530)	(10,530)	(7,908)	10/18/2027	
000000-00-0	Dubai Drydocks - Profit Participating Lo	D.	01/11/2018	CORPORATE ACTION		305,432	1,460,000	306,600	311,223		894		894		312,116		(6,684)	(6,684)	(7,908)	10/18/2027	
000000-00-0	Dubai World Tranche B1 2% + 1.75% PIK	D.	03/28/2018	VARIOUS		2,538,969	2,704,000	2,462,800	2,445,113		10,254		10,254		2,479,368		59,601	59,601	25,648	09/30/2022	
AP4178-43-4	RESIDUO SRO-SECURED	B.	05/31/2018	MORGAN		3,727,814	3,732,479	3,746,880	3,847,040				(100,160)		3,732,480	(14,400)	(4,666)	(19,066)	55,489	10/15/2024	
AG3069-40-0	Petroamazonas EP-SENIOR UNSECURED	D.	02/06/2018	CITIGROUP GLOBAL MAR		481,750	500,000	477,852	478,298		982		982		479,280		2,470	2,470	2,698	11/06/2020	
B5339W-GK-8	KBC BANK NV-SUBORDINATED	D.	01/25/2018	CALL 100		800,000	800,000	849,100	802,640		(2,640)		(2,640)		800,000				4,267	01/25/2023	
D65035-AA-6	ProGroup AG-SECURED NOTE	B.	05/01/2018	CALL 102.563		992,892	968,080	865,920	961,760				(95,840)		992,892	102,160		102,160	41,562	05/01/2022	
D8544P-AB-2	Unitymedia Hessen GmbH & SECURED NOTE	B.	06/05/2018	CALL 102.813		5,382,598	5,235,327	5,886,675	5,391,573		(673)		(673)		487,654	5,387,503	(638,321)	(643,226)	277,637	04/15/2023	
D8544P-AC-0	UNITYMEDIA HESSEN / NRW-SECURED BOND	B.	06/06/2018	CREDIT SUISSE INTERN		3,566,339	3,163,052	3,607,333	3,239,184		148		148		3,699,888		(452,609)	409,727	(42,882)	180,916	01/15/2029
D85456-AC-1	UNITYMEDIA GMBH-2ND LIEN REGS	B.	11/12/2018	CREDIT SUISSE INTERN		8,357,297	7,928,488	7,147,562	7,648,273		56,435		56,435		(405,849)	7,285,605	(13,254)	1,071,692	1,058,438	268,065	01/15/2027
D818A2-AA-3	Via Solutions Nord GmbH Senior Secured	B.	01/01/2018	DIRECT									(3,961)							08/31/2043	
E4177G-AC-2	ENCE ENERGIA CELULOSA SA SHORT TERM NTS	B.	06/01/2018	CALL 105.04		5,985,549	5,698,355	5,733,376	6,042,364		(36,721)		(36,721)		6,114,798	207,245	(129,249)	77,996	420,228	11/01/2022	
E5R239-AA-6	Financiera Marsyc SA-SECURED	B.	06/30/2018	SINKING PAYMENT		2,067,983	2,067,984	2,210,016							2,067,983		(142,033)	(142,033)	21,033	12/31/2025	
E6732F-AA-1	INTERCAMBIADOR - Adj % Due 3/13/2019 MS3	B.	06/29/2018	CA CASH CLOSE		439,648	439,648	419,146	453,578		2,633		2,633	(34,428)	439,648	17,865		17,865	15,189	06/30/2038	
E6732E-AA-3	INTERCAMBIADOR - Adj % Due 3/13/2019 MS31	B.	06/29/2018	CA CASH CLOSE		841,346	841,346	797,851	868,026		5,017		5,017	(70,145)	841,346	38,448		38,448	29,589	09/30/2041	
E7827*-AA-9	AUTOPISTA DEL SOL CONCESIONARIA EURO SEC	B.	12/30/2018	SINKING PAYMENT		700,283	700,284	690,554	733,508				(43,205)		700,283				27,040	12/30/2045	
E8T529-AA-2	Sommedix Espana Finance Senior Secured	B.	12/31/2018	SINKING PAYMENT		1,085,894	1,085,894	1,118,163							1,085,894					06/30/2037	
E8T529-AC-8	Sommedix Espana Finance Senior Secured N	B.	12/31/2018	SINKING PAYMENT		275,611	275,611	274,502							275,611					06/30/2037	
EK3007-46-6	INTL BK OF AZERBAIJAN EURO ISSUE SHORT T	D.	01/01/2018	EXCHANGE OFFER		82	82	82	82						82				94	06/11/2019	
F2R907-AB-2	CROWN EURO HOLDINGS SA-SR UNSECURED	B.	06/05/2018	MORGAN		8,519,591	8,332,116</														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
F65585-AC-9	ELIS SA-SR UNSECURED	B.	06/04/2018	CITIGROUP		8,099,094	7,961,366	7,355,849	8,093,517		10,523		10,523	(685,007)	7,863,251	444,219	235,843	680,062	107,034	04/30/2022
F66277-AD-5	Numericable-SFR SAS-SECURED NOTE	B.	01/29/2018	GOLDMAN SACHS INTERN		638,276	621,950	690,950	601,100					89,550	621,950	(69,000)	16,326	(52,674)	3,330	05/15/2022
F66277-AE-3	Numericable-SFR SAS-SECURED NOTE	B.	02/07/2018	VARIOUS		11,179,781	11,083,842	12,067,497	10,901,380		(3,491)		(3,491)	1,043,544	11,276,559	(664,873)	96,778	(761,651)	74,612	05/15/2024
F73537-CX-5	REXEL SA-SENIOR UNSECURED	B.	06/04/2018	UBS LIMITED		1,992,090	1,924,726	1,897,005	1,983,630					(86,625)	1,924,725	27,720	67,365	95,085	28,953	06/15/2023
F84440-AC-4	BISOHO SAS-SECURED	B.	11/08/2018	VARIOUS		187,010	36,355	192,013	46,104		24,001		24,001	(2,263)	98,482	(6,516)	88,528	82,012	(107,600)	05/01/2023
F85783-AF-9	SPCM SA-SR UNSECURED	B.	06/04/2018	HSBC SECURITIES INC		5,908,614	5,832,502	5,430,514	5,829,074		13,328		13,328	(335,309)	5,668,749	161,656	239,865	401,521	72,070	06/15/2023
F9849M-AB-7	WFS Global Holding SAS-SECURED	B.	10/02/2018	CALL 104.75		6,806,066	6,497,437	6,591,397	6,922,334		(44,823)		(44,823)	(406,304)	6,916,416	136,580	(110,350)	26,230	788,427	07/15/2022
G01088-AJ-5	ADCB FINANCE CAYMAN LTD-SUBORDINATED	D.	03/22/2018	MERRILL LYNCH INTERN		7,087,500	7,000,000	7,319,500	7,268,637		(10,996)		(10,996)		7,257,641		(170,141)	(170,141)	74,375	03/06/2023
G0370N-AM-6	ANGLIAN WATER OSPREY FIN-SECURED	B.	11/09/2018	MORGAN STANLEY		2,881,411	2,814,563	3,211,885	2,907,660					304,225	2,814,565	(397,320)	66,846	(330,474)	125,124	04/30/2023
G0457J-AP-4	ARDAGH PKG FIN/HLDS USA-SENIOR UNSECURE	B.	11/28/2018	VARIOUS		3,573,441	3,820,498	3,865,500	4,057,200					(191,700)	3,820,500	(45,000)	(247,059)	(292,059)	278,432	07/15/2027
G05162-AE-5	ARROW GLOBAL FINANCE-SECURED	B.	03/15/2018	CALL 106.67		1,144,724	1,073,145	967,804	1,034,290		1,904		1,904	(65,153)	1,134,717	92,098	10,007	102,105	81,871	05/01/2023
G0566*-AD-1	Arqiva Financing No 1 Lt Gtd Senior FI R	B.	12/31/2018	SINKING PAYMENT		1,743,570	1,743,569	1,711,167	1,856,842					(145,675)	1,743,570				49,719	12/31/2029
G0566U-AA-0	Arqiva Broadcast Finance-FIRST LIEN	B.	09/30/2018	CALL 102.375		5,474,216	5,347,217	6,764,561	5,714,904		(93,650)		(93,650)	675,714	5,547,168	(876,796)	(72,952)	(949,748)	516,344	03/31/2020
G0566V-AC-4	ARQIVA FINANCING PLC-SECURED BOND	B.	06/05/2018	VARIOUS		9,230,382	7,854,675	10,405,466	8,934,123		(26,849)		(26,849)	1,359,683	8,768,898	(1,498,059)	461,484	(1,036,575)	184,216	06/30/2030
G0754*-AC-1	Babcock International Gr Senior Note Ser	D.	03/17/2018	MATURITY		8,500,000	8,500,000	8,500,000	8,500,000						8,500,000				91,390	03/17/2018
G12570-AA-1	BORETS FINANCE LTD EURO ISSUE SHORT TERM	D.	09/26/2018	MATURITY		1,500,000	1,500,000	1,413,240	1,463,305		36,695		36,695		1,500,000				84,193	09/26/2018
G1418*-AG-8	Caribbean Utilities Co. Senior Note	D.	06/01/2018	SINKING PAYMENT		520,000	520,000	520,000	520,000						520,000				11,028	06/01/2018
G1744*-AE-8	Cadogan Estates Ltd Gtd Senior Note	D.	08/07/2018	SINKING PAYMENT		4,500,000	4,500,000	4,500,000	4,500,000						4,500,000				174,150	08/07/2018
G1846*-AD-9	Capita Holdings Limited Gtd Senior Note	D.	06/20/2018	CA CASH CLOSE		42,897,375	42,500,000	45,183,950	42,854,428		(237,484)		(237,484)		43,014,319		(116,944)	(116,944)	1,738,710	09/13/2018
G1846*-AG-2	Capita Holdings Limited Gtd Senior Note	D.	11/15/2018	CA CASH CLOSE		7,947,340	7,713,874	7,713,874	7,713,874						7,947,340				660,270	06/30/2020
G1846*-AM-9	Capita Holdings Limited Gtd Senior Note	D.	11/15/2018	CA CASH CLOSE		2,369,056	2,288,449	2,288,449	2,288,449						2,369,056				191,927	07/19/2021
G1910*-AP-1	Cobham PLC Senior Note Ser	D.	04/18/2018	CA CASH CLOSE		6,544,846	6,365,000	6,365,000	6,365,000						6,544,846				296,606	10/28/2021
G1910*-AQ-9	Cobham PLC Senior Note Ser	D.	04/18/2018	CA CASH CLOSE		49,993,806	47,235,000	47,235,000	47,235,000						49,993,806				3,705,272	10/28/2024
G1951S-AB-4	BOPARAN FINANCE PLC-SR UNSECURED	B.	06/05/2018	VARIOUS		9,775,112	10,596,254	9,749,847	9,749,847		44,743		44,743	1,068,311	9,657,346	(1,205,555)	101,766	(1,103,789)	223,881	07/15/2019
G2003*-AA-4	Campo Palomas Finance Lt Senior Secured	D.	11/15/2018	SINKING PAYMENT		658,377	658,377	658,377	658,377						658,377				31,279	11/15/2036
G2019R-AE-8	CREDIT BANK OF MOSCOW VI-SUBORDINATED	D.	01/30/2018	HSBC BANK PLC IN LON		1,000,000	939,971	940,257	940,257		344		344		940,600		8,970	8,970	6,185	10/05/2027
G2044*-AI-5	Compass Group PLC Senior Note Ser	D.	10/01/2018	MATURITY		17,000,000	17,000,000	18,119,090	17,153,213		(153,213)		(153,213)		17,000,000				422,025	10/01/2018
G206A1-AD-4	Central China Real Estat-SENIOR UNSECURE	D.	06/26/2018	DIRECT		437,549	430,000	463,863	462,689		(6,278)		(6,278)		456,411		(18,862)	(18,862)	18,290	01/23/2021
G2119W-AE-6	CHINA EVERGRANDE GROUP-SECURED	D.	03/19/2018	BNP PARIBAS		603,000	600,000	606,600	606,412		(334)		(334)		606,078		(3,078)	(3,078)	11,667	06/28/2025
G2119W-AF-3	CHINA EVERGRANDE GROUP-SECURED	D.	06/26/2018	DIRECT		616,089	660,000	666,753	666,650		(620)		(620)		666,030		(49,941)	(49,941)	49,225	06/28/2023
G2140A-AC-1	CIFI HOLDINGS GROUP-SENIOR UNSECURED	D.	10/18/2018	VARIOUS		347,251	343,000	364,866	360,589		(5,647)		(5,647)		354,943		(7,692)	(7,692)	23,112	06/05/2020
G2140A-AJ-6	CIFI Holdings Group Co L-SENIOR UNSECURE	D.	10/18/2018	VARIOUS		423,720	433,000	424,354	424,354		20		20		424,374		(654)	(654)	14,471	04/23/2021
G2140A-AL-1	CIFI Holdings Group Co L-SENIOR UNSECURE	D.	10/18/2018	VARIOUS		248,849	250,000	248,973	248,973		5		5		248,978		(129)	(129)	7,349	05/02/2020
G2372G-AA-1	COGNITA FINANCING PLC-SECURED	B.	10/25/2018	CALL 101.9375		15,707,956	15,409,393	17,325,068	16,614,637		(170,052)		(170,052)	416,282	15,892,052	(1,267,372)	(184,096)	(1,451,468)	1,320,352	08/15/2021
G24524-AH-6	COUNTRY GARDEN HLGD CO-SR UNSECURED REGS	D.	10/18/2018	VARIOUS		250,226	250,000	250,409	250,409		(4)		(4)		250,405		(179)	(179)	705	04/04/2021
G2553Z-AJ-1	CPUK FINANCE LTD-UNSECURED	B.	11/08/2018	CITIGROUP		8,000,723	7,956,956	7,798,450	8,182,020					(383,570)	7,956,960	158,510	43,763	202,273	299,437	08/28/2022
G2583X-AA-9	CSN ISLANDS XI CORP-SENIOR UNSECURED	D.	06/26/2018	VARIOUS		480,200	490,000	455,945	458,354		8,315		8,315		466,668		13,532	13,532	22,694	09/21/2019
G2624*-AG-8	Dairy Crest Group PLC Gtd Senior Note	D.	11/30/2018	MATURITY		10,000,000	10,000,000	10,147,000	10,031,466		(31,466)		(31,466)		10,000,000				307,981	11/30/2018
G2624*-AH-6	Dairy Crest Group PLC Gtd Senior Note	D.	11/30/2018	SINKING PAYMENT		9,903,600	9,903,600	9,903,600	9,903,600						9,903,600				355,696	11/30/2021
G2694N-AG-4	DEBENHAMS PLC-SR UNSECURED	B.	08/01/2018	VARIOUS		5,563,786	7,125,188	8,456,238	7,310,739		2,751		2,751	1,157,220	7,109,115	(1,361,594)	(1,545,329)	(2,906,923)	220,262	07/15/2021
G27631-AD-5	DIGICEL GROUP LTD-SR UNSECURED REGS	D.	06/26/2018	DIRECT		3,634,575	4,830,000	4,775,663	4,777,727		8,215		8,215		4,785,942		(1,151,367)	(1,151,367)	193,703	09/30/2020
G27631-AF-0	DIGICEL GROUP LTD-SENIOR UNSECURED	D.	06/26/2018	DIRECT		1,055,368	1,570,000	1,479,725	1,482,121		8,485		8,485		1,490,606		(435,268)	(435,268)	54,378	04/01/2022
G2941D-AC-6	DTEK FINANCE PLC-1ST LIEN	D.	06/26/2018	VARIOUS		4,772,723	4,585,000	4,740,890	4,736,703		(15,213)		(15,213)		4,721,490		51,233	51,233	239,916	12/31/2024
G2951Z-AC-4	EIROOM FINANCE DAC-SECURED	B.	11/08/2018	VARIOUS		13,601,830	13,298,238	13,044,036	14,010,474		(22,713)		(22,713)	(996,529)	13,398,263	347,031	263,567	610,596	554,114	05/31/2022
G3148K-AD-7	PROVEN HONOUR CAPITAL-SENIOR UNSECURED	D.	12/06/2018	GOLDMAN SACHS INTERN		718,400	800,000	836,664	832,020		(3,152)		(3,152)		828,867		(110,467)	(110,467)	36,117	05/06/2026
G315B1-AL-4	EPHOS BONDOO PLC-1ST LIEN	B.	11/27/2018	MORGAN		5,075,549	4,932,465	4,981,856	5,353,656		(41,355)		(41,355)	(453,177)	5,009,906	150,782	65,643	216,425	191,317	07/01/2022
G315B9-AA-1	DIME AIRPORT LTD-SENIOR UNSECURED	D.	07/23/2018	CREDIT SUISSE INTERN		1,624,800	1,600,000	1,600,000	1,600,000						1,600,000				213,322	11/11/2021
G3424*-AD-3	GAS PLC Senior Note	D.	07/15/2018	MATURITY		7,000,000	7,000,000	8,330,210	7,139,240		(139,240)		(139,240)		7,000,000				255,757	07/15/2018
G34361-AB-4	FERRIXPO FINANCE PLC-SENIOR UNSECURED	D.	06/26/2018	VARIOUS		933,467	920,000	971,377	963,120		(30,907)									

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
6490LC-AA-4	HSS FINANCING PLC-SECURED NOTE	B	07/10/2018	CALL 100		4,325,126	4,325,127	5,469,112	4,415,877		9,825		9,825	979,880	4,335,688	(1,069,894)	(10,562)	(1,080,456)	154,281	08/01/2019
65136D-AA-8	JGSH PHILIPPINES LTD-SENIOR UNSECURED NO	D	05/31/2018	BARCLAYS CAPITAL INC		6,438,250	6,500,000	6,373,750	6,417,909		6,019		6,019		6,423,928		14,322	14,322	120,859	01/23/2023
652132-AV-2	KAISA GROUP HOLDINGS LTD-SENIOR UNSECURE	D	06/26/2018	DIRECT		358,005	430,000	430,106	430,178		(23)		(23)		430,155		(72,150)	(72,150)	17,767	06/30/2022
652516-AA-2	KEYSTONE FINANCING-SECURED NOTE	B	12/11/2018	CALL 100		2,217,289	2,817,290	3,279,645	3,088,259		(11,871)		(11,871)	117,043	2,847,685	(345,746)	(30,396)	(376,142)	269,249	10/15/2019
65307R-AC-6	KOKS OAO VIA KOKS FINANC-SENIOR UNSECURE	D	06/26/2018	DIRECT		329,885	330,000	355,690	354,910		(2,507)		(2,507)		352,403		(22,518)	(22,518)	12,031	05/04/2022
65320T-AA-9	KRLING THAI BANK/CAYMAN-SUBORDINATED	D	05/23/2018	BARCLAYS CAPITAL INC		3,654,000	3,600,000	3,673,930	3,643,598		(8,607)		(8,607)		3,634,991		19,009	19,009	74,880	12/26/2024
65494B-AA-8	LIQUID TELECOMMUNICATION-SECURED	D	06/26/2018	VARIOUS		875,880	850,000	905,428	903,543		(5,190)		(5,190)		898,354		(22,474)	(22,474)	27,058	07/13/2022
65635P-AC-3	LONGFOR PROPERTIES-SENIOR UNSECURED	D	02/08/2018	CALL 103.375		4,135,000	4,000,000	4,304,000	4,144,299		31,449		31,449		4,310,747		(175,747)	(175,747)	162,750	01/29/2023
66264V-AB-8	ENERGY RESOURCES LLC-JR SUBORDINATED	D	06/26/2018	DIRECT		716,750	1,220,000	634,400	634,813		1,366		1,366		636,179		80,571	80,571	1,011/01/9999	
66356Y-AC-9	MOBILE TELESYS (MTS INT)-SENIOR UNSECURE	D	10/11/2018	VARIOUS		691,488	700,000	723,249	720,721		(1,807)		(1,807)		718,915		(27,427)	(27,427)	18,514	05/30/2023
66463B-AB-1	New Metro Global Ltd-SENIOR UNSECURED	D	10/18/2018	VARIOUS		826,133	831,000	831,000						831,000		(4,867)	(4,867)	26,973	02/11/2019	
66542T-AE-1	NOBLE GROUP LTD-SENIOR UNSECURED	D	03/28/2018	VARIOUS		135,375	300,000	114,000	114,000					114,000		21,375	21,375	1,575	01/29/2020	
66544P-AA-5	EP PETROECUADOR VIA NOBL-SECURED	D	06/26/2018	VARIOUS		3,934,100	3,991,579	4,064,938	4,056,549		(64,970)		(64,970)		3,991,579		(57,479)	(57,479)	119,265	09/24/2019
666749-AC-9	NOVATEK FIN LTD LN PARTN NT	D	10/11/2018	TROUSS1		685,650	700,000	633,104	652,637		6,514		6,514		659,151		26,499	26,499	24,419	12/13/2022
66711K-AA-3	ODEBRECHT OFFSHORE DRILL FIN SR SEC'D INT	D	01/01/2018	EXCHANGE OFFER		51,482	78,761	62,083	31,701	29,781			29,781		51,482				1,649	10/01/2022
66711K-AC-9	ODEbrecht Offshore Drill-First Lien	D	12/01/2018	SINKING PAYMENT		1,557	1,557	1,076						1,557						12/01/2022
66740Z-AA-5	OILFLOW SPV 1 DAC-SECURED	D	03/14/2018	VARIOUS		1,381,050	1,310,000	1,283,395	1,283,887		2,392		2,392		1,286,279		94,771	94,771	41,677	01/13/2022
67012D-AA-3	Perform Group Financing -SECURED	B	06/11/2018	DEUTSCHE BANK AG		7,386,228	7,241,402	7,833,405	7,203,272		14,559		14,559	682,024	7,156,645	(743,210)	229,583	(513,627)	285,468	11/15/2020
672186-AB-8	Premier Foods Finance PL-SECURED NOTE	B	06/14/2018	CALL 101.625		8,575,981	8,438,847	9,952,356	8,584,651		(7,128)		(7,128)	1,297,621	8,572,732	(1,439,543)	3,249	(1,436,294)	390,363	03/15/2021
67306E-AA-6	QOOG ATLANTIC/ALASKAN RI-SECURED NOTE	D	06/26/2018	VARIOUS		471,010	483,750	476,445	476,959		6,791		6,791		483,750		(12,740)	(12,740)	16,057	07/30/2018
67333F-AB-8	RPC Group plc Senior Note Ser	D	12/15/2018	SINKING PAYMENT		3,000,000	3,000,000	3,000,000	3,000,000						3,000,000				121,547	12/15/2018
67444B-AA-8	Red Dorsal Finance Limit Senior Secured	D	10/12/2018	SINKING PAYMENT		2,138,856	2,138,856	2,134,107	2,138,856		(5,478)		(5,478)		2,138,856				363,380	10/12/2031
675463-AA-0	Reventazon Finance Trust Senior Secured	D	11/15/2018	SINKING PAYMENT		1,213,925	1,213,925	1,213,925	1,213,925						1,213,925				73,412	11/15/2033
67547B-AA-1	REWARD INTERNATIONAL INV-SENIOR UNSECURE	D	06/26/2018	DIRECT		442,585	670,000	633,114	635,394		7,492		7,492		642,886		(200,301)	(200,301)	23,613	01/25/2020
678146-AB-9	SAUDI ELECTRICITY GLOBAL-SENIOR UNSECURE	D	10/22/2018	GOLDMAN SACHS INTERN		476,250	500,000	501,513	501,483		1		1		501,484		(25,234)	(25,234)	20,591	04/08/2043
68006F-AB-2	SEA TRUCKS GROUP LTD-FIRST LIEN	D	02/12/2018	VARIOUS		1,396,397	3,714,040	1,299,914	1,188,493	743,105	(516,931)		226,174		1,414,667		(18,270)	(18,270)	39,165	12/31/2018
68030A-AD-2	Senior PLC Senior Note Ser	D	10/08/2018	MATURITY		17,200,000	17,200,000	18,491,650	17,381,054		(181,054)		(181,054)		17,200,000				905,236	10/08/2018
68038F-AE-8	Sercio Group plc Senior Note Ser	D	05/09/2018	MATURITY		5,297,987	5,297,987	5,297,987	5,297,987						5,297,987				92,303	05/09/2018
68068B-AB-3	SEVEN ENERGY FINANCE LTD-1ST LIEN	D	02/09/2018	VARIOUS		660,835	1,970,000	630,400		97,315	13,891		111,206		660,835				275,574	10/11/2021
681043-AF-1	SHIMAO PPTY HLDG LTD-SENIOR UNSECURED	D	01/22/2018	CALL 104.063		3,954,394	3,800,000	4,197,100	3,964,300		(9,906)		(9,906)		4,108,788		(154,394)	(154,394)	172,404	01/22/2021
681043-AG-9	SHIMAO PROPERTY HLDGS-SENIOR UNSECURED	D	10/18/2018	VARIOUS		261,631	250,000	279,075	270,902		(7,475)		(7,475)		263,427		(1,796)	(1,796)	19,998	02/10/2022
68249J-AG-0	SMURFIT KAPPA ACQUISITIO-SR UNSECURED	B	06/04/2018	VARIOUS		4,858,472	4,666,002	4,225,875	4,616,879		10,487		10,487	(337,566)	4,489,827	200,027	368,645	568,672	55,727	02/01/2025
683113-AC-7	SPARC EM SPC PANAMA METR-SECURED	D	12/05/2018	SINKING PAYMENT		6,682,251	6,682,251	5,909,951	5,794,254		212,077		212,077		6,682,251					12/05/2022
68408F-AA-8	St. James's Oncology Sr Note	B	09/30/2018	SINKING PAYMENT		6,150,697	6,150,697	5,734,758	6,216,983					(482,225)	6,150,697				180,214	03/31/2037
68569A-AF-3	SUNAC CHINA HOLDINGS LTD-SENIOR UNSECURE	D	06/26/2018	DIRECT		791,400	820,000	834,013	833,696		(1,255)		(1,255)		832,441		(41,041)	(41,041)	31,690	08/08/2022
68967F-AF-0	Triton Container Interna Senior Secured	D	09/30/2018	SINKING PAYMENT		2,000,000	2,000,000	2,000,000	2,000,000						2,000,000				114,474	09/30/2018
68967F-AG-8	Triton Container Interna Senior Secured	D	09/30/2018	SINKING PAYMENT		3,200,000	3,200,000	3,200,000	3,200,000						3,200,000				259,520	09/30/2020
69123J-AA-2	TUNGSHU VENUS HOLDINGS L-SENIOR UNSECURE	D	06/26/2018	DIRECT		351,046	450,000	437,617	438,269		2,152		2,152		440,421		(89,375)	(89,375)	15,313	06/12/2020
69137M-AA-9	TVL FINNACE PLC-SECURED	B	11/14/2018	VARIOUS		3,927,237	3,749,065	4,143,921	3,849,380		(2,629)		(2,629)	290,603	3,805,847	(379,621)	121,390	(258,231)	251,196	05/15/2023
69141L-AA-5	PIZZAEXPRESS FINANCING 2-SECURED NOTE	B	09/03/2018	VARIOUS		7,010,293	7,846,679	9,700,856	8,193,048		(9,455)		(9,455)	1,472,332	7,841,736	(1,814,190)	(831,443)	(2,645,633)	369,074	08/01/2021
69144A-AA-6	TVB FINANCE LTD-SENIOR UNSECURED	D	06/29/2018	NOMURA SECURITIES IN		18,363,125	18,700,000	18,700,000	18,700,000						18,700,000		(336,875)	(336,875)	323,572	10/11/2021
69228F-AA-1	University of Brighton Senior Secured	B	07/17/2018	SINKING PAYMENT		1,929,775	1,929,775	2,445,058	1,933,062					540,674	1,929,775				62,159	07/17/2039
69300M-AB-8	UCPB FINANCE IV LTD-SECURED	B	06/11/2018	VARIOUS		11,279,731	10,963,792	9,640,855	10,688,434		21,313		21,313	(956,498)	10,456,094	702,845	823,637	1,526,482	194,907	01/15/2027
69372C-AJ-7	VIRGIN MEDIA SECURED FIN-SECURED NOTE	B	11/08/2018	DEUTSCHE BANK AG		2,735,616	2,630,399	3,386,302	2,741,700		(4,691)		(4,691)	634,000	2,661,701	(709,309)	73,915	(635,394)	145,847	03/28/2029
69398B-AB-4	Vue International BidCo -SECURED NOTE	D	11/27/2018	VARIOUS		10,661,171	10,660,146	13,646,730	11,368,974		32,743		32,743	1,769,796	10,767,255	(2,404,259)	(106,084)	(2,510,343)	1,160,638	07/15/2020
69500A-AA-7	Waypoint Asset Co 8 Limi Senior Secured	D	10/15/2018	SINKING PAYMENT		750,000	750,000	750,000	750,000						750,000				16,027	10/15/2022
69500A-AC-3	WAYPOINT ASSET CO 8 LTD USD SER C SR NT	D	10/15/2018	SINKING PAYMENT		1,250,000	1,250,000	1,250,000	1,250,000						1,250,000				28,188	10/15/2022
69645P-AD-1	WILLIAM HILL PLC-SENIOR UNSECURED	B	05/17/2018	VARIOUS		5,347,233	5,129,243	5,523,683	5,145,044		(373)		(373)	377,162	5,134,792	(387,042)	212,441	(174,601)	97,130	09/07/2023
697745-AA-4	WORLDPAY FINANCE-SR UNSECURED	D	06/06/2018	VARIOUS		9,675,069	8,948,290	8,357,151	9,262,240		(5,889)		(5,889)	(930,322)	9,012,149	886,121	662,920			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
L0179R-AH-5	ALTIICE FINCO SA-SENIOR UNSECURED	D	04/26/2018	JP MORGAN SECURITIES		279,328	290,000	310,706	310,104		(1,321)		(1,321)		308,783		(29,455)	(29,455)	7,309	02/15/2025
L21779-AA-8	CSN RESOURCES SA-SENIOR UNSECURED	D	06/26/2018	VARIOUS		458,750	500,000	462,500	464,355		6,117		6,117		470,472		(11,722)	(11,722)	30,243	07/21/2020
L2287*-AA-5	Cygnus Issuance SA Senior Secured	D	12/31/2018	SINKING PAYMENT		3,787,107	3,787,107	3,787,107	3,787,107						3,787,107				139,984	03/31/2023
L2287*-AB-3	Cygnus Issuance SA Senior Secured Note M	D	12/31/2018	SINKING PAYMENT		1,277,108	1,277,108	1,277,108	1,277,108						1,277,108				43,675	03/31/2023
L2287*-AC-1	Cygnus Issuance SA Senior Secured	D	12/31/2018	SINKING PAYMENT		2,621,936	2,621,936	2,621,936	2,621,936						2,621,936				21,618	03/31/2023
L2660R-AD-6	DUFYR FINANCE SCA-SR UNSECURED	B	06/05/2018	ROYAL BANK OF CANADA		1,979,106	1,904,818	1,865,992	2,035,956		(7,746)		(7,746)	(198,927)	1,971,619	142,336	7,487	149,823	37,451	08/01/2023
L38428-AB-1	SIG Combibloc Holdings S-SECURED	B	06/01/2018	HSBC SECURITIES INC		15,974,556	15,338,021	15,721,786	16,394,249		(114,667)		(114,667)	(1,000,732)	15,805,620	526,771	168,936	695,707	515,585	02/15/2023
L4121Q-AC-9	GALAPAGOS SA/LUXEMBOURG-SECURED NOTE	B	06/11/2018	GOLDMAN SACHS INTERN		2,281,460	2,466,444	2,871,119	2,523,501		(1,469)		(1,469)	336,271	2,469,815	(388,488)	(188,355)	(576,843)	59,611	06/15/2021
L4441P-AA-8	GOL LUXCO SA-SENIOR UNSECURED	D	06/26/2018	VARIOUS		1,051,880	1,020,000	1,063,350	1,061,675		9,292		9,292		1,070,966		(19,086)	(19,086)	19,488	01/24/2022
L4678S-AA-6	HANESBRANDS INC-SENIOR UNSECURED	B	06/05/2018	UBS LIMITED		3,967,970	3,762,891	3,608,976	3,871,084					(262,108)	3,762,892	153,916		358,994	56,981	06/15/2024
L5115*-AB-0	Ingenium Financing SA Senior Secured	D	10/26/2018	CA CASH_CLOSE		15,201,300	15,000,000	15,105,000	15,092,887		(43,049)		(43,049)		15,251,138		(49,838)	(49,838)	748,279	09/26/2019
L5115*-AC-8	Ingenium Financing SA Senior Secured	D	09/26/2018	CA CASH_CLOSE		25,470,712	24,100,000	24,100,000	24,100,000						25,470,712				2,252,400	09/26/2022
L6366M-AC-7	MHP SE-SENIOR UNSECURED	D	04/06/2018	CA CASH_CLOSE		905,250	850,000	918,000	914,002		(8,752)		(8,752)		905,250				18,505	04/02/2020
L6401P-AF-0	Minerva Luxembourg SA-SENIOR UNSECURED	D	06/26/2018	DIRECT		418,605	455,000	471,494	471,286		(982)		(982)		470,304		(51,699)	(51,699)	14,377	09/20/2026
L72728-AA-9	Oriflame Cosmetics SA Senior Note Ser	D	07/13/2018	MATURITY		5,976,780	5,976,780	5,976,780	5,976,780						5,976,780				151,093	07/13/2018
L7877X-AB-5	Q606 CONSTELLATION SA-1ST LIEN	D	05/09/2018	VARIOUS		1,216,080	2,503,754	1,282,261	1,901,893			609,293	614,846	(5,553)	1,899,179		(683,099)	(683,099)	67,524	11/09/2024
L7982R-AT-1	RUSSIAN STANDARD LTD-SECURED	D	02/06/2018	VARIOUS		339,796	1,360,000	476,000	476,000	160,525					169,820		(136,204)	(136,204)	18,171	10/27/2022
L8084D-AP-5	SBERBANK (SB CAP SA)-SENIOR UNSECURED NO	B	12/13/2018	VARIOUS		5,808,883	5,698,822	6,084,466	6,016,752		(2,918)		(2,918)	63,024	5,701,470	(375,388)	107,413	(267,975)	184,095	11/15/2019
L8800M-AG-8	SEVERSTAL (STEEL CAP)-SENIOR UNSECURED	D	03/19/2018	MATURITY		200,000	200,000	204,842	200,941				(941)		200,000				1,928	03/19/2018
L8984F-AA-4	Telenet Finance V Luxemb-SECURED NOTE	B	04/04/2018	CALL 105.9281		10,633,117	10,038,050	11,489,272	10,115,079		(13,226)		(13,226)	1,134,047	10,925,773	(905,193)	(292,656)	(1,197,849)	769,743	08/15/2024
L8984H-AA-0	TELENET FINANCE VI-FIRST LIEN	B	06/06/2018	VARIOUS		3,738,318	3,450,054	3,378,531	3,616,583		(4,191)		(4,191)	(250,101)	3,524,636	151,923	213,682	365,605	83,452	07/15/2027
L9630Q-AC-2	VELA ENERGY FINANCE SA-SECURED	B	12/31/2018	SINKING PAYMENT		1,817,160	1,817,161	1,764,919	1,888,045					(124,664)	1,817,160				44,565	06/30/2036
M0R75Z-DF-3	Arbank TAS-SR UNSECURED	D	04/16/2018	VARIOUS		961,350	990,000	933,236	936,492		1,131		1,131		937,623		23,727	23,727	8,314	03/31/2025
M15537-AA-7	AVANGARDO INVESTMENTS P-SENIOR UNSECURE	D	02/08/2018	VARIOUS		221,013	1,120,000	244,160	244,160	72,106					348,077		(127,064)	(127,064)	(19,289)	10/29/2018
M1839C-AA-4	BOUBAYAN TIER 1 CAPITAL-SUBORDINATED	D	05/30/2018	VARIOUS		10,828,125	10,500,000	10,635,000	10,596,890		(10,786)		(10,786)		10,586,104		242,021	242,021	293,906	01/01/9999
M4R36C-AZ-3	FINANSBANK AS EURO MED TERM NT USD 1.0	D	10/18/2018	VARIOUS		200,332	200,000	208,003	204,855		(2,874)		(2,874)		201,981		(1,649)	(1,649)	293,906	01/01/9999
M5318P-AS-5	IBDI BANK LTD/DIFC DUBAI-SENIOR UNSECURE	D	08/21/2018	HSBCSGGG		199,000	200,000	201,500	201,221		(332)		(332)		200,890		(1,890)	(1,890)	5,317	04/23/2020
M8986V-AA-3	UKRLANDFARMING PLC-UNSECURED	D	02/08/2018	VARIOUS		492,800	2,480,000	545,600	322,400	637,413		476,895	1,114,308	(332)	1,436,709		(943,909)	(943,909)	(71,171)	03/26/2018
M8S175-AA-6	RITEKRO LTD-UNSECURED	D	06/21/2018	CORPORATE ACTION		1,107,000	1,500,000	937,950	951,189			42,978	42,978		994,166		112,834	112,834		11/07/2022
M9037B-BW-8	Turkiye Vakiflar Bankasi-SENIOR UNSECURE	B	10/18/2018	VARIOUS		904,371	920,480	1,076,376	959,650		1,067		1,067	121,337	919,485	(162,569)	(15,114)	(177,683)	43,351	06/17/2019
M9037B-KF-5	TURKIYE VAKIFLAR BANKASI-SECURED	B	10/18/2018	VARIOUS		470,598	491,306	477,758	510,011					(30,853)	488,841	8,935	(18,243)	(9,308)	17,471	05/04/2021
M9740N-AA-5	Turk Telekomunikasyon AS-SR UNSECURED	D	11/16/2018	JEFFERIES INTL LTD		435,800	500,000	474,554	477,151		2,631		2,631		479,782		(43,982)	(43,982)	21,491	06/19/2024
000000-00-0	Drb-hicom Bhd Frn Loan 22/01/2021	D	03/23/2018	VARIOUS		1,639,299	1,600,000	1,630,850	1,633,298		11,517		11,517		1,644,815		(5,516)	(5,516)	13,208	01/22/2021
N01766-AA-7	AJECORP BV-SENIOR UNSECURED	D	06/26/2018	DIRECT		127,200	160,000	147,200	147,527						148,696		(21,496)	(21,496)	5,056	05/14/2022
N20137-AD-2	CIMPOR FINANCIAL OPERATI-SENIOR UNSECURE	D	06/14/2018	DTCYID		1,174,550	1,390,000	1,219,537	1,224,319		8,951		8,951		1,233,270		(58,720)	(58,720)	37,076	07/17/2024
N2446N-AA-0	DARLING GLOBAL FINANCE-SENIOR UNSECURED	B	06/08/2018	CALL 102.375		9,549,868	9,328,325	8,624,032	9,430,105		6,158		6,158	(777,928)	9,489,767	609,884	60,101	669,985	420,830	05/30/2022
N31599-AA-6	FIRST BANK OF NIGERIA LT-SUBORDINATED	D	06/26/2018	DIRECT		455,437	460,000	450,558	451,040		1,503		1,503		452,544		2,893	2,893	18,448	08/07/2020
N31599-AB-4	FIRST BANK OF NIGERIA LT-SUBORDINATED	D	06/26/2018	DIRECT		1,504,204	1,530,000	1,484,100	1,485,823		5,205		5,205		1,491,027		13,177	13,177	59,500	07/23/2021
N3755A-AC-7	GOODYEAR DUNLOP TIRES-SR UNSECURED	B	06/04/2018	CITIGMJK		2,222,766	2,158,026	2,035,555	2,224,070					(188,515)	2,158,025	122,470	64,741	187,211	34,782	12/15/2023
N3783A-AB-5	GTH FINANCE BV-SENIOR UNSECURED	D	10/18/2018	VARIOUS		266,847	250,000	264,864	260,539		(3,940)		(3,940)		266,599		10,248	10,248	12,457	04/26/2020
N47279-AD-1	INTERXION HOLDING NV-SECURED NOTE	B	06/04/2018	CREDIT SUISSE INTERN		3,637,876	3,557,826	4,062,180	3,729,968		(17,009)		(17,009)	238,301	3,602,913	(348,346)	34,963	(313,383)	92,179	07/15/2020
N4960Z-AB-3	KazMunayGas National Co -SENIOR UNSECURE	D	05/05/2018	TENDERED		989,288	925,000	1,151,625	1,003,169		(11,073)		(11,073)		992,097		(2,809)	(2,809)	40,623	05/05/2020
N54468-AF-5	MARFRIG HOLDINGS EUROPE -SENIOR UNSECURE	D	06/26/2018	VARIOUS		929,200	920,000	961,400	959,895		(5,116)		(5,116)		954,779		(25,579)	(25,579)	40,480	06/08/2023
N5657T-AE-6	METINVEST BV-SECURED	D	04/19/2018	VARIOUS		4,696,452	4,673,705	4,774,577	4,784,831		(92,266)		(92,266)		4,692,627		3,825	3,825	305,614	12/31/2021
N5807N-AA-4	Ziggo Bond Co BV-FIRST LIEN	B	11/23/2018	VARIOUS		4,765,534	4,512,815	4,975,625	5,093,628		(105,042)		(105,042)	(267,266)	4,727,417	6,098	38,117	44,215	302,621	05/15/2024
N6777*-AG-4	Overseas Assistance Fin Gtd Senior Note	D	09/30/2018	SINKING PAYMENT		2,575,000	2,575,000	2,575,000	2,575,000						2,575,000				128,750	03/30/2024
N7423C-AB-8	RESOURCE EUROPE CLO I BV-SR SEC'D REG NT	B	01/15/2018	PAYDOWN		4,953,216	4,953,214	5,024,688	4,901,631		5,500		5,500	375,401	4,953,216	(329,317)		(329,317)		07/15/2023
N7676V-AA-2	SABC CAPITAL II BV-SENIOR UNSECURED NOT	D	10/03/2018	MATURITY		15,000,000	15,000,000	15,133,750	15,025,281		(25,281)		(25,281)		15,000,000				297,500	10/03/2018
N77609-AJ-9	Schaeffler Finance BV-SECURED	B	06/06/2018	CITIGMJK		6,917,942	6,50													

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
P3367D-AA-3	COSAN OVERSEAS LTD-SENIOR UNSECURED NOTE	D	11/15/2018	SUMRIDGE PARTNERS LL		459,550	455,000	499,363	458,132		1,024		1,024		459,156		394	394	33,158	01/01/9999
P37060-AA-1	PETROAMAZONAS EP-SENIOR UNSECURED	D	06/26/2018	DIRECT		1,021,275	1,080,000	1,046,736	1,049,297		8,633		8,633		1,057,930		(36,655)	(36,655)	24,281	02/16/2020
P7077E-AF-1	Nassau Airport Developme Senior Note	D	12/31/2018	SINKING PAYMENT		606,000	606,000	606,000	606,000						606,000				34,466	11/30/2033
P7077E-AH-7	Nassau Airport Developme Senior Note Ser	D	12/31/2018	SINKING PAYMENT		380,875	380,875	380,875	380,875						380,875				20,306	03/31/2035
P7077E-AK-0	Nassau Airport Developme Senior Note Ser	D	12/31/2018	SINKING PAYMENT		151,250	151,250	151,250	151,250						151,250				8,279	06/30/2035
P7807H-AO-8	PETROLEOS DE VENEZUELA S-SENIOR UNSECURE	D	06/26/2018	DIRECT		467,024	2,020,000	727,200		184,683	2,650		187,333		729,703		(262,679)	(262,679)	95,740	05/17/2035
P7807H-AV-7	PETROLEOS DE VENEZUELA S-FIRST LIEN	D	06/26/2018	DIRECT		4,607,201	5,437,508	4,521,288	4,431,569	147,558	209,175		356,733		4,788,303		(181,102)	(181,102)	224,675	10/27/2020
P7S08V-AK-7	PETROLEOS MEXICANOS-SENIOR UNSECURED	B	10/29/2018	GOLDMAN SACHS INTERN		5,612,530	5,697,999	5,472,038	5,947,548		5,217		5,217	(467,475)	5,642,812	157,522	(30,282)	127,240	182,397	04/16/2026
P84050-AA-4	SAMARCO MINERACAO SA NT REG S	D	06/26/2018	DIRECT		978,200	1,340,000	787,250	797,757		37,202		37,202		834,958		143,242	143,242	8,445	11/01/2022
P98047-AA-4	VOLCAN COMPANIA MINERA SAA-SR NT REGS	D	05/02/2018	DTCYID		205,100	200,000	194,750	196,962		219		219		197,181		7,919	7,919	3,673	02/02/2022
P98118-AA-3	Nexa Resources SA-SENIOR UNSECURED	D	06/26/2018	DIRECT		434,295	450,000	479,201	478,920		(1,266)		(1,266)		477,654		(43,359)	(43,359)	11,758	05/04/2027
P989MJ-BE-0	YPF SA-SENIOR UNSECURED	D	06/26/2018	DIRECT		1,414,800	1,440,000	1,670,580	1,667,604		(11,821)		(11,821)		1,655,783		(240,983)	(240,983)	59,500	07/28/2025
Q0455H-AD-0	APT Pipelines Ltd. Gtd Senior Note	D	09/09/2018	MATURITY		11,550,000	11,550,000	11,550,000	11,550,000						11,550,000				478,991	09/09/2018
Q1734E-AA-9	Bradken Finance Pty Ltd Gtd Senior Note	D	09/28/2018	CA CASH CLOSE		7,168,955	7,150,000	7,150,000	7,150,000						7,168,955				242,207	11/29/2018
Q1734E-AC-5	Bradken Finance Pty Ltd Gtd Senior Note	D	09/28/2018	CA CASH CLOSE		10,962,846	10,300,000	10,300,000	10,300,000						10,962,846				1,033,346	11/29/2023
Q3920H-AD-1	Fonterra Co-operative Gr Senior Note Ser	D	05/29/2018	SINKING PAYMENT		15,100,000	15,100,000	15,100,000	15,100,000						15,100,000				356,947	05/29/2018
Q4975H-AB-1	INVESTA LISTED FDS MGMT LTD USD SER A GT	C	12/14/2018	CA CASH CLOSE		49,790,585	46,500,000	46,500,000	46,500,000						49,790,585				5,306,424	04/07/2025
Q5516E-AC-0	Leighton Finance Ltd. Gtd Senior Note	D	10/15/2018	SINKING PAYMENT		22,850,000	22,850,000	22,850,000	22,850,000						22,850,000				1,380,800	10/15/2018
Q6270H-AE-8	Murray Goulburn Co-Opera Senior Note Ser	D	04/27/2018	CA CASH CLOSE		13,922,034	13,350,000	13,350,000	13,350,000						13,922,034				826,276	10/29/2019
Q6270H-AH-1	Murray Goulburn Co-Opera Senior Note Ser	D	04/27/2018	CA CASH CLOSE		28,593,616	28,200,000	28,200,000	28,200,000						28,593,616				727,328	10/29/2021
Q6270H-AJ-7	Murray Goulburn Co-Opera Senior Note Ser	D	04/27/2018	CA CASH CLOSE		3,921,225	3,850,000	3,850,000	3,850,000						3,921,225				118,298	10/29/2022
Q7134H-AD-4	Onesteel Finance Pty Ltd Gtd Senior Note	D	09/27/2018	PREPAYMENTS I/O PENA		353,723	353,723	263,037									353,723	353,723		06/28/2021
Q7134H-AE-2	Onesteel Finance Pty Ltd Gtd Senior Note	D	09/27/2018	PREPAYMENTS I/O PENA		232,802	232,802	173,127									232,802	232,802		06/28/2023
Q8773H-AF-3	Stockland Finance Pty Lt Gtd Senior Note	D	10/08/2018	MATURITY		14,300,000	14,300,000	14,300,000	14,300,000						14,300,000				661,284	10/08/2018
Q9396H-AC-5	Victoria Power Networks-Senior Note Ser	D	06/07/2018	MATURITY		12,000,000	12,000,000	13,256,520	12,105,185		(105,185)		(105,185)		12,000,000				211,120	06/07/2018
S25221-AL-6	Eskom Holdings SOC Ltd-SENIOR UNSECURED	D	03/01/2018	CITIGROUP GLOBAL MAR		1,134,151	1,085,000	1,101,981	1,101,841		(271)		(271)		1,101,570		32,581	32,581	13,099	02/11/2025
T6510C-AA-5	LKO ITALIA BONDO SPA-SENIOR UNSECURED	B	06/04/2018	UBS LIMITED		1,286,066	1,224,825	1,194,480	1,262,310					(67,830)	1,224,825	30,345	61,241	91,586	21,068	04/01/2024
V4256B-AA-2	HTA GROUP LTD/MALRITIUS-SENIOR UNSECURED	D	06/26/2018	VARIOUS		587,750	590,000	631,418	629,766		(4,591)		(4,591)		625,174		(37,424)	(37,424)	25,404	03/08/2022
V6560A-AD-4	OCF SA-SENIOR UNSECURED	D	06/26/2018	VARIOUS		441,165	420,000	476,700	476,586		(450)		(450)		476,136		(34,971)	(34,971)	19,330	04/25/2044
V9327H-AA-3	UNITED BANK FOR AFRICA P-SENIOR UNSECURE	D	05/02/2018	CITIGROUP GLOBAL MAR		618,000	600,000	618,750	618,123		(1,229)		(1,229)		616,894		1,106	1,106	18,858	06/08/2022
V4662H-EM-4	INTRUM JUSTITIA AB-UNSECURED	B	04/17/2018	VARIOUS		8,974,889	9,039,587	8,138,040	8,776,060					(638,020)	9,039,590	901,550		836,849	84,444	07/15/2024
W7263H-AF-1	PKO BNK POLSKI (PKO FIN)-SR UNSECURED	D	05/02/2018	GOLDMAN SACHS INTERN		206,500	200,000	206,500	204,616		(301)		(301)		204,314		2,186	2,186	3,164	09/26/2022
W9821D-AJ-3	VERISURE HOLDING AB-SECURED	B	11/19/2018	CALL 103		3,967,155	3,851,605	3,810,098	4,116,386		(21,959)		(21,959)		4,017,605	153,103	(50,450)	(50,450)	302,649	11/01/2022
X9976E-AA-3	Teollisuuden Voima OYJ Senior Note Ser	D	08/19/2018	MATURITY		23,900,000	23,900,000	23,900,000	23,900,000						23,900,000				976,315	08/19/2018
Y000PX-AA-1	ENERGY RESOURCES LLC-SECURED	D	06/26/2018	VARIOUS		2,367,906	2,450,000	2,453,063	2,452,812		(265)		(265)		2,452,546		(84,640)	(84,640)	93,896	09/30/2022
Y06942-UF-4	Bank of East Asia Ltd/Th-SUBORDINATED	D	10/18/2018	VARIOUS		121,793	125,000	122,188			44		44		122,231		(438)	(438)	2,292	11/03/2026
Y0704P-AA-4	BAO TRANS ENTERPRISES EURO ISSUE BOND	D	12/12/2018	MATURITY		800,000	800,000	805,981	801,327		(1,327)		(1,327)		800,000				28,417	12/12/2018
Y1917X-CR-9	DAH SING BANK LTD-SUBORDINATED	D	10/18/2018	VARIOUS		802,245	800,000	833,160	812,866		(6,148)		(6,148)		806,719		(4,474)	(4,474)	51,217	01/29/2024
Y19029-BG-4	KAZKOMERTSBANK JSC-SENIOR UNSECURED	D	06/26/2018	DIRECT		1,634,260	1,640,000	1,629,750	1,630,129		841		841		1,630,970		3,290	3,290	59,712	12/21/2022
Y202ER-AB-6	ABJA INVESTMENT CO-SENIOR UNSECURED	D	05/31/2018	BARCLAYS CAPITAL INC		500,000	500,000	518,750	516,839		(937)		(937)		515,902		(15,902)	(15,902)	12,644	07/31/2024
Y2749K-AB-6	GOLDEN LEGACY PTE LTD-SENIOR UNSECURED	D	06/26/2018	DIRECT		446,696	440,000	478,488	476,661		(6,137)		(6,137)		470,524		(23,828)	(23,828)	17,646	06/07/2021
Y2R40T-AA-6	DELHI INTERNATIONAL AIRP-FIRST LIEN	D	06/26/2018	NOMURA INTL PLC		204,500	200,000	212,000	210,868		(1,203)		(1,203)		209,664		(5,164)	(5,164)	11,059	02/03/2022
Y44690-CF-4	JSW STEEL LTD SR UNSECURED	D	12/13/2018	VARIOUS		2,876,784	2,881,000	2,837,785	2,853,602		13,261		13,261		2,866,863		9,921	9,921	145,551	11/12/2019
Y4591R-NK-2	KASIKORN BANK PCL-SENIOR UNSECURED NOTE	D	03/20/2018	MATURITY		2,250,000	2,250,000	2,281,605	2,251,894		(1,894)		(1,894)		2,250,000				14,813	03/20/2018
Y48585-DA-1	KEB Hana Bank-SR UNSECURED	D	04/02/2018	MATURITY		5,000,000	5,000,000	4,965,140	4,997,111		2,889		2,889		5,000,000				25,278	04/02/2018
Y49876-AE-8	KRUNG THAI BANK/CAYMAN-SENIOR UNSECURED	D	09/11/2018	MATURITY		1,000,000	1,000,000	982,770	996,919		3,081		3,081		1,000,000				15,625	09/11/2018
Y5257Y-AA-5	LENOVO GROUP LTD EURO SHORT TERM NOTES U	D	11/21/2018	VARIOUS		17,073,977	16,950,000	17,533,795	17,147,532		(74,285)		(74,285)		17,073,247		730	730	481,708	05/08/2019
Y7028N-FG-5	POWER GRID CORP OF INDIA-SENIOR UNSECURE	D	09/28/2018	UBS LIMITED		981,500	1,000,000	1,015,400	1,011,920		(1,675)		(1,675)		1,010,245		(28,745)	(28,745)	29,170	01/17/2023
Y7138A-AE-0	PERTAMINA PERSERO PT-SENIOR UNSECURED	D	10/19/2018	JEFFERIES INTL LTD		245,125	250,000	253,772	253,289		(450)		(450)		252,839		(7,714)	(7,714)	8,719	05/20/2023
Y8564H-AB-0	Teekay Shuttle Tanker Fi Senior Secured	D	12/31/2018	SINKING PAYMENT		2,008,076	2,008,076	2,006,639	2,007,241		164		164		2,008,076				99,601	12/31/2023
A32174-98-3	China Hongqiao Group Ltd	D	06/26/2018	VARIOUS		221,054	220,000	221,0												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
05533U-AB-4	BBVA BANCOMER SA TEXAS SUB PFD NT	D	10/18/2018	VARIOUS		787,826	753,000	821,711	799,297		(10,964)		(10,964)		788,334		(508)	(508)	54,111	03/10/2021
05946N-AJ-4	BANCO BRADESCO (CAYMAN)-SUBORDINATED NOT	D	10/18/2018	VARIOUS		819,280	800,000	836,000	831,060		(7,788)		(7,788)		823,272		(3,992)	(3,992)	59,262	01/16/2021
05969B-AB-9	BANCO SANTANDER MEXICO-SUBORDINATED NOTE	D	10/18/2018	VARIOUS		806,500	800,000	832,000	812,876		(6,129)		(6,129)		806,747		(247)	(247)	57,913	01/30/2024
78454H-AA-7	SMFG PREF CAP USD 3-JR SUBORDINATED	D	07/25/2018	CALL 100		800,000	800,000	902,094	833,449		(33,449)		(33,449)		800,000				43,067	01/01/9999
G012B1-AA-1	AHLI UNITED SUKUK LTD-JR SUBORDINATED	D	10/23/2018	VARIOUS		204,820	209,000	209,000	209,000						209,000		(4,180)	(4,180)	11,495	01/01/9999
G07980-AH-1	BARCLAYS BANK PLC JR SUBORDINATED SER Z	D	12/07/2018	BARCLAYS CAPITAL INC		5,520,000	8,000,000	3,600,072	3,600,072						3,600,072		1,919,928	1,919,928	183,750	01/01/9999
G5485F-AD-4	LI & FUNG LTD-SUBORDINATED	D	12/13/2018	UBSAGLN		1,280,000	2,000,000	2,000,000	2,000,000						2,000,000		(720,000)	(720,000)	117,833	01/01/9999
G5S64M-AC-0	MAF GLOBAL SECURITIES-SUBORDINATED BOND	D	03/20/2018	TENDERED		13,940,000	13,600,000	14,630,400	14,017,862		(109,737)		(109,737)		13,908,124		31,876	31,876	212,642	01/01/9999
G8697Z-AA-4	TINKOFF CREDIT SYSTEMS V-AKBHC 9 1/4 PER	D	06/26/2018	DIRECT		737,136	720,000	760,536	759,532		(2,950)		(2,950)		756,582		(19,446)	(19,446)	32,375	01/01/9999
M7301X-AA-2	NBK TIER 1 FNC LTD-JUNIOR SUBORDINATED	D	10/18/2018	VARIOUS		287,680	286,000	292,664	290,950		109		109		291,059		(3,379)	(3,379)	16,856	01/01/9999
M7S27Z-SN-3	NATIONAL BK OF ABU DHABI-JUNIOR SUBORDIN	D	12/13/2018	VARIOUS		20,100,000	20,100,000	20,213,500	20,169,597		(7,725)		(7,725)		20,161,872		(61,872)	(61,872)	1,033,355	01/01/9999
N09612-AB-3	Barclays Bank PLC-SUBORDINATED BOND	D	12/10/2018	BARCLAYS CAPITAL INC		2,822,000	4,000,000	1,831,516	1,831,516						1,831,516		990,484	990,484	83,745	01/01/9999
N76368-AB-0	ROYAL CAPITAL BV-SR UNSECURED	D	05/23/2018	NOMURA SECURITIES IN		3,526,250	3,500,000	3,493,405	3,493,405						3,493,405		32,845	32,845	87,500	01/01/9999
N76368-AC-8	ROYAL CAPITAL BV-SR UNSECURED	D	05/31/2018	BARCLAYS CAPITAL INC		4,010,000	4,000,000	4,000,000	4,000,000						4,000,000		10,000	10,000	83,500	01/01/9999
P3772W-AA-0	Banco do Brasil SA/Cayma-BANCO BRASL (CI	D	02/07/2018	VARIOUS		832,788	765,000	841,118	838,431		(2,543)		(2,543)		835,889		(3,101)	(3,101)	6,723	01/01/9999
Y19019-AA-9	CHINA LIFE INSURANCE-SUBORDINATED	D	10/18/2018	VARIOUS		250,207	256,000	257,280	257,280		(396)		(396)		256,884		(6,677)	(6,677)	8,107	07/03/2075
Y81636-AD-7	STATE BK OF INDIA/DUBAI-SBI IN 5 1/2 09/2	D	12/13/2018	VARIOUS		3,209,563	3,250,000	3,250,000	3,250,000						3,250,001		(40,438)	(40,438)	211,299	01/01/9999
4899999	Subtotal - Bonds - Hybrid Securities					68,412,454	71,687,000	65,847,495	64,800,338		(174,294)		(174,294)		64,886,046		3,526,408	3,526,408	2,719,397	XXX
05619E-AA-9	Barings Capital Finance LLC - Investment		12/28/2018	DIRECT		205,780,000	205,780,000	205,780,000	176,600,000						205,780,000				1,629,838	07/29/2020
46596B-AP-0	JPMCC Commercial Mortgage-SERIES 2017-JP7		01/01/2018	JP MORGAN SECURITIES							(86,147)		(86,147)							09/01/2050
47231E-AE-0	JEFFERIES FINANCE LLC-REVOLVING CR FACIL		02/16/2018	DIRECT		225,000,000	225,000,000	225,000,000	225,000,000						225,000,000				691,535	03/01/2020
57628H-AH-1	MASSMUTUAL ASSET FINANCE LLC Senior Secu		12/27/2018	DIRECT		569,193,840	569,193,840	569,193,840	568,668,240						569,193,840					12/31/2020
57632E-AP-9	MASSMUTUAL HOLDING LLC PROMISSORY NOTE		12/15/2018	DIRECT		319,970,458	319,970,458	36,581,461	36,581,461						319,970,458				10,701,234	01/15/2019
57632E-AG-7	MASSMUTUAL HOLDING LLC PROMISSORY NOTE		12/15/2018	DIRECT		10,257,905	10,257,905								10,257,905				343,070	03/15/2019
57632E-AV-6	MASSMUTUAL HOLDING LLC PROMISSORY NOTE		12/15/2018	DIRECT		49,830,000	49,830,000	25,643,721	25,643,721						49,830,000				1,666,537	03/15/2019
72403*-AB-8	PIONEERS GATE LLC 2015-4 DUNLAP		09/17/2018	DIRECT		75,000,000	75,000,000	75,000,000	75,000,000						75,000,000				2,121,086	12/02/2022
72403*-AG-7	PIONEERS GATE LLC 2016-1 BWS		07/16/2018	DIRECT		50,000,000	50,000,000	50,000,000	50,000,000						50,000,000				950,190	04/29/2023
72403*-AH-5	PIONEERS GATE LLC 2016-2 MPOE Note		03/29/2018	DIRECT		68,182,258	68,182,258	68,182,258	68,182,258						68,182,258				176,284	10/30/2023
72403*-AJ-1	PIONEERS GATE LLC 2016-3 Insignia Jet No		06/28/2018	DIRECT		150,000,000	150,000,000	150,000,000	150,000,000						150,000,000				3,407,024	12/02/2020
72403*-AK-8	PIONEERS GATE LLC 2017 2 GSCF 2011-2A-1		12/17/2018	DIRECT		10,056,310	10,056,310	10,559,126	10,056,310		(450,258)		(450,258)		10,514,232		(457,922)	(457,922)	(62,781)	12/17/2021
72403*-AL-6	PIONEERS GATE LLC 2016-4 Solar Tetris Wa		12/14/2018	DIRECT		43,310,369	43,310,369	43,310,369	33,159,520						43,310,369				1,451,537	11/16/2046
72403*-AN-2	PIONEERS GATE LLC 2017-4 Alkali Term Loa		12/26/2018	DIRECT		6,470,450	6,470,450	6,470,450	6,470,450						6,470,450				113,192	06/25/2021
72403*-AP-7	PIONEERS GATE LLC 2017-5 CERBERUS		08/17/2018	DIRECT		68,280,000	68,280,000	68,280,000	68,280,000						68,280,000				1,727,789	08/02/2024
72403*-AR-3	PIONEERS GATE LLC 2017-3 AEF (Amur)		12/28/2018	DIRECT		52,977,394	52,977,394	52,977,394	51,920,000						52,977,394				405,164	08/09/2026
72403*-AS-1	PIONEERS GATE LLC 2017-6 FS FUNDING		03/21/2018	VARIOUS		82,649,130	82,649,130	82,649,130	82,649,130						82,649,130				2,354,599	07/31/2026
72403*-AV-4	PIONEERS GATE LLC 2018-2 ONDK Note		12/20/2018	DIRECT		1,330,336	1,330,336	1,330,336	1,330,336						1,330,336				30,351	10/13/2022
72403*-AW-2	PIONEERS GATE LLC 2018-3 BIKKey Note		10/16/2018	DIRECT		5,488,035	5,488,035	5,488,035	5,488,035						5,488,035				100,025	10/16/2023
72403*-AX-0	PIONEERS GATE LLC 2018-1 MPOF Note		12/31/2018	DIRECT		7,667,419	7,667,419	7,667,419	7,667,419						7,667,419				219,911	03/28/2023
72403*-AY-8	PIONEERS GATE LLC 2018-4 CSWC Lev II		12/28/2018	DIRECT		29,080,000	29,080,000	29,080,000	29,080,000						29,080,000				256,376	08/02/2025
72403*-AZ-5	PIONEERS GATE LLC 2018-5 OPTN (Elington		12/12/2018	DIRECT		1,681,247	1,681,247	1,681,247	1,681,247						1,681,247				2,922	12/10/2019
79548K-6F-0	SALOMON BROTHERS MORTGAG-SERIES 2001-2 C		08/01/2018	PAYDOWN		672,163	672,163	609,463	671,985		178		178		672,163				7,850	01/01/2035
79548K-XQ-6	SALOMON BROTHERS MORTGAG-SERIES 1997-HUD		12/01/2018	PAYDOWN		115,600	115,600	104,093	114,745		11,059		11,059		115,600				4,605	07/01/2024
79549A-FV-6	Citigroup Global Markets-SERIES 2001-MM		12/01/2018	PAYDOWN		95,133	95,133	43,005	16,909						95,133				7,964	02/01/2034
79549A-GG-8	SALOMON BROTHERS MORTGAG-SERIES 2001-MM		12/01/2018	PAYDOWN		608,429	608,429	524,663	595,284		13,145		13,145		608,429				21,677	02/01/2034
79549A-GU-7	SALOMON BROTHERS MORTGAG-SERIES 2001-MM		11/01/2018	PAYDOWN		511,936	511,964	248,191	477,297		34,639		34,639		511,936				24,777	02/01/2034
79549A-RD-3	SALOMON BROTHERS MORTGAG-SERIES 2002-HYB		05/01/2018	PAYDOWN		4,334	4,334	4,341	4,137		197		197		4,334				41	09/01/2032
79549A-RE-1	SALOMON BROTHERS MORTGAG-SERIES 2002-HYB		12/01/2018	PAYDOWN		2,255	2,255	2,259	2,320		(65)		(65)		2,255				56	09/01/2032
79549A-RU-5	Salomon Bros Mtg Secs VI-SERIES 2003-CB1		12/01/2018	PAYDOWN		2,175	2,175	1,196	1,543		632		632		2,175				47	01/01/2033
79549A-SM-2	SALOMON BROTHERS MORTGAG-SERIES 2003-UP1		11/01/2018	PAYDOWN		103,246	103,246	92,238	91,323		11,922		11,922		103,246				1,666	04/01/2032
79549A-XH-7	SALOMON BROTHERS MORTGAG-SERIES 2003-HE1		01/25/2018	PAYDOWN		596,133	596,133	508,948	560,944		35,189		35,189		596,133				935	04/25/2033
79549A-XZ-7	SALOMON BROTHERS MORTGAG-SERIES 2003-UP2		12/01/2018	PAYDOWN		42,590	42,590	32,568	32,900		9,690		9,690		42,590				1,388	06/01/2033
79549A-YA-1	SALOMON BROTHERS MORTGAG-SERIES 2003-UP2																			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
05616M-AE-6	BABSON CLO LTD 2015-11 SUB NT	D	10/01/2018	VARIOUS		7,468,970	10,100,000	8,908,799	7,009,722				429,383		7,468,970					10/20/2030
05617Q-AC-0	BABSON CLO LTD 2012-11 SUB NT	D	01/01/2018	VARIOUS		2,858,373	10,000,000	2,378,881	1,000	2,857,373					2,858,373				1,949,359	05/15/2023
05617Y-AG-4	BABSON CLO LTD 2013-11-SR SECD DEF NT CL	D	04/06/2018	PAYDOWN		3,250,000	3,250,000	3,034,688	3,186,094		63,906			3,250,000					42,162	01/18/2025
05617Y-AS-8	BABSON CLO LTD-BABSN 2013-11A A2R	D	04/06/2018	PAYDOWN		14,400,000	14,400,000	14,400,000	14,400,000					14,400,000					269,183	01/18/2025
05617Y-AU-3	BABSON CLO LTD-BABSN 2013-11A BR	D	04/06/2018	PAYDOWN		6,100,000	6,100,000	6,100,000	6,100,000					6,100,000					141,665	01/18/2025
05618B-AA-6	BABSON CLO LTD 2013-1 SUB NT	D	05/28/2018	VARIOUS				132,280			362,367			362,367						04/21/2025
05618C-AE-6	BABSON CLO LTD 2013-11 SUB NT	D	07/18/2018	PAYDOWN		5,542,537	5,542,537	2,304,017	1,460,594				4,081,943		5,542,537					01/18/2025
05618H-AE-5	BABSON CLO LTD 2014-1 SUB NT	D	01/20/2018	CAPDECR				139,214												07/20/2025
05618J-AE-1	BABSON CLO LTD 2014-111-SUB NT 144A	D	01/20/2018	CAPDECR				173,883												01/15/2026
05618K-AC-2	BABSON CLO LTD 2014-11-SUB NT 144A	D	01/20/2018	CAPDECR				663,918												10/17/2026
05618L-AF-3	BABSON CLO LTD-BABSN 2014-11A AR	D	11/15/2018	PAYDOWN		11,000,000	11,000,000	11,000,000	11,000,000					11,000,000					386,050	10/17/2026
05618L-AG-1	BABSON CLO LTD-BABSN 2014-11A BR	D	11/15/2018	PAYDOWN		13,250,000	13,250,000	13,250,000	13,250,000					13,250,000					524,822	10/17/2026
05618L-AH-9	BABSON CLO LTD-BABSN 2014-11A CR	D	11/15/2018	PAYDOWN		8,750,000	8,750,000	8,750,000	8,750,000					8,750,000					418,209	10/17/2026
05618M-AU-8	BABSON CLO LTD-BABSN 2014-3A B1R	D	06/14/2018	PAYDOWN		18,700,000	18,700,000	18,700,000	18,700,000					18,700,000					109,441	01/15/2026
05618M-AY-0	BABSON CLO LTD-BABSN 2014-3A C1R	D	06/14/2018	PAYDOWN		6,600,000	6,600,000	6,600,000	6,600,000					6,600,000					138,623	01/15/2026
05618N-AA-0	BABSON EURO CLO 2014-2 BV-SUB NT 144A	B	05/25/2018	CAPDECR				3,716,752								(341,428)		(341,428)		11/26/2027
05618P-AJ-6	BABSON CLO LTD 2016-1 SECD DEF MEZZ CL C	D	08/20/2018	PAYDOWN		9,400,000	9,400,000	9,400,000	9,400,000					9,400,000					318,124	04/23/2027
05618R-AC-7	BABSON CLO LTD 2016-1 SUB NT	D	10/01/2018	VARIOUS		7,149,232	11,250,000	9,396,583	6,850,291					7,149,232						04/23/2027
06759F-AA-4	BABSON CLO LTD 2015-11-SERIES 15-2A CLAS	D	10/22/2018	PAYDOWN		11,250	11,250	11,250	11,250					11,250					173	10/20/2030
06760C-AE-0	Barings CLO Ltd 2017-1-SERIES 2017-1 CLA	D	05/28/2018	CAPDECR				856,999												07/18/2029
26410M-AB-6	DUCHESS VI CLO BV-2ND PRIORITY DEF SEC N	B	02/01/2018	PAYDOWN		4,492,579	4,492,580	3,307,818	4,194,976		137,707		137,707	517,081	4,492,579	(357,185)		(357,185)	110	08/01/2022
26410M-AF-7	DUCHESS VI CLO BV SECD INC NT CL F	B	02/01/2018	CA CASH CLOSE		1,769,697	7,487,402	1,664,699	1,704,888					80,917	1,769,697	(16,108)		(16,108)	1,268,775	08/01/2022
46616A-AE-6	JFIN CLO 2012 LTD NT CL B	D	04/20/2018	PAYDOWN		6,800,000	6,800,000	6,484,344	6,853,559		(53,559)		(53,559)	6,800,000					106,467	07/20/2023
46616A-AJ-5	JFIN CLO 2012 LTD-NOTE CLASS A2B 144A	D	04/20/2018	PAYDOWN		10,800,000	10,800,000	10,396,188	10,875,366		(75,366)		(75,366)	10,800,000					48,299	07/20/2023
46617N-AQ-0	JFIN CLO LTD-SERIES 14-2A CLASS A1AR	D	10/22/2018	PAYDOWN		4,743,803	4,743,803	4,743,803	4,743,803					4,743,803					119,682	07/20/2026
N0804Q-AZ-8	BABSON EURO CLO 2015-1 BV SHORT TERM NT	B	04/25/2018	CAPDECR				1,114,990								98,094		98,094	456,938	10/25/2029
N0804R-BN-2	BABSON EURO CLO-BABSE 2016-1A SUB	B	05/25/2018	CAPDECR				2,464,172								65,931		65,931		07/27/2030
N2874B-AA-7	DUCHESS VI CLO BV-SR SEC NT CLASS D	B	02/01/2018	CORPORATE ACTION		3,044,876	3,044,877	1,283,069	1,705,533		15,181		15,181	321,995	1,785,898	(256,811)	1,258,978	1,002,167	3,413	08/01/2022
N2874B-AE-9	Duchess VI CLO-SERIES VI-X CLASS E	B	02/01/2018	PAYDOWN		1,031,212	1,031,212	319,716	722,905		280,662		280,662	109,357	1,031,212	(81,713)		(81,713)	2,975	08/01/2022
N5758-AE-1	MALIN CLO BV-SECD NT SER 2007-1X CL F RE	B	11/07/2018	PAYDOWN		1,359,331	5,731,999							1,359,331					159,652	05/07/2023
N7516#-AA-1	ROCKALL CLO BV EURO CL VF-1 SR SECD VAR	B	12/17/2018	VARIOUS		75,786,352	75,786,342	71,971,147	76,529,319		1,359,331		1,359,331	(4,558,172)	75,786,352	3,815,205		3,815,205	2,009,369	06/15/2020
N7516#-AB-9	ROCKALL CLO BV Variable Funding Note- US	D	12/17/2018	DIRECT		8,862,763	8,862,763	8,862,763	8,862,763					8,862,763					271,194	06/15/2020
N7516#-AC-7	ROCKALL CLO BV Variable Funding Note - G	B	09/17/2018	DIRECT		21,203,851	20,666,800	23,975,581	20,907,797					3,067,784	21,203,851	(3,308,785)		(3,308,785)	314,171	06/15/2020
05618H-AE-5	BABSON CLO LTD 2014-1 SUB NT	D	01/20/2018	VARIOUS		139,214	139,214	139,214	139,214					139,214						07/20/2025
05618K-AC-2	BABSON CLO LTD 2014-11-SUB NT 144A	D	01/20/2018	VARIOUS		663,918	663,918	663,918	663,918					663,918						10/17/2026
05616J-AE-3	BABSON CLO LTD 2015-1 SUB NT	D	01/20/2018	VARIOUS		252,225	252,225	252,225	252,225					252,225						04/20/2027
102894-35-9	BABSON EURO CLO 2014-2 BV-SUB NT 144A	D	05/25/2018	VARIOUS		3,716,752	3,716,752	3,716,752	3,716,752					3,716,752						11/26/2027
126854-43-9	BABSON EURO CLO 2015-1 BV SHORT TERM NT	D	04/25/2018	VARIOUS		1,114,990	1,114,990	1,114,990	1,114,990					1,114,990					456,938	10/25/2029
05618B-AA-6	BABSON CLO LTD 2013-1 SUB NT	D	01/20/2018	VARIOUS		132,280	132,280	132,280	132,280					132,280						04/21/2025
06760C-AE-0	BABSON CLO LTD-SERIES 2017-1 CLASS A	D	01/18/2018	VARIOUS		856,999	856,999	856,999	856,999					856,999						07/18/2029
05618J-AE-1	BABSON CLO LTD 2014-111-SUB NT 144A	D	06/08/2018	VARIOUS		173,883	173,883	173,883	173,883					173,883						01/15/2026
000000-00-0	BABSON EURO CLO-BABSE 2016-1A SUB	D	05/25/2018	VARIOUS		2,464,172	2,464,172	2,464,172	2,464,172					2,464,172						07/27/2030
5599999	Subtotal - Bonds - Parent, Subsidiaries and Affiliates					2,322,306,198	2,345,734,257	2,006,577,124	1,907,464,928	3,219,740	5,877,360	10,205	9,086,895	(461,038)	2,321,505,142	(382,800)	801,056	418,256	38,147,398	XXX
00118B-AF-4	AEP Hlds Initial Term Ln		10/01/2018	CA CASH CLOSE		113,291	113,291	113,047	113,047				244		113,291				3,247	08/31/2021
00118B-AG-2	Arrowhead Electrical Pro Term Loan EUR		10/01/2018	CA CASH CLOSE		27,950	27,950	28,094	28,094				280		27,950	(423)		(423)		08/31/2021
00190N-AH-2	PODS Enterprises, Inc. 1st Lien Term L		06/08/2018	VARIOUS		1,875,572	1,878,693	1,873,997	1,873,997				23		1,874,020		1,552	1,552	39,460	11/21/2024
00190N-AJ-8	PODS LLC		12/31/2018	CA CASH CLOSE		14,085	14,085	14,062					24		14,085				179	12/06/2024
00221*-AA-1	ASC Communications, LLC Term Loan		11/21/2018	VARIOUS		3,013,980	3,013,980	2,953,700	2,953,700				15,736		2,969,437		44,543	44,543	180,120	06/28/2022
00404D-AD-5	ACADIA HEALTHCARE COMPAN TERM LOAN B		03/22/2018	CA CASH CLOSE		1,474,433	1,474,433	1,467,061	1,468,595				5,838		1,474,433				14,524	02/11/2022
00404D-AE-3	Acadia Healthcare Compan Incremental USD		03/22/2018	CA CASH CLOSE		2,505,375	2,505,375	2,492,848	2,493,796				11,579		2,505,375				24,473	02/16/2023
00449#-AE-5	Accruent, LLC First Lien		09/06/2018	VARIOUS		1,493,060	1,493,060	1,478,129	1,478,129				14,931		1,493,060				123,172	07/28/2023
00449#-AF-2	Accruent, LLC 1L DDTL		09/06/2018	VARIOUS		2,320,099	2,320,099	2,320,099	2,320,099					2,320,099					96,486	07/26/2024
00449#-AG-0	Accruent, LLC 2L DDTL		05/31/2018	VARIOUS		1,800,593	1,800,593	1,800,593	1,746,911					1,800,593						

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
00769E-AS-9	ADVANTAGE SALES & MARKET 1ST LIEN TERM L		06/22/2018	VARIOUS		1,796,801	1,869,013	1,862,393	1,864,115			9	9		1,864,124		(67,323)	(67,323)	35,514	07/25/2021
00889E-AD-6	AIM Aerospace Sr. Term Loan		09/28/2018	CA CASH CLOSE		59,500	59,500	58,608			893		893		59,500				1,069	04/03/2024
011662-AF-7	Alaska Air Group Inc. Floating Rate B		09/13/2018	VARIOUS		28,265,625	28,265,625	28,124,297	28,124,297		15,703		15,703		28,140,000		125,625	125,625	674,236	09/13/2024
01242H-AJ-7	Albany Molecular Researc First Lien TL		11/16/2018	VARIOUS		1,234,589	1,234,589	1,231,503	1,231,503		23		23		1,231,526		3,063	3,063	56,711	08/31/2024
01642P-AW-6	AlixPartners LLP Term Loan B due		11/26/2018	VARIOUS		2,617,787	2,621,039	2,614,486	2,614,486		50		50		2,614,535		3,252	3,252	116,120	04/04/2024
01852P-AA-5	ALLFLEX HOLDINGS III INC 1ST LIEN TL 6/1		11/08/2018	VARIOUS		1,217,999	1,213,496	1,207,428	1,209,971		37		37		1,210,008		7,991	7,991	51,391	07/17/2020
01881U-AE-5	Alliant Holdings LP TL B (Apr'18) (		12/31/2018	CA CASH CLOSE		19,125	19,125	19,125							19,125				437	03/22/2024
01973J-AH-2	ALLISON TRANSMISSION NEW TERM LOAN B		04/06/2018	VARIOUS		2,683,672	2,683,672	2,670,813	2,676,666		7,006		7,006		2,683,672				21,948	08/23/2019
02034D-AC-1	Almonde Inc USD 1L Term Loa		11/30/2018	CA CASH CLOSE		250,553	250,553	249,300	249,300		1,253		1,253		250,553				6,971	06/13/2024
02074E-AA-3	Alpha Guardian (fka Cann First-Out DDTL		12/31/2018	CA CASH CLOSE		1,051	1,051	701			350	350		1,051					18	07/31/2023
02083J-AC-8	Ascend Learning, LLC Term Loan B		12/31/2018	CA CASH CLOSE		6,892	6,892	6,858	6,858		34		34		6,892				229	07/12/2024
02337N-AB-5	Trimark Inc. 1st Lien Term L		12/31/2018	CA CASH CLOSE		8,793	8,793	8,771			22		22		8,793				323	09/13/2024
03759D-AB-4	APEX TOOL GROUP LLC TERM LOAN B 1/1		04/06/2018	VARIOUS		1,182,862	1,183,591	1,177,673	1,180,553		19		19		1,180,573		2,289	2,289	9,292	01/18/2020
03759D-AD-0	Apex Tool Group LLC - 2018 Term Loan B		12/31/2018	CA CASH CLOSE		54,717	54,717	54,908			(191)		(191)		54,717				548	02/01/2022
03765V-AH-3	Prime Security Services Borrower LLC		12/31/2018	CA CASH CLOSE		55,181	55,181	55,871	55,871		(690)		(690)		55,181				1,730	12/30/2026
03769E-AB-3	Apollo Aviation Securitization Equity Tr		12/15/2018	CA CASH CLOSE		8,632,246	8,632,246	8,631,980	8,631,980		266		266		8,632,246				303,423	11/15/2041
03827F-AX-9	Applied Systems Inc. 1st Lien TL		12/31/2018	CA CASH CLOSE		25,500	25,500	25,500	25,500						25,500				800	09/13/2024
03879R-AB-8	Arbor Pharmaceuticals In TL B		12/31/2018	CA CASH CLOSE		79,688	79,688	74,906	75,013		4,674		4,674		79,688				4,893	07/05/2023
04268B-AA-2	Arpad Solar Borrower LLC Term Loan		10/15/2018	CA CASH CLOSE		1,926,201	1,926,201	1,926,201	1,926,201						1,926,201				79,642	08/30/2034
04546D-AB-0	Associated Asphalt Partn Term Loan B due		12/21/2018	CA CASH CLOSE		21,857	21,857	21,748	21,748		109		109		21,857				1,270	03/21/2024
04621H-AK-9	AssuredPartners Capital, 1st Lien TL		12/31/2018	CA CASH CLOSE		10,719	10,719	10,731			(12)		(12)		10,719				88	10/22/2024
04626*-AA-4	ASTORIA ENERGY II LLC ACQUISITION TER		12/31/2018	CA CASH CLOSE		134,599	134,599	134,599	134,599						134,599				3,205	08/31/2024
04626*-AB-2	ASTORIA ENERGY II LLC PROJECT TERM LO		12/31/2018	CA CASH CLOSE		10,698	10,698	10,698	10,698						10,698				255	08/31/2024
04626*-AC-0	ASTORIA ENERGY II LLC TERM LOAN		12/31/2018	CA CASH CLOSE		2,160,591	2,160,591	2,160,591	2,160,591						2,160,591				51,364	08/31/2024
04626L-AB-5	ASTORIA ENERGY LLC TERM LOAN B		12/20/2018	VARIOUS		3,565,414	3,618,668	3,546,295	3,561,802		1,951		1,951		3,563,753		31,661	31,661	196,961	12/24/2021
04649V-AS-9	Asurion LLC TL B5		04/06/2018	VARIOUS		793,367	793,367	793,367							793,367				6,145	11/03/2023
05350N-AC-8	Avantor Performance Mate USD TLB (Sep'17		11/27/2018	CA CASH CLOSE		2,013,774	2,013,774	1,983,567	1,983,567		30,207		30,207		2,013,774				110,130	11/21/2024
05368H-AE-7	Aviation Technical Services, Inc.		09/28/2018	CA CASH CLOSE		50,000	50,000	48,625	48,641		1,359		1,359		50,000				2,015	09/30/2021
05377J-AN-2	Avis Budget Car Rental LLC - 2017 Term L		02/13/2018	CA CASH CLOSE		5,219,257	5,219,257	5,222,545	5,222,545		(3,288)		(3,288)		5,219,257				24,675	03/15/2022
05549D-AB-4	Epic Health Services, In First Lien TL		12/31/2018	CA CASH CLOSE		25,500	25,500	25,245	25,245		255		255		25,500				1,029	03/08/2024
05604X-AP-1	BWAY Holding Company New Term Loan B		12/31/2018	CA CASH CLOSE		42,500	42,500	42,288	42,288		213		213		42,500				1,373	04/03/2024
08078*-AA-4	Belron Finance US LLC USD TLB (Oct'17		12/26/2018	VARIOUS		774,959	794,677	793,683	793,683		7		7		793,691		(18,732)	(18,732)	31,417	11/07/2024
08579J-AV-4	Berry Plastics Group Inc.		05/29/2018	VARIOUS		3,174,774	3,170,885	3,170,885	3,170,885						3,170,884		3,890	3,890	47,310	02/08/2020
086582-AA-4	BESTOP, INC. TERM LOAN		09/28/2018	CA CASH CLOSE		471,382	471,382	462,548	463,514		7,869		7,869		471,382				16,502	07/30/2021
08887*-AA-5	BICENT POWER LLC FLOATING RATE T		12/31/2018	CA CASH CLOSE		336,124	336,124	334,443	334,777		1,347		1,347		336,124				9,851	02/07/2024
08948*-AA-2	Big River Steel LLC Senior Secured		12/31/2018	CA CASH CLOSE		9,819	9,819	9,720	9,720		98		98		9,819				550	08/23/2023
09238F-AK-7	Blackhawk Network Holdin Term Loan B		12/31/2018	CA CASH CLOSE		7,978	7,978	7,958			20		20		7,978				113	05/18/2025
09522U-AD-5	Blucora Inc.		05/29/2018	CA CASH CLOSE		458,066	458,066	459,500	459,500		(1,434)		(1,434)		458,066				8,230	05/22/2024
09776M-AK-0	BOMREC TL B 1L USD		11/09/2018	VARIOUS		2,515,104	2,524,500	2,499,255	2,499,988		185		185		2,500,172				14,932	05/23/2025
09858E-AC-6	Boomerang Tube, LLC Exit TLB		11/01/2018	BANK LOANS BARINGS		278,764	337,158	328,216	321,577	3,225					329,236		(50,472)	(50,472)	37,550	02/02/2020
09858E-AD-4	Boomerang Tube LLC Subordinated No		11/01/2018	VARIOUS		44,942	209,313	294,392	2,983	24,138					44,942				44,942	02/01/2021
09858E-AE-2	Boomerang Tube, LLC Exit ABL		11/01/2018	BANK LOANS BARINGS		71,917	71,917	72,097	71,917	108					72,025		(108)	(108)	9,709	02/02/2020
09858E-AF-9	Boomerang Tube LLC Term A Ln		11/30/2018	CA CASH CLOSE		14,384	14,384	14,384							14,384				88	06/30/2022
10138*-AA-8	Bottom Line Systems, Inc Term Loan 12/16		05/14/2018	CA CASH CLOSE		82,151	82,151	82,151	82,151						82,151				4,248	01/06/2023
10330J-AU-2	Boyd Gaming Corporation Repriced TL B2		07/12/2018	CA CASH CLOSE		25,239	25,239	25,239	25,239						25,239				323	09/15/2023
10801X-AF-4	BROCKMAN GROUP LTD LLC 1st Lien Term L		08/15/2018	CA CASH CLOSE		3,399,870	3,399,870	3,382,871	3,388,909		10,961		10,961		3,399,870				98,765	12/18/2020
11221M-AB-7	BRONCO MIDSTREAM FUNDING BRONCO TLB 7/13		12/06/2018	VARIOUS		2,264,689	2,267,876	2,224,733	2,238,232		11,092		11,092		2,249,324		15,365	15,365	92,852	08/17/2020
12508K-AD-9	CD&R Buyer/STS Op First Lien Term Loan		12/31/2018	CA CASH CLOSE		16,185	16,185	16,105	16,105		81		81		16,185				586	12/06/2024
12512Y-AF-8	CDW LLC - 2016 Term Loan B		04/06/2018	VARIOUS		3,907,286	3,907,286	3,907,286	3,907,286						3,907,286				38,877	08/04/2023
12602E-AA-3	CFS FUNDING TRUST I Floating Rate V		12/17/2018	VARIOUS		1,631,959	1,631,959	1,631,959							1,631,959				21,473	04/09/2043
12632E-AG-1	CPI International Inc. First Lien Term		12/21/2018	VARIOUS		658,231	681,919	681,919	681,919						681,919		(23,688)	(23,688)	37,179	07/26/2024
12683*-AA-7	CPV SHORE HOLDINGS, LLC CONSTRUCTION FA		12/27/2018	CA CASH CLOSE		17,285,137	17,285,137	17,048,887	17,091,700		193,437		193,437		17,285,137				881,842	08/31/2021
12738E-AA-0	Cadence Aerospace, LLC Senior Term Loa		12/04/2018	VARIOUS		6,548,137	6,631,061	6,498,440	6,498,440		995		995		6,499,435				502,947	11/14/2023
12738E-AB-8	Cadence Aerospace, LLC Incremental TL		09/28/2018	CA CASH CLOSE		8,339	8,339	8,255			83		83		8,339					11/14/2023
12764H-AB-9	Caelus Energy Alaska 03 2nd Lien		12/0																	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
13973U-AP-4	Capital Automotive LLC First Lien Term		11/08/2018	VARIOUS		4,137,396	4,137,396	4,116,709	4,116,709			157	157		4,116,866		20,530	20,530	159,058	03/24/2024
14314F-AA-6	Carlyle US CLO 2017-2 Ri Term Loan		10/23/2018	CA CASH_CLOSE		142,857	142,857	142,857	142,857						142,857				4,473	07/18/2031
143156-AA-7	Carlyle US CLO 2013-2 Re Term Loan		10/19/2018	CA CASH_CLOSE		204,932	204,932	204,932	204,932						204,932				2,532	01/19/2029
14441J-AB-2	Carr Management Inc. - Revolver		01/26/2018	VARIOUS		131,200	131,200	131,200	131,200						131,200				13,453	10/22/2020
147266-AA-0	CASCADE DRILLING, L.P. 2015 1ST LIEN T		10/02/2018	CA CASH_CLOSE		106,362	106,362	104,681	104,681		1,497		1,497		106,362				4,095	09/01/2021
14855J-AB-1	Castlelake Aircraft Secu Class A Loans		12/15/2018	CA CASH_CLOSE		6,065,983	6,065,983	6,064,207	6,064,216		1,767		1,767		6,065,983				161,544	08/03/2041
14964Y-AD-2	Cavium Inc. - 2017 Term Loan B		07/23/2018	VARIOUS		842,224	842,224	847,488	847,488		(5,264)		(5,264)		842,224				17,750	08/16/2022
15018L-AJ-0	Cedar Fair, L.P. TL B		03/14/2018	CA CASH_CLOSE		3,068,034	3,068,034	3,078,115	3,078,115		(10,081)		(10,081)		3,068,034				24,515	03/30/2024
15911A-AC-7	Change Healthcare Holdin New TL B due 20		12/31/2018	CA CASH_CLOSE		76,500	76,500	76,309	76,309		191		191		76,500				2,777	01/26/2024
16117L-BS-7	Charter Communications I New Term Loan B		12/31/2018	CA CASH_CLOSE		25,500	25,500	25,468	25,468		32		32		25,500				575	04/11/2025
16384Y-AE-7	Chemours Company (The) Repriced USD Te		04/03/2018	CA CASH_CLOSE		4,218,125	4,218,125	4,218,125	4,218,125						4,218,125				46,826	05/12/2022
164110-AA-5	CHENIERE CORPUS CHRISTI CONSTRUCTION FA		05/23/2018	VARIOUS		7,983,125	7,983,125	7,738,826	7,749,121		229,745		229,745		7,978,865		4,260	4,260	170,433	05/31/2022
17121H-AF-7	CHRYSLER 2018 TERM LOAN		11/08/2018	BANK LOANS BARINGS		2,282,851	2,282,851	2,271,436	2,277,355						2,277,355		5,495	5,495	77,429	12/31/2018
18143E-AB-5	Dossan Infracore Interna Term Loan B		04/06/2018	VARIOUS		1,004,274	1,004,274	1,001,763	1,001,764		2,511		2,511		1,004,274				8,072	05/19/2024
208240-AA-8	ROI Solutions Senior Term Loa		10/01/2018	CA CASH_CLOSE		5,997	5,997	5,877	5,877		120		120		5,997				169	07/31/2024
21119F-AA-8	Continental Cafe Term Loan		12/31/2018	CA CASH_CLOSE		44,322	44,322	43,436	43,436		886		886		44,322				2,941	01/27/2023
21751F-AA-1	COPPER MOUNTAIN SOLAR 3 CONSTRUCTION FA		12/31/2018	CA CASH_CLOSE		1,047,368	1,047,368	1,047,368	1,047,368						1,047,368				18,394	06/30/2025
224120-AA-2	CPV MARYLAND, LLC CONSTRUCTION FA		09/28/2018	CA CASH_CLOSE		1,337,536	1,337,536	1,337,536	1,337,536						1,337,536				37,402	12/31/2021
22834K-AB-7	Crown Finance US, Inc. USD TLB (Feb'18		12/31/2018	CA CASH_CLOSE		5,013	5,013	4,999	4,999		14		14		5,013				46	02/28/2025
22904T-AC-1	Cryolife Inc. TL B		12/31/2018	CA CASH_CLOSE		17,566	17,566	17,478	17,478		88		88		17,566				662	12/01/2024
23108K-AG-3	CUMULUS MEDIA HOLDINGS I 2013 TERM LOAN		04/06/2018	DIRECT		1	1												1	12/12/2020
23137P-AC-6	CURT MANUFACTURING LLC CLOSING DATE TE		04/06/2018	DIRECT															5,275	02/27/2019
23137P-AD-4	CURT MANUFACTURING LLC DELAYED DRAW TE		04/06/2018	DIRECT															11,957	02/27/2019
23248R-AB-0	Cvent, Inc. Re-priced TL B		09/28/2018	CA CASH_CLOSE		12,750	12,750	12,718	12,718		32		32		12,750				480	11/14/2024
23361F-AA-3	DRB Systems, LLC First Lien TL		12/04/2018	VARIOUS		8,376,174	8,571,674	8,357,382	8,357,382		1,792		1,792		8,359,174		17,000	17,000	635,792	10/06/2023
23918Y-AC-2	DAVITA HEALTHCARE PARTNE TERM LOAN B		12/20/2018	VARIOUS		8,216,758	8,237,191	8,181,043	8,189,217		226		226		8,189,442		27,316	27,316	359,402	06/24/2021
240010-AL-5	Dayton Power & Light Co. TL B		12/31/2018	CA CASH_CLOSE		18,322	18,322	18,230	18,231		91		91		18,322				503	08/18/2022
243440-AA-1	Decision Resources, Inc. Senior Term Loa		09/27/2018	CA CASH_CLOSE		426,821	426,821	418,285	418,602		8,219		8,219		426,821				14,123	09/30/2020
243800-AA-6	Deer District LLC Senior Secured		11/15/2018	CA CASH_CLOSE		9,976,102	9,976,102	9,976,102	8,833,973						9,976,102				60,625	05/17/2021
24702N-AZ-3	Dell Inc		10/31/2018	CA CASH_CLOSE		30,902	30,902	30,945	30,945		(43)		(43)		30,902				637	09/07/2023
247361-B-6	DELTA AIR LINES INC DEL N809W		09/28/2018	CA CASH_CLOSE		2,936,116	2,936,116	2,914,095	2,922,601		13,515		13,515		2,936,116				63,011	09/30/2019
247361-C-4	DELTA AIR LINES INC DEL N816NW		09/28/2018	CA CASH_CLOSE		3,377,350	3,377,350	3,352,020	3,361,800		15,551		15,551		3,377,350				72,480	09/30/2019
247361-D-2	DELTA AIR LINES INC DEL N858NW		09/28/2018	CA CASH_CLOSE		2,813,470	2,813,470	2,792,369	2,800,520		12,950		12,950		2,813,470				60,379	09/30/2019
247361-E-0	DELTA AIR LINES INC AIRBUS A330-200 N856		09/28/2018	CA CASH_CLOSE		4,811,649	4,811,649	4,775,562	4,789,494		22,155		22,155		4,811,649				103,261	09/30/2019
24764F-AA-0	DELTA HOUSE FPS LLC TERM LOAN		08/31/2018	CA CASH_CLOSE		3,440,684	3,440,684	3,388,644	3,401,987		38,697		38,697		3,440,684				53,655	06/20/2021
25213Y-AB-1	DexKo Global Inc. USD First Lien		01/25/2018	BANK LOANS BARINGS		1,030,117	1,021,496	1,016,388	1,016,388						1,016,388		13,729	13,729	4,362	07/12/2024
25213Y-AK-1	DexKo Global Inc.		12/31/2018	CA CASH_CLOSE		7,661	7,661	7,725	7,725		(65)		(65)		7,661				282	07/24/2024
25463F-AA-1	Direct Travel, Inc. Term Loan		10/01/2018	CA CASH_CLOSE		88,308	88,308	87,215	20,543		1,093		1,093		88,308				1,992	12/01/2021
25463E-AD-8	Direct Travel, Inc. Delayed Draw B		10/01/2018	CA CASH_CLOSE		447	447	447	447						447				16	06/01/2021
25471Y-AC-6	DiscoverOrg Holdings, In Sr. Term Loan		12/03/2018	VARIOUS		4,327,795	4,327,795	4,284,517	4,284,517		778		778		4,285,295		42,500	42,500	258,511	08/11/2023
25769J-AB-2	DONCASTERS US LLC USD TERM LOAN B		04/06/2018	DIRECT															17	03/31/2020
26830F-AA-9	EAIV 2017 Delta MSN 15146		10/29/2018	CA CASH_CLOSE		831,646	831,646	831,646	831,646						831,646				14,406	10/15/2023
26830F-AB-7	EAIV Delta MSN 15147		10/31/2018	CA CASH_CLOSE		831,613	831,613	831,613	831,613						831,613				20,987	10/31/2022
26830F-AC-5	EAIV Delta MSN 15153		12/19/2018	CA CASH_CLOSE		831,709	831,709	831,709	831,709						831,709				14,029	12/19/2022
26830F-AD-3	EAIV Delta MSN 15161		07/31/2018	CA CASH_CLOSE		804,564	804,564	804,564	804,564						804,564				20,472	01/31/2023
26830F-AE-1	EAIV Delta MSN 15162		07/31/2018	CA CASH_CLOSE		804,564	804,564	804,564	804,564						804,564				20,472	01/31/2023
26830F-AF-8	EAIV Delta MSN 15166		10/04/2018	CA CASH_CLOSE		806,196	806,196	806,196	806,196						806,196				20,703	04/04/2023
26830F-AG-6	EAIV Delta MSN 15170		09/27/2018	CA CASH_CLOSE		804,437	804,437	804,437	804,437						804,437				20,592	03/27/2023
26830F-AH-4	EAIV Delta MSN 15176		10/29/2018	CA CASH_CLOSE		813,862	813,862	813,862	813,862						813,862				14,245	04/29/2023
26830F-AJ-0	EAIV Delta MSN 15181		11/29/2018	CA CASH_CLOSE		814,994	814,994	814,994	814,994						814,994				13,841	05/29/2023
26830F-AK-7	EAIV Delta MSN 15186		07/24/2018	CA CASH_CLOSE		799,869	799,869	799,869	799,869						799,869				20,596	07/24/2023
26830F-AL-5	EAIV Delta MSN 15187		07/24/2018	CA CASH_CLOSE		801,834	801,834	801,834	801,834						801,834				20,647	07/24/2023
26830F-AM-3	EAIV Delta MSN 15200		12/18/2018	CA CASH_CLOSE		773,357	773,357	773,357	773,357						773,357				13,289	11/11/2023
26835F-AA-4	Avatar Purchaser, Inc 1st Lien TL		12/31/2018	CA CASH_CLOSE		19,125	19,125	19,029	19,029		96		96		19,125				653	09/06/2024
26844H-AE-7	Linden Cogen Holdings LL TL B		09/28/2018	CA CASH_CLOSE		138,283	138,283	136,900	136,939		1,344		1,344		138,283					

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
26929C-AC-0	Excelitas Technologies C USD TLB (Nov'17		11/20/2018	VARIOUS		387,370	385,457	384,493	384,493				7		384,501		2,869	2,869	15,796	11/30/2024
26952B-AA-9	Eagle Family Foods, Inc. Term Loan - Las		06/14/2018	CA CASH_CLOSE		6,375,000	6,375,000	6,292,763	6,298,949		76,051		76,051		6,375,000				326,012	12/31/2021
26952B-AC-5	Eagle Family Foods, Inc. 2nd Incr. TL -		06/14/2018	CA CASH_CLOSE		519,907	519,907	514,708	514,708		5,199		5,199		519,907				26,588	08/29/2023
27005F-AA-2	EMERALD US INC. TERM LOAN B1		09/28/2018	CA CASH_CLOSE		7,568	7,568	7,492	7,514		54		54		7,568				453	05/16/2021
28249G-AC-0	EIF Channelview Cogenera TL B		09/28/2018	CA CASH_CLOSE		52,243	52,243	51,982	51,982		261		261		52,243				1,162	04/11/2025
28579F-AA-6	Electronic Payment Provi Term Loan - Sec		04/18/2018	CA CASH_CLOSE		5,897,902	5,897,902	5,779,944	5,779,944		117,958		117,958		5,897,902				209,894	10/03/2022
28013E-AG-8	Elo Touch Solutions, Inc Term Loan B		12/14/2018	CA CASH_CLOSE		3,100,650	3,100,650	3,069,643	3,069,643		31,007		31,007		3,100,650				192,854	10/19/2023
29246U-AB-2	Empower Payments Acquisition Inc-1st Lie		10/11/2018	CA CASH_CLOSE		5,584,360	5,584,360	5,472,673	5,472,673		111,687		111,687		5,584,360				333,139	12/01/2023
29358F-AA-1	Ensono, Lt. GBP Facility		06/28/2018	VARIOUS		5,867,641	5,867,643	5,783,322	5,879,005		116,442		116,442	(94,767)	5,867,641	(33,039)		(33,039)	249,351	09/12/2021
29362L-AE-4	Entegris Inc. - 2017 Term Loan B		11/06/2018	CA CASH_CLOSE		547,251	547,251	549,758	549,758		(2,506)		(2,506)		547,251				17,405	04/30/2021
29404F-AA-5	ENVIRO WATER SOLUTIONS L TERM LOAN		11/20/2018	VARIOUS		1,914,700	1,914,700	1,897,014	1,903,087		10,444		10,444		1,912,920		1,780	1,780	57,193	11/20/2018
30204K-AB-2	ExGen Renewables IV, LLC TL B		05/31/2018	CA CASH_CLOSE		22,571	22,571	22,514	22,514		56		56		22,571				500	11/07/2024
30255F-AD-7	FPC HOLDINGS, INC. FIRST LIEN TERM		04/06/2018	VARIOUS		472,345	472,345	472,647	472,512		(168)		(168)		472,345				7,302	11/09/2019
30255Q-AB-7	FLNG LIQUEFACTION 2 LLC TERM LOAN		01/09/2018	CA CASH_CLOSE		1,767,031	1,767,031	1,767,031	1,767,031						1,767,031				2,310	11/19/2021
30286F-AA-6	FCX PERFORMANCE, INC. NEW TERM LOAN		04/06/2018	DIRECT															9,369	08/04/2020
30559R-AB-2	Fairmount Minerals, Ltd. Senior Secured		06/01/2018	CA CASH_CLOSE		4,582,346	4,582,346	4,513,611	4,513,611		68,735		68,735		4,582,346				155,343	10/24/2024
31659H-AD-3	FIELDWOOD ENERGY LLC 1ST LIEN TERM L		04/11/2018	VARIOUS		2,568,750	2,612,758	2,567,885	2,588,214						2,568,750		(19,464)	(19,464)	13,925	09/28/2018
31659H-AF-8	Fieldwood Energy LLC 2nd Lien Term L		04/11/2018	BANK LOANS BARINGS		103,040	795,752	126,525	144,354						144,354		(41,314)	(41,314)	40,810	09/30/2020
31659H-AG-6	Fieldwood Energy LLC New 1st Lien Te		04/11/2018	BANK LOANS BARINGS		444,670	503,818	444,670	448,099						448,099			(3,429)	5,110	09/31/2020
31659H-AJ-0	FIEENE TL 1L USD		04/11/2018	BANK LOANS BARINGS		178,424	667,005	178,424	191,976						191,977		(13,553)	(13,553)	4,933	09/30/2020
33887E-AB-3	Flavor Producers First Lien Term		09/27/2018	CA CASH_CLOSE		30,317	30,317	29,862	29,862		455		455		30,317				980	12/15/2023
33971E-AA-2	FLNG LIQUEFACTION 3, LLC CONSTRUCTION LO		11/30/2018	CA CASH_CLOSE		28,064,918	28,064,918	28,064,918	22,541,384						28,064,918				564,838	04/28/2022
34416D-AN-8	Focus Financial Partners Term Loan		01/17/2018	BANK LOANS BARINGS		581,922	578,664	577,941	577,941						577,941				1,510	05/09/2024
36172K-AC-5	Global Healthcare Exchan First Lien TL		11/05/2018	VARIOUS		810,541	810,541	806,489	806,489		31		31		806,519		4,022	4,022	31,827	06/30/2024
36194E-AA-6	GCS Acq Corp/Global Claims Term Loan A		09/28/2018	CA CASH_CLOSE		32,462	32,462	32,056	32,056		406		406		32,462				1,283	09/19/2022
36249V-AF-3	Gypsum Management and Su TLB (Repriced 2		06/01/2018	VARIOUS		466,589	466,948	465,781	465,780		6		6		465,786		813	813	9,583	03/31/2023
36249V-AG-1	GYP Holdings III 2018 Increrm Term Loan		10/31/2018	CA CASH_CLOSE		7,881	7,881	7,881	7,881						7,881				103	05/16/2025
36250L-AP-9	GTT Communications, Inc. USD TL B (Apr'1		12/31/2018	CA CASH_CLOSE		12,750	12,750	12,686	12,686		64		64		12,750				250	04/25/2025
36555E-AM-1	Gardner Denver Inc 2017 USD Term Loan B		12/31/2018	CA CASH_CLOSE		980,058	980,058	977,608	977,608		2,450		2,450		980,058				43,552	07/30/2024
36740U-AP-7	Gates Global LLC 2017 Term Ln B		12/31/2018	CA CASH_CLOSE		17,128	17,128	17,176	17,176		(48)		(48)		17,128				585	04/01/2024
37609F-AA-1	EIF CHANNELVIEW COGENERA TERM LOAN B		05/03/2018	VARIOUS		240,915	240,915	239,710	240,240		674		674		240,914				4,151	05/08/2020
38017B-AN-6	Go Daddy Term Loan B-1		12/31/2018	CA CASH_CLOSE		25,500	25,500	25,557	25,557		(57)		(57)		25,500				713	02/15/2024
38133U-AC-7	Golden West Packaging Gr Term Loan		11/19/2018	CA CASH_CLOSE		329,248	329,248	327,601	327,601		1,646		1,646		329,248				8,820	06/20/2023
38268P-AC-5	Convergint Technologies DD First Lien T		09/28/2018	CA CASH_CLOSE		17	17	17	17						17					01/24/2025
38870F-AA-1	GraphPad Software, Inc. Unitranche		12/31/2018	CA CASH_CLOSE		162,809	162,809	159,553	159,553		3,256		3,256		162,809				8,590	12/15/2023
39808C-AE-4	GRIDIRON FDG LLC Term Facility		11/30/2018	CA CASH_CLOSE		10,314,608	10,314,608	10,134,977	10,134,977		179,630		179,630		10,314,608				303,914	05/15/2024
40227U-AB-2	Gulf Finance, LLC TL B		09/28/2018	CA CASH_CLOSE		165,877	165,877	164,882	164,890		987		987		165,877				6,294	08/25/2023
40409V-AR-5	H.B. Fuller Company Term Loan B		11/13/2018	VARIOUS		2,537,460	2,543,625	2,537,266	2,537,266		194		194		2,537,460				89,292	10/20/2024
404122-AU-7	HCA Inc. - Term Loan BB		04/06/2018	VARIOUS		2,524,548	2,524,548	2,528,234	2,528,234		(3,686)		(3,686)		2,524,548				19,899	05/15/2020
40416V-AB-1	CD&R Plumb Buyer, LLC Term Loan B		10/26/2018	CA CASH_CLOSE		8,311	8,311	8,290	8,290		21		21		8,311				176	07/19/2024
41151P-AL-9	Harbor Freight Tools USA TL B (New)		01/24/2018	BANK LOANS BARINGS		9,473,966	9,450,340	9,422,477	9,422,708						9,422,708		51,258	51,258	32,891	08/19/2023
41151P-AM-7	Harbor Freight Tools USA Inc.		11/09/2018	CA CASH_CLOSE		173,209	173,209	173,642	173,642		(433)		(433)		173,209				3,231	08/18/2023
41152F-AA-4	Harbor Hydro I, LLC - Term Loan		07/31/2018	CA CASH_CLOSE		3,365,172	3,365,172	3,314,694	3,315,161		20,181		20,181		3,335,342		29,830	29,830	95,542	02/21/2023
421300-AG-9	Hayward Industries, Inc. First Lien TL		11/23/2018	VARIOUS		520,898	519,609	518,310	518,310		10		10		518,320		2,578	2,578	25,138	08/02/2024
42330E-AB-8	Helix Gen Funding, LLC TL B		12/21/2018	VARIOUS		1,034,250	1,046,338	1,041,107	1,041,107		4,224		4,224		1,045,331		(11,081)	(11,081)	52,881	06/03/2024
42804V-AS-0	HTZ TL B1 TL USD		12/31/2018	CA CASH_CLOSE		51,000	51,000	50,873	50,876		124		124		51,000				1,604	06/30/2023
42958F-AB-6	Higginbotham Insurance A 1st Lien TL		12/31/2018	CA CASH_CLOSE		22,094	22,094	21,984	21,984		110		110		22,094				643	12/29/2024
42980*-AA-4	High Ridge 1ST Lien Initial Term Ln		09/28/2018	CA CASH_CLOSE		116,994	116,994	113,484	113,607		3,387		3,387		116,994				4,628	06/30/2022
43110E-AC-0	Highline Aftermarket Acq TL B		04/26/2018	VARIOUS		1,703,308	1,703,308	1,694,792	1,694,792		22		22		1,694,814		8,494	8,494	34,221	03/15/2024
43110E-AF-3	Highline Aftermarket Acq TL B		12/31/2018	CA CASH_CLOSE		13,320	13,320	13,320	13,320						13,320				340	04/25/2025
43128E-AA-3	HOUGHTON INTERNATIONAL I TERM LOAN B USD		12/31/2018	CA CASH_CLOSE		19,298	19,298	19,239	19,267		31		31		19,298				825	12/20/2019
43289D-AE-3	Hilton Worldwide Finance LLC - USD 2016		04/19/2018	VARIOUS		3,843,662	3,843,662	3,852,539	3,852,433		(8,770)		(8,770)		3,843,662				42,972	10/26/2023
43455J-AT-5	Hoffmaster Group Inc. Repriced 1st Li		12/31/2018	CA CASH_CLOSE		8,223	8,223	8,285	8,285		(62)		(62)		8,223				77	11/23/2023
43534F-AB-7	Hollander Sleep Products Term Loan		01/25/2018	CA CASH_CLOSE		2,731,278	2,731,278	2,669,824	2,669,824		61,454									

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
44908X-AT-5	Hyland Software Inc. TL B (add-on)		12/31/2018	CA CASH_CLOSE		3,208	3,208	3,223			(15)		(15)		3,208				.14	07/01/2024
44969C-BF-6	Quintiles IMS Term Loan B-1		06/11/2018	CA CASH_CLOSE		2,798,003	2,798,003	2,813,756	2,813,756		(15,753)		(15,753)		2,798,003				62,917	03/01/2024
45249F-AA-0	Image Intl Holdco Initial Term Ln		12/31/2018	VARIOUS		8,435,347	8,606,197	8,455,588			1,858		1,858		8,457,447		(22,100)	(22,100)	171,352	07/10/2023
45607R-AB-8	INDUSTRIAL DYNAMICS COMP TERM LOAN		12/07/2018	CA CASH_CLOSE		3,240,108	3,240,108	3,152,624	3,178,164		61,944		61,944		3,240,108				228,595	12/31/2025
45672J-AK-6	INEOS US Finance LLC USD TLB (Oct'17		12/10/2018	VARIOUS		2,543,673	2,550,000	2,550,000							2,550,000		(6,327)	(6,327)	93,871	03/31/2024
45672L-AE-5	Infor (US), Inc. Extended USD Te		07/12/2018	CA CASH_CLOSE		104,046	104,046	104,008			37		37		104,046				3,219	02/01/2022
466626-AA-8	JLL XDD, INC.-1st Lien Term Loan		09/28/2018	CA CASH_CLOSE		96,108	96,108	93,465			2,643		2,643		96,108				3,389	12/22/2023
47214D-AC-8	JAZZ ACQUISITION INC 1ST LIEN TERM L		12/31/2018	CA CASH_CLOSE		4,445	4,445	4,434	4,437		8		8		4,445				194	06/19/2021
47579S-AT-7	Jeld-Wen Inc. Amended TL B		12/31/2018	CA CASH_CLOSE		12,600	12,600	12,600							12,600				283	12/06/2024
48252F-AA-8	KKR Eagle Asset Term Loan A		01/01/2018	DIRECT															659,470	12/29/2027
48256L-AH-6	KMG Chemicals Inc Term Loan B		11/15/2018	CA CASH_CLOSE		416,159	416,159	414,078	414,078		2,081		2,081		416,159				15,730	06/07/2024
48275E-AA-3	KREF Lending VII 2018-1 Term Loan		11/28/2018	CA CASH_CLOSE		94,101,739	94,101,739	94,101,739							94,101,739				2,081,401	04/12/2023
48275E-AB-1	KREF Lending VII 2018-2 Term Loan		11/28/2018	CA CASH_CLOSE		19,987,366	19,987,366	19,987,366							19,987,366				385,573	04/26/2023
48275E-AC-9	KREF Lending VII 2018-3 Term Loan		11/28/2018	CA CASH_CLOSE		47,048,184	47,048,184	47,048,184							47,048,184				806,524	06/05/2023
48275E-AE-5	KREF Lending VII 2018-4 Term Loan		11/28/2018	CA CASH_CLOSE		33,915,000	33,915,000	33,915,000							33,915,000				78,743	04/11/2023
48562R-AJ-8	KAR Auction Svc Term Loan B-4		12/19/2018	CA CASH_CLOSE		37,196	37,196	37,312	37,312		(116)		(116)		37,196				1,397	03/11/2021
48770T-AF-0	KELLERMAYER BERGENSONS S-INCREMENTAL TER		09/28/2018	CA CASH_CLOSE		20,513	20,513	20,308	20,308		205		205		20,513				645	10/29/2021
49458F-AK-6	KINDRED HEALTHCARE INC NEW TERM LOAN		07/02/2018	CA CASH_CLOSE		3,189,117	3,189,117	3,178,212	3,181,155		7,962		7,962		3,189,117				98,929	04/09/2021
49848L-AG-1	KLEEN ENERGY SYSTEMS TERM LOAN		06/25/2018	VARIOUS		35,163,449	35,163,449	34,987,631	35,022,236		1,405		1,405		35,023,641		139,808	139,808	967,531	06/13/2024
50105J-AM-9	Kronos Inc. TL B		04/06/2018	VARIOUS		661,087	661,087	661,087	661,087						661,087				7,674	10/08/2023
50179F-AB-2	LBP Packaging, Inc. Incremental Ter		09/28/2018	CA CASH_CLOSE		28,774	28,774	28,351	28,404		370		370		28,774					07/16/2020
50212X-AW-6	LPL Holdings New Incremental TLB		09/28/2018	CA CASH_CLOSE		31,795	31,795	31,795	31,795						31,795				671	09/11/2024
50217U-AH-0	Boyd Corporation 1st Lien Term L		09/06/2018	VARIOUS		2,543,625	2,543,625	2,518,189	2,518,189		25,436		25,436		2,543,625				116,446	05/08/2024
50219N-AD-3	Dohmen Life Science Serv Second Lien Ter		08/16/2018	CA CASH_CLOSE		2,810,056	2,810,056	2,750,669			59,388		59,388		2,810,056				85,034	03/16/2026
50219N-AF-8	Dohmen Life Science Serv Second Lien DDT		08/16/2018	CA CASH_CLOSE		530,789	530,789	530,789							530,789				16,435	03/16/2026
50419M-AB-7	LA QUINTA INTERMEDIATE H TERM LOAN B		05/30/2018	VARIOUS		2,005,503	2,005,503	1,995,475	1,998,760		6,743		6,743		2,005,503				40,186	02/19/2021
50546E-AA-2	LAC INTER LLC Term Loan		12/31/2018	CA CASH_CLOSE		27,654	27,654	27,032			622		622		27,654				622	09/30/2024
51187G-AC-6	Lakeland Tours, LLC TL B due 2024		12/31/2018	CA CASH_CLOSE		4,916	4,916	4,916							4,916				54	12/15/2024
529897-AF-7	LIBBEY GLASS INC TERM LOAN B		09/28/2018	CA CASH_CLOSE		27,912	27,912	27,842	27,865		47		47		27,912				234	03/26/2021
53186*-AA-3	Life Extension Institute Term Loan B		12/31/2018	CA CASH_CLOSE		175,364	175,364	173,212	78,588		2,056		2,056		175,364				6,281	02/19/2022
53227F-AA-0	Lightspeed Systems, Inc. Senior Term Loa		12/31/2018	CA CASH_CLOSE		77,183	77,183	74,867			2,315		2,315		77,183				3,137	01/31/2023
54047F-AA-6	Loftware, Inc. First Lien Term		12/31/2018	CA CASH_CLOSE		57,375	57,375	56,228			1,148		1,148		57,375				2,125	02/28/2023
55282C-AB-2	MAG DS Corp - 1st Lien Term Loan		12/31/2018	CA CASH_CLOSE		67,340	67,340	66,667			673		673		67,340				1,430	10/31/2025
55357G-AG-2	MSHC Inc (HVAC Holdings/ 1L DDTL		11/20/2018	CA CASH_CLOSE		1,431,122	1,431,122	1,431,122	1,431,122						1,431,122				236,529	07/31/2023
55368*-AG-5	MSHC Inc (HVAC Holdings/ 2L DDTL		06/05/2018	CA CASH_CLOSE		809,524	809,524	809,524							809,524				3,010	07/31/2024
55371*-AA-3	MRI Software LLC Delayed Draw Te		09/28/2018	CA CASH_CLOSE		1,347	1,347	1,347	1,347						1,347				63	07/05/2023
55371*-AC-9	MRI Software LLC Unitranche		09/28/2018	CA CASH_CLOSE		17,509	17,509	17,334	17,334		175		175		17,509				1,050	07/05/2023
55371*-AE-5	MRI Software LLC Incremental Ter		09/28/2018	CA CASH_CLOSE		41,552	41,552	41,136	41,136		416		416		41,552				2,441	06/30/2023
55371*-AF-2	MRI Software LLC Second Incremen		09/28/2018	CA CASH_CLOSE		5,292	5,292	5,239	5,239		53		53		5,292				236	06/30/2023
55371*-AG-0	MRI Software LLC Third Increment		09/28/2018	CA CASH_CLOSE		725	725	718			7		7		725				27	06/30/2023
55371*-AH-8	MRI Software LLC June '18 Increm		09/28/2018	CA CASH_CLOSE		1,764	1,764	1,746			18		18		1,764				33	06/30/2023
55377V-AK-6	MTS Sys Corp New Tranche B Term Loan		12/17/2018	CA CASH_CLOSE		361,069	361,069	363,777	363,777		(2,708)		(2,708)		361,069				4,775	07/05/2023
56356X-AC-3	Manitowoc Foodservice, I TLB		10/23/2018	BANK LOANS BARINGS		2,135,972	2,131,538	2,088,908	2,091,675						2,091,675		44,297	44,297	74,621	03/03/2023
56356X-AE-9	Wellbit Inc Term Loan B		12/31/2018	CA CASH_CLOSE		106,577	106,577	106,799			(222)		(222)		106,577				804	10/19/2025
57776U-AB-1	Maxlinear, Inc. TL B		11/20/2018	VARIOUS		1,587,070	1,590,004	1,582,054	1,582,054		2,083		2,083		1,584,136		2,934	2,934	55,038	05/12/2024
58506P-AB-7	MedPlast Holdings, Inc-1st Lien Term Loa		07/02/2018	CA CASH_CLOSE		12,006,385	12,006,385	11,676,209	11,676,209		330,176		330,176		12,006,385				329,370	01/02/2023
58711P-AL-6	MENS WEARHOUSE INC THE TERM LOAN B		04/09/2018	VARIOUS		2,367,452	2,367,452	2,347,242	2,353,068		14,384		14,384		2,367,452				32,728	06/18/2021
59408B-AM-8	MIK TL B1 1L USD		05/23/2018	VARIOUS		6,054,920	6,064,147	6,075,548	6,075,548		(63)		(63)		6,075,484		(20,564)	(20,564)	108,421	01/27/2023
59408B-AQ-9	Michaels Stores Term Loan B		10/30/2018	CA CASH_CLOSE		30,152	30,152	30,106			46		46		30,152				366	01/28/2023
60063G-AD-4	Miller's Ale House - 1st Lien Term Loan		05/30/2018	CA CASH_CLOSE		5,940,000	5,940,000	5,880,600	5,883,823		56,177		56,177		5,940,000				155,239	07/19/2019
60935Q-AF-3	MONEYGRAM INTERNATIONAL, TERM LOAN B 3/1		01/30/2018	BANK LOANS BARINGS		3,179,010	3,179,010	3,177,834	3,178,293						3,178,293		717	717	12,494	03/21/2020
62475P-AC-4	Muelier Water Products 2/17 Cov-Lite		06/12/2018	CA CASH_CLOSE		2,386,692	2,386,692	2,401,609	2,401,609		(14,917)		(14,917)		2,386,692				47,071	11/25/2021
62704B-AK-7	MURRAY ENERGY CORPORATIO TERM LOAN B2		08/10/2018	VARIOUS		3,903,973	4,149,636	4,027,925	4,051,752						4,051,752		(147,779)	(147,779)	228,083	03/19/2021
62871N-AG-0	North American Bancard H Term Loan B		01/03/2018	BANK LOANS BARINGS		655,945	654,714	651,441	651,441						651,441		4,504	4,504	438	06/14/2024
62871N-AK-1	NAB Hldgs 2018 Refi Term Loan		12/31/2018	CA CASH_CLOSE		4,910	4,910	4,920			(9)		(9)		4,910				165	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
64072U-AE-2	Neptune Finco TLB		10/15/2018	CA CASH CLOSE		15,286	15,286	15,209	15,209			.76	.76		15,286				268	07/17/2025	
64072U-AG-7	CSC Holdings LLC TL B (Jan'18)		10/15/2018	CA CASH CLOSE		12,253	12,253	12,191			.61	.61	.61		12,253				148	01/12/2026	
64108E-AA-3	Net Health Systems, Inc. Unitranche		09/28/2018	CA CASH CLOSE		108,375	108,375	106,208	106,208		2,168		2,168		108,375				3,978	12/15/2023	
64863P-YY-6	SBARRO INC EXIT TERM LOAN		11/09/2018	BANK LOANS BARINGS		129,584	259,188	128,683	257,346			128,669	(128,669)		128,677		917	917	30,675	06/02/2019	
65341F-AC-1	NextCare Inc - Term Loan		09/28/2018	CA CASH CLOSE		31,437	31,437	31,123			.314		.314		31,437				719	02/27/2023	
65684*-AB-2	North American Dental Gr Delayed Draw Te		10/26/2018	CA CASH CLOSE		2,231,051	2,231,051	2,231,051	1,070,036						2,231,051				96,136	07/07/2023	
67090U-AB-9	QL SP 2018-B, LLC Class A Term Lo		12/11/2018	CA CASH CLOSE		5,988,696	5,988,696	5,987,291			1,405		1,405		5,988,696				61,173	02/09/2030	
67090U-AC-7	QL SP 2018-B, LLC Class B Term Lo		12/11/2018	CA CASH CLOSE		3,992,453	3,992,453	3,992,390			.63		.63		3,992,453				52,868	02/09/2030	
67107V-AE-2	Berlin Packaging LLC		05/07/2018	VARIOUS		2,381,216	2,381,217	2,381,217	2,381,217						2,381,216			17,090	17,090	42,199	10/01/2021
67611Y-AB-1	Odyssey Logistics First Lien Term		05/09/2018	VARIOUS		1,965,332	1,958,008	1,948,218			.24		.24		1,948,242				42,256	10/04/2024	
67611Y-AF-2	Odyssey Logistics 2018 1st Lien Term Loa		09/28/2018	CA CASH CLOSE		9,766	9,766	9,802			(.37)		(.37)		9,766				151	10/12/2024	
68216D-AC-2	OMNITRACS INC 1ST LIEN TERM L		03/23/2018	CA CASH CLOSE		722,921	722,921	719,306	720,634		2,287		2,287		722,921				9,193	11/25/2020	
68216D-AF-5	OMNITRACS INC 2ND LIEN TERM L		03/23/2018	CA CASH CLOSE		820,000	820,000	813,850	815,110		4,890		4,890		820,000				18,081	05/25/2021	
68285F-AA-7	OnCourse Learning Corp. Term Loan		11/01/2018	CA CASH CLOSE		6,475,360	6,475,360	6,407,522	6,407,522		67,838		67,838		6,475,360				497,814	09/12/2021	
68285F-AB-5	OnCourse Learning Corp. Incremental TL		11/01/2018	CA CASH CLOSE		1,416,529	1,416,529	1,402,364	1,402,364		14,165		14,165		1,416,529				92,010	09/12/2021	
68285F-AB-7	ONION INC. TERM LOAN		10/31/2018	CA CASH CLOSE		241,709	241,709	238,337	24,091		3,132		3,132		241,709				10,884	04/21/2020	
68489F-AA-1	ORANGE GROVE ENERGY, L.P DELAYED DRAW TE		06/29/2018	CA CASH CLOSE		329,363	329,363	322,364	322,975		6,388		6,388		329,363				3,704	06/30/2035	
69306E-AA-2	P&L Development Holdings Term Loan		10/01/2018	CA CASH CLOSE		106,320	106,320	105,256	105,256		1,063		1,063		106,320				7,044	05/12/2022	
69398*-AA-3	Professional Datasolutio First Lien Term		10/01/2018	CA CASH CLOSE		253,207	253,207	250,675	250,675		2,532		2,532		253,207				6,754	08/25/2023	
69398*-AB-1	Professional Datasolutio DDTL		04/11/2018	VARIOUS		2,819,597	2,861,824	2,861,824	2,861,824						2,861,824		(42,227)	(42,227)	98,095	08/25/2023	
69946E-AT-8	PAREXEL International Co TL B		12/31/2018	CA CASH CLOSE		13,396	13,396	13,329	13,329		.67		.67		13,396				424	09/27/2024	
70469E-AA-3	Peak 10, Inc. First Lien Term		12/31/2018	CA CASH CLOSE		15,948	15,948	15,868	15,868		.80		.80		15,948				626	07/18/2024	
70558C-AD-4	Pegasus TransTech Corpor Senior Term Loa		09/28/2018	CA CASH CLOSE		152,085	152,085	148,283	148,283		3,802		3,802		152,085				7,506	11/17/2024	
70738B-AS-3	Penn Engineering & Manuf USD TL B		11/20/2018	VARIOUS		271,566	271,566	271,226	271,226		.3		.3		271,230		336	336	11,337	06/27/2024	
71913Y-AC-6	Phoenix Services Interna TL B due Februa		09/28/2018	CA CASH CLOSE		6,747	6,747	6,713			.34		.34		6,747				139	01/24/2025	
72152F-AB-7	Pilot Air Freight, LLC Incremental Sr.		12/04/2018	VARIOUS		9,914,561	10,032,561	9,932,236			.326		.326		9,932,561		(18,000)	(18,000)	126,542	07/25/2024	
72152F-AC-5	Pilot Air Freight, LLC Sr. Term Loan		09/28/2018	CA CASH CLOSE		18,609	18,609	18,423			.186		.186		18,609				195,176	07/25/2024	
73702E-AA-4	PORTS AMERICA TERMINAL H TERM LOAN		04/26/2018	CA CASH CLOSE		8,182,967	8,182,967	7,937,478	8,041,924		141,043		141,043		8,182,967				138,890	01/27/2019	
73919W-AC-0	POWERTEAM SERVICES, LLC \$385MM 1ST LIEN		04/06/2018	VARIOUS		470,648	470,648	468,387	469,401		1,247		1,247		470,648				2,265	05/06/2020	
73919W-AF-3	POWERTEAM SERVICES, LLC \$140MM 2ND LIEN		03/06/2018	CA CASH CLOSE		261,723	261,723	259,105	260,091		1,631		1,631		261,723				4,356	11/20/2020	
74274N-AC-7	Proampac PG Borrower LLC - 2016 1st Lien		09/26/2018	CA CASH CLOSE		33,358	33,358	33,358	22,376						33,358				4,360	11/18/2023	
74338U-AC-5	Kofax, Inc. Term Loan B		02/27/2018	CA CASH CLOSE		786,672	786,672	784,706	784,706		1,967		1,967		786,672				9,431	05/31/2023	
74338U-AB-4	PROJECT ALPHA TERM LOAN B		12/31/2018	CA CASH CLOSE		25,500	25,500	25,373			.128		.128		25,500				859	04/26/2024	
74349E-AP-9	Prospect Medical Holding Term Loan B		02/22/2018	VARIOUS		4,207,341	4,196,875	4,133,922	4,135,865		154		154		4,136,020		71,321	71,321	131,692	06/01/2022	
74834Y-AF-9	Quest Software US Holdings Inc.		05/18/2018	VARIOUS		4,207,099	4,207,099	4,221,109	4,221,109		(14,010)		(14,010)		4,207,099				118,811	10/31/2022	
74979X-AC-3	RPX Corp 2018 Term Loan		09/28/2018	CA CASH CLOSE		184,668	184,668	176,819			7,848		7,848		184,668				4,186	06/19/2024	
75971Q-AM-1	RENAISSANCE LEARNING INC NEW 1ST LIEN TE		05/31/2018	CA CASH CLOSE		814,720	814,720	810,647	811,927		2,793		2,793		814,720				19,693	03/20/2021	
75972J-AB-0	Renaissance Learning, In Term Loan B		12/31/2018	CA CASH CLOSE		9,066	9,066	9,044			.23		.23		9,066				201	05/08/2025	
76027E-AA-5	REP HS ACQ/HEMASOURCE INCRIMTL TERM LN		10/31/2018	CA CASH CLOSE		155,832	155,832	153,494	153,494		2,338		2,338		155,832				6,894	07/14/2023	
76086F-AB-9	RESA Power, LLC Sr. Secured Ter		11/29/2018	CA CASH CLOSE		91,528	91,528	89,698			1,831		1,831		91,528				5,220	10/25/2022	
76761*-AA-7	Rock-it Cargo 2018 Term Loan		12/31/2018	CA CASH CLOSE		21,045	21,045	20,519			.526		.526		21,045				381	06/22/2024	
78466Y-AL-2	SRS Distribution, Inc. Term Loan B		10/31/2018	CA CASH CLOSE		4,705	4,705	4,693			.12		.12		4,705				107	08/25/2022	
78489C-AG-5	Seallworld Parks Term Loan B-5		12/31/2018	CA CASH CLOSE		64,538	64,538	64,154	64,154		.383		.383		64,538				2,612	02/24/2024	
78571Y-BA-7	Sabre GLBL Inc. - Incremental Term Loan		04/06/2018	VARIOUS		2,405,419	2,405,419	2,410,927	2,410,927		(5,508)		(5,508)		2,405,419				16,095	02/22/2024	
78648E-AF-7	SambaSafety, Inc. 2018 Incrementa		10/01/2018	CA CASH CLOSE		6,784	6,784	6,597			.187		.187		6,784				208	04/29/2022	
78648E-A*-1	SAFFETY HOLDINGS INC-INITIAL TERM LOAN		12/31/2018	CA CASH CLOSE		102,832	102,832	101,290	101,386		1,446		1,446		102,832				5,524	04/29/2022	
78648E-AB-9	SambaSafety, Inc. Incremental Ter		12/31/2018	CA CASH CLOSE		7,320	7,320	7,155	7,155		.165		.165		7,320				391	04/29/2022	
80386F-AA-0	SASOL CHEMICALS (USA) LL TERM LOAN		10/03/2018	CA CASH CLOSE		22,425,706	22,425,706	22,235,774	21,058,582		160,233		160,233		22,425,706				769,821	12/15/2021	
81608F-AA-0	SEKO GLOBAL LOGISTICS NETWORK LLC TERM L		07/13/2018	CA CASH CLOSE		5,418,750	5,418,750	5,338,552	5,349,880		68,870		68,870		5,418,750				306,095	04/30/2020	
81619E-BA-5	Select Medical Holdings New TL B		04/19/2018	VARIOUS		3,393,955	3,393,955	3,368,606	3,368,606		.85		.85		3,368,691		25,264	25,264	52,108	03/06/2024	
82671E-AA-2	SIGNODE INDUSTRIAL GROUP USD TERM LOAN B		04/06/2018	VARIOUS		1,184,444	1,184,444	1,181,483	1,179,608		4,837		4,837		1,184,444				13,819	05/01/2021	
82888F-AA-9	Simpli.fi, Inc. Incremental Ter		12/31/2018	CA CASH CLOSE		37,299	37,299	36,740			.560		.560		37,299				1,139	09/28/2022	
83401*-AA-9	SoFi Funding IX LLC Class B Warehou		12/21/2018	CA CASH CLOSE		84,448,130	84,448,130	84,448,130							84,448,130				372,819	07/03/2020	
83420L-AB-7	SOLENIS INTL LP TERM LOAN		06/26/2018	VARIOUS		1,332,051	1,332,051	1,325,391	1,327,236		4,815		4,815		1,332,051				373,819	07/02/2021	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
849441-ZZ-6	Spring Renewables Invest Senior Term Loa		05/09/2018	BANK LOANS BARINGS		49,900,000	50,000,000	49,500,000							49,500,000		400,000	400,000	2,589,047	03/30/2038
852356-AA-4	Canon Safe, Inc. Term Loan		09/28/2018	CA CASH_CLOSE		830,157	830,157	813,554	813,554		16,603		16,603		830,157				9,943	07/31/2023
855031-AP-5	Staples Inc. First Lien TL B		11/01/2018	CA CASH_CLOSE		42,360	42,360	42,254	42,254		106		106		42,360				1,303	09/12/2024
86310E-AC-7	Stratose Intermediate Ho TL B		12/13/2018	VARIOUS		2,248,000	2,248,000	2,245,190	2,245,190		21		21		2,245,211		2,789	2,789	108,545	06/22/2023
86614H-AJ-8	Summit Midstream Partner TL B		11/29/2018	CA CASH_CLOSE		412,250	412,250	408,128	408,128		4,121		4,121		412,250				18,800	03/06/2022
87104N-AF-8	Switch, Ltd. Term Loan B		01/01/2018	BANK LOANS BARINGS		506,495	505,863	504,598	504,598						504,598		1,897	1,897	1,559	06/20/2024
87104N-AG-6	Switch LTD TLB		11/28/2018	VARIOUS		505,863	505,863	506,495			(6)		(6)		506,489		(626)	(626)	19,596	06/27/2024
87164G-AE-3	SYNIVERSE HOLDINGS INC TERM LOAN B 9/1		03/09/2018	CA CASH_CLOSE		6,926,920	6,926,920	6,831,957	6,881,843		45,077		45,077		6,926,920				61,701	04/23/2019
87164G-AM-5	Syniverse Holdings, Inc. Term Loan B		12/31/2018	CA CASH_CLOSE		10,025	10,025	9,962			63		63		10,025				76	03/09/2023
87228G-AF-4	TCH - 2 HOLDINGS, LLC TL B		04/04/2018	CA CASH_CLOSE		2,768,744	2,768,744	2,775,423	2,775,423		(6,680)		(6,680)		2,768,744				41,439	05/06/2024
87261S-AC-3	TMS International Corp-2017 Term Loan B		03/26/2018	CA CASH_CLOSE		1,800,830	1,800,830	1,805,332	1,805,332		(4,502)		(4,502)		1,800,830				19,935	08/21/2024
87264N-AB-3	TPF II POWER, LLC TERM LOAN B		11/02/2018	VARIOUS		3,728,084	3,728,084	3,700,124	3,706,982		8,757		8,757		3,715,739		12,345	12,345	139,203	10/02/2021
87290D-AB-3	TRC Companies, Inc. First Lien Term		12/31/2018	CA CASH_CLOSE		11,377	11,377	11,320	11,320		57		57		11,377				385	06/21/2024
87416D-AB-2	THE TALBOTS, INC. 1ST LIEN TERM L		11/28/2018	CA CASH_CLOSE		1,437,508	1,437,508	1,393,801	1,406,472		31,036		31,036		1,437,508				85,742	03/19/2020
877256-AC-3	TAYLOR PRECISION PRODUCT TERM LOAN B		04/06/2018	DIRECT															1,526	11/06/2018
88023H-AC-4	Tempo Acquisition LLC Term Loan		11/07/2018	VARIOUS		4,233,996	4,228,750	4,207,606	4,207,606		159		159		4,207,766		26,230	26,230	180,144	05/12/2024
88651B-AK-8	TierPoint, LLC 1st Lien TL		09/28/2018	CA CASH_CLOSE		17,093	17,093	17,007			85		85		17,093				548	05/05/2024
89071F-AA-1	Toppolf International, Inc. - 1st Lien T		09/28/2018	CA CASH_CLOSE		391,351	391,351	371,196	371,196		20,155		20,155		391,351				9,646	08/26/2021
89078P-AG-9	The Topps Company, Inc.-1st Lien Term Lo		09/28/2018	CA CASH_CLOSE		384,603	384,603	382,680	382,680		1,917		1,917		384,603				17,592	10/31/2021
891586-AA-9	Total Military Managemen Term Loan		11/21/2018	VARIOUS		8,892,965	9,007,715	8,856,122	8,856,122		8,545		8,545		8,864,666		28,299	28,299	471,077	09/05/2022
89364M-BJ-2	TransDigm Group Incorpor Term Loan G		02/22/2018	CA CASH_CLOSE		1,691,500	1,691,500	1,687,271	1,687,271		4,229		4,229		1,691,500				12,057	08/15/2024
89364M-BK-9	TransDigm Inc 2017 Term Loan E		05/30/2018	VARIOUS		476,132	476,132	477,141	477,141		(1,009)		(1,009)		476,132				9,028	06/09/2023
89364M-BL-7	TransDigm Group Incorpor Repriced TL F		12/31/2018	CA CASH_CLOSE		17,640	17,640	17,618			22		22		17,640				120	06/09/2023
896166-AA-5	Trident (former US Joine Unitranche		12/31/2018	CA CASH_CLOSE		127,500	127,500	124,631			2,869		2,869		127,500				3,189	04/30/2024
90187D-AL-1	24 HOUR FITNESS WORLDWID NEW TERM LOAN B		05/31/2018	CA CASH_CLOSE		2,373,900	2,373,900	2,350,161	2,357,155		16,745		16,745		2,373,900				57,382	05/30/2021
903203-BO-9	VT BUYER ACQ CORP 2ND LIEN TERM LN		08/01/2018	CA CASH_CLOSE		4,703,442	4,703,442	4,609,373	4,617,294		86,148		86,148		4,703,442				357,491	01/29/2023
903203-BT-3	UPC Financing Partnershi USD TL AR (Oct'		08/01/2018	CA CASH_CLOSE		1,405,131	1,405,131	1,403,375	1,403,375		1,756		1,756		1,405,131				35,863	01/31/2026
90322*-AA-0	UroGPO, LLC Term Loan		09/28/2018	CA CASH_CLOSE		17,468	17,468	17,118			349		349		17,468				459	02/15/2024
90343K-AN-2	US SILICA CO TERM LOAN B 7/1		05/01/2018	CA CASH_CLOSE		2,349,300	2,349,300	2,337,554	2,342,485		6,815		6,815		2,349,300				38,615	07/17/2020
90343K-AR-3	U.S. Silica Company TLB due Apr 202		12/31/2018	VARIOUS		1,362,557	1,520,134	1,512,534			77		77		1,512,611		(150,054)	(150,054)	46,708	05/01/2025
90350D-AE-8	US Farathane Term Loan B-4		12/31/2018	CA CASH_CLOSE		188,053	188,053	188,758	188,758		(705)		(705)		188,053				8,217	12/31/2021
90350H-AF-6	U.S. Anesthesia Partners First Lien TL B		12/03/2018	VARIOUS		253,410	253,725	253,091	253,091		5		5		253,095		315	315	11,706	06/23/2024
90351H-AB-4	USFOOD TL B 1L USD		06/22/2018	VARIOUS		3,424,026	3,424,026	3,415,466	3,415,754		8,272		8,272		3,424,026				70,642	06/27/2023
90351N-AE-5	USI Inc Term Loan B		12/31/2018	CA CASH_CLOSE		42,500	42,500	42,385	42,385		115		115		42,500				1,366	05/16/2024
90352U-AB-4	US Salt LLC First Lien TL		12/04/2018	VARIOUS		6,605,716	6,669,929	6,603,230	6,603,230		500		500		6,603,730		1,986	1,986	414,654	11/30/2023
90932R-AD-6	United Airlines Inc.		05/16/2018	VARIOUS		651,104	648,819	649,468	649,468		(3)		(3)		649,464		1,640	1,640	9,155	04/01/2024
914908-AX-6	Univision Communications New TL C5		12/24/2018	CA CASH_CLOSE		45,590	45,590	45,476	45,476		114		114		45,590				1,307	03/07/2024
91759U-AM-7	UTEX INDUSTRIES INC 1ST LIEN TERM L		12/31/2018	CA CASH_CLOSE		11,612	11,612	11,554	11,554		41		41		11,612				465	05/22/2021
91822*-AD-7	VFH Parent LLC		01/02/2018	VARIOUS		442,404	440,021	446,071	446,071		(1,681)		(1,681)		444,390		(1,986)	(1,986)	251	12/31/2021
91834F-AC-1	VP Holding Co Term A Loan		12/31/2018	CA CASH_CLOSE		36,010	36,010	35,290			720		720		36,010				1,189	05/22/2024
91865F-AG-4	Vaco Holdings, LLC Term Loan		12/13/2018	VARIOUS		3,355,450	3,425,353	3,348,283	3,348,283		1,454		1,454		3,349,737		5,713	5,713	126,286	11/09/2023
92261F-AA-5	Velocity Technology Solu Senior TL		12/31/2018	CA CASH_CLOSE		112,338	112,338	111,215	111,215		1,123		1,123		112,338				5,344	11/30/2023
92565E-AB-9	VICI Properties Inc. First Lien TL B		02/06/2018	CA CASH_CLOSE		58,410	58,410	58,264			146		146		58,410				152	12/13/2024
92849*-AA-6	Vitalyst, LLC Term Loan		12/31/2018	VARIOUS		4,786,424	4,868,449	4,758,909	4,758,909		13,915		13,915		4,772,824		13,600	13,600	327,739	08/31/2022
93208P-AN-9	Wall Street Sys Term Loan		12/31/2018	CA CASH_CLOSE		23,905	23,905	23,928	23,928		(24)		(24)		23,905				903	11/30/2024
94108B-AE-9	WASTEQUIP LLC NEW FIRST LIEN		03/20/2018	CA CASH_CLOSE		1,771,581	1,771,581	1,762,723	1,767,035		4,546		4,546		1,771,581				24,275	07/31/2019
95081T-AD-0	WESCO DISTRIBUTION INC USD TLB		12/06/2018	VARIOUS		113,707	113,707	112,570	113,153		392		392		113,545		162	162	2,720	11/15/2019
95810D-AN-1	Western Digital Corporation		05/15/2018	VARIOUS		3,360,169	3,349,233	3,368,960	3,368,960		(3,338)		(3,338)		3,365,623		(5,454)	(5,454)	42,384	04/29/2023
97246F-AF-3	Wilsonart, LLC Term Loan B		12/31/2018	CA CASH_CLOSE		22,429	22,429	22,429	22,429						22,429				884	12/19/2023
97382T-AB-6	WINEBOW GROUP INC 1ST LIEN TERM L		12/31/2018	CA CASH_CLOSE		4,149	4,149	4,129	4,135		15		15		4,149				159	06/25/2021
97417A-AB-6	Davis Vision Incorporate First Lien TL B		11/30/2018	VARIOUS		497,976	500,460	499,209	499,209		9		9		499,218		(1,242)	(1,242)	22,927	12/01/2024
97654Y-AB-6	Wirepath LLC 1st Lien Term L		10/31/2018	CA CASH_CLOSE		2,071,059	2,071,059	2,060,704	2,060,704		10,355		10,355		2,071,059				117,691	07/26/2024
98083F-AA-8	Woolpert, Inc. Term Loan		11/21/2018	VARIOUS		3,031,226	3,090,423	3,028,615	3,028,615		464		464		3,029,079		2,147	2,147	153,885	11/03/2022
98141*-AA-2	World 50, INC. TERM LOAN B		11/30/2018																	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
D2700P-AC-3	FAENZA ACQUISITION GMBH INITIAL DOLLAR		04/06/2018	VARIOUS		860,869	860,869	856,565	858,290		2,578		2,578		860,869				7,038	08/31/2020	
D2700P-AD-1	CERAMTEC ACQUISITION COR INITIAL DOLLAR		04/06/2018	VARIOUS		110,525	110,525	109,972	110,194		331		331		110,525				908	08/28/2020	
D2700P-AF-6	FAENZA ACQUISITION GMBH INTIAL DOLLAR T		03/08/2018	CA CASH_CLOSE		263,618	263,618	262,299	262,829		789		789		263,618				2,155	08/28/2020	
F35978-AA-3	METROLOGIC INSTRUMENTS, EUR TERM LOAN B		07/04/2018	CA CASH_CLOSE		5,560,869	5,560,870	5,220,640	5,607,849		126,545		126,545	(361,744)	5,560,869	188,219		188,219	114,199	04/28/2022	
F7415#-AA-2	METROLOGIC TRIDIMENSION HLDG EURO FAC B2		07/04/2018	CA CASH_CLOSE		11,914,131	11,914,132	11,185,192	12,014,786		271,122		271,122	(775,035)	11,914,131	403,258		403,258	244,670	04/28/2022	
G1093#-AA-7	BIIF Bidco Limited GBP Term Loan		06/29/2018	CA CASH_CLOSE		1,938,163	1,938,163	2,158,334	1,960,988					197,346	1,938,163	(220,171)		(220,171)		12/02/2025	
G4250#-AA-6	Halo Technology Bidco Li Term Loan B		01/01/2018	BANK LOANS BARINGS															16,201	10/01/2024	
G4700H-AE-0	I-Logic Technologies Bidco Limited		12/31/2018	CA CASH_CLOSE		97,143	97,143	97,143							97,143					12/21/2024	
G7553#-AA-3	Rock-it Cargo 2018 Term Loan		12/31/2018	CA CASH_CLOSE		30,000	30,000	29,250			750		750		30,000				544	06/22/2024	
G8766#-AA-4	Textainer Marine Contain Series 2018-I C		10/15/2018	CA CASH_CLOSE		3,828,025	3,828,025	3,828,025							3,828,025				83,891	02/15/2025	
L7300K-AB-0	ORTHO CLINICAL DIAGNOSTI TERM LOAN B		06/08/2018	VARIOUS		3,235,996	3,234,387	3,202,476	3,209,412		115		115		3,209,528		26,468		79,912	05/07/2021	
Q3978#-AB-6	Genesis Care Pty Limited Tranche B1 (AUD		10/31/2018	CA CASH_CLOSE		2,213,895	2,213,895	2,268,326	2,346,110		81,914		81,914	(77,783)	2,213,895	(136,346)		(136,346)	123,643	10/21/2021	
Q3978#-AC-4	Genesis Care Pty Limited Tranche B2 (GBP		10/31/2018	CA CASH_CLOSE		1,637,503	1,637,503	1,603,712	1,677,775		60,588		60,588	(74,063)	1,637,503	(26,797)		(26,797)	72,430	10/21/2021	
Q8834#-AA-1	TAU BIDCO TERM LOAN A2		04/06/2018	VARIOUS		2,454,875	2,454,875	2,454,875	2,454,875						2,454,875				39,000	04/09/2019	
U3000J-AD-1	EVERTEC NEW TERM LOAN B		11/27/2018	CA CASH_CLOSE		5,191,745	5,191,745	5,191,745	5,191,745						5,191,745				211,404	04/17/2020	
V3845#-AA-3	Graftech International L Term Loan B due		12/31/2018	CA CASH_CLOSE		50,000	50,000	50,375			(375)		(375)		50,000				485	02/12/2025	
30214X-AC-0	Explorer Holdings, Inc. TL B		11/30/2018	VARIOUS		1,841,161	1,843,442	1,838,833	1,838,833		47		47		1,838,880		2,281		2,281	79,614	05/02/2023
68620#-AA-1	Original Cakerie US TERM LN		12/31/2018	CA CASH_CLOSE		16,376	16,376	16,376							16,376				620	07/20/2021	
C0458W-AC-7	ATRIUM INNOVATIONS INC USD TERM LOAN		03/08/2018	CA CASH_CLOSE		2,368,243	2,368,243	2,362,686	2,363,859		4,384		4,384		2,368,243				22,439	01/29/2024	
C1467#-AB-7	CANADIAN HOSPITAL SPECIA 5 YEAR TERM LOA		04/06/2018	VARIOUS		9,406,697	9,406,697	10,810,751	9,171,118		44,764		44,764	1,696,928	9,406,697	(1,506,113)		(1,506,113)	46,014	11/12/2018	
C2968#-AB-5	Deluxe Toronto LTD. Term Loan		09/28/2018	CA CASH_CLOSE		43,151	43,151	42,719	42,719						43,151				1,472	12/01/2020	
C4796#-AA-1	INTRANSIT BC FINANCE LTD CONSTRUCTION FA		12/31/2018	CA CASH_CLOSE		260,394	260,394	273,526	257,707		14,394		14,394	17,150	260,394	(28,857)		(28,857)	5,704	06/30/2033	
C6901L-AE-7	1011778 B.C. Unlimited 2017 Term Loan B		12/31/2018	CA CASH_CLOSE		45,620	45,620	45,689	45,689		(68)		(68)		45,620				1,225	02/14/2024	
C7077U-AD-5	PH Vitres Autos Term Loan		12/31/2018	CA CASH_CLOSE		25,367	25,367	26,000			381		381		25,367	(1,013)		(1,013)	581	01/23/2024	
C8509#-AA-2	ST. CLAIR POWER LP CON TERM LOAN		06/20/2018	CA CASH_CLOSE		15,907,154	15,907,154	15,807,087	16,734,455		98,130		98,130	(914,138)	15,907,154	(11,293)		(11,293)	280,409	10/31/2022	
C9413P-AU-7	VALEANT PHARMACEUTICALS TERM LOAN B F1		06/01/2018	VARIOUS		1,075,002	1,073,991	1,068,621	1,069,573		258		258		1,069,831		5,171		22,807	03/13/2022	
C9413P-AZ-6	Valeant Pharm Initial Term Loan		12/24/2018	CA CASH_CLOSE		63,239	63,239	63,502			(263)		(263)		63,239				752	05/31/2025	
C08065-AB-3	AEROVIAS DE MEXICO SA USD TERM LN		11/30/2018	CA CASH_CLOSE		16,903,846	16,903,846	16,803,130	9,879,080		100,716		100,716		16,903,846				258,097	10/27/2021	
O1983#-AA-3	Allnex (Luxembourg) & Cy USD Term B-3 du		12/31/2018	VARIOUS		250,843	251,427	251,427	251,427						251,427		(584)	(584)	13,117	09/14/2023	
O2154U-AE-3	Alltice US Finance I Corp New TL B		11/27/2018	CA CASH_CLOSE		2,537,250	2,537,250	2,524,564	2,524,564		12,686		12,686		2,537,250				97,962	05/13/2025	
O20676#-AA-5	CONDOR BORROWER LLC Term Loan		12/06/2018	VARIOUS		7,581,564	7,671,406	7,537,157	7,537,157		2,128		2,128		7,539,285		42,279	42,279	562,223	10/20/2024	
44890C-A*-5	HVVA GLOBAL B.V. TERM LOAN A		11/15/2018	CA CASH_CLOSE		3,836,057	3,836,057	3,720,975	3,743,591		92,467		92,467		3,836,057				140,782	07/24/2020	
46611V-AT-2	JBS USA, LLC New TL B due 20		11/27/2018	VARIOUS		4,223,358	4,218,125	4,218,125	4,218,125						4,218,125		5,233	5,233	140,927	10/30/2022	
552662-AU-2	MCC Iowa LLC Tranche M Term Loan		11/06/2018	VARIOUS		2,355,450	2,355,450	2,356,180	2,356,180		(7)		(7)		2,356,173		(723)	(723)	77,279	01/30/2025	
55331#-AB-8	MIP DELAWARE, LLC TERM LOAN 2/13		11/07/2018	BANK LOANS BARINGS		394,162	394,162	389,503	391,716						391,717		2,445	2,445	15,281	03/01/2020	
58335#-AA-6	MIAMI ESCROW BORR TRANCHE B-3 TERM LN		06/11/2018	VARIOUS		451,608	454,510	453,374	453,374		1		1		453,374		(1,766)	(1,766)	6,549	06/21/2024	
69353#-AE-3	PPC Industries Inc. First Lien Term		01/31/2018	CA CASH_CLOSE		2,537,250	2,537,250	2,534,078	2,534,078		3,172		3,172		2,537,250				11,954	05/08/2024	
70454F-SS-0	PCB Creation SAS Cash-backed Bri		03/30/2018	CA CASH_CLOSE		3,319,957	3,319,959	3,161,988	3,231,060		16,600		16,600	(69,072)	3,319,957	141,369		141,369	38,733	03/31/2018	
81172U-AB-1	SEADRILL PARTNERS FINCO TERM LOAN B		12/31/2018	CA CASH_CLOSE		211,646	211,646	209,529	210,237		1,408		1,408		211,646				10,350	02/21/2021	
81271E-AB-7	SEATTLE ESCROW BORR INITIAL TERM LN		06/11/2018	VARIOUS		3,049,823	3,069,420	3,061,746	3,061,746		6		6		3,061,752		(11,929)	(11,929)	44,226	06/21/2024	
89705D-AD-4	Tronox Ltd. TL B-1		12/31/2018	CA CASH_CLOSE		11,693	11,693	11,634	11,634		58		58		11,693				468	09/13/2024	
89705D-AE-2	Tronox Ltd. TL B-2		12/31/2018	CA CASH_CLOSE		5,067	5,067	5,042	5,042		25		25		5,067				203	09/13/2024	
000000-00-0	Avoca IH 4 07/02/19 Class B		11/09/2018	VARIOUS		1,327,612	1,327,612	1,388,561							1,327,612	(70,949)		(70,949)	77,279	02/07/2019	
000000-00-0	Avoca IH 4 07/02/19 Class C		11/09/2018	CALL 100		633,677	633,677	667,582							633,677	(33,905)		(33,905)		02/07/2019	
D1200Y-AN-7	Springer Science+Business Term B13		12/28/2018	CA CASH_CLOSE		368,523	368,523	369,677	369,677		(1,153)		(1,153)		368,523				16,867	08/15/2022	
D1638#-AA-8	Cordenka GmbH Term Loan B1		11/12/2018	CA CASH_CLOSE		360,943	360,943	363,160	374,306		10,828		10,828	(11,146)	360,943	(13,046)		(13,046)	28,147	07/14/2023	
D1638#-AB-6	Cordenka GmbH Term Loan B2		11/12/2018	CA CASH_CLOSE		39,233	39,233	39,474	39,474		1,177		1,177	(1,212)	39,233	(1,418)		(1,418)	1,776	07/14/2023	
G0128#-AA-8	AGILITY TRAINS WEST LIMI GBP TERM LOAN		10/31/2018	BANK LOANS BARINGS		10,758	10,758	12,978	11,407					10,758		(2,220)	(2,220)	6	12/31/2041		
G0128#-AA-6	AGILITY TRAINS EAST LIMI GBP TERM LOAN		10/31/2018	VARIOUS		5,511	5,511	6,095						5,511		(584)	(584)		6	09/30/2043	
526677-ZZ-5	Trascare Bidco Limited		11/29/2018	BANK LOANS BARINGS		4,003,090	4,003,090	1,521,975						1,521,975			2,481,115	2,481,115		11/14/2025	
G2282#-AA-2	COLORADO BIDCO LIMITED EUR TERM LOAN B		12/10/2018	CA CASH_CLOSE		11,263,774	11,263,770	10,432,377	11,920,167					(1,487,790)	11,263,774	831,397		831,397	423,260	03/12/2022	
G2282#-AB-0	COLORADO BIDCO LIMITED EUR TERM LOAN B		12/10/2018	CA CASH_CLOSE		10,726,438	10,726,435	9,934,703	11,351,518					(1,416,815)	10,726,438	791,736		791,736	403,069	03/12/2022	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Con- sideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
64301U-AF-1	Harbour Aircraft Investm Series 2017-1 C	C.	12/15/2018	CA CASH CLOSE		2,686,897	2,686,897	2,666,220	2,666,220				20,676		2,686,897				56,754	11/15/2037	
66031F-AA-7	Merseylink Limited - Term Loan	B.	09/28/2018	CA CASH CLOSE		739,764	739,764	741,572	750,226				(8,646)		739,764	(856)		(856)	16,488	03/31/2032	
66361E-AA-9	NYOP EDUCATION (ABERDEEN AMORTISING TERM	B.	09/28/2018	CA CASH_CLOSE		1,181,828	1,181,828	1,276,583	1,042,852		139,646		139,646	246,756	1,181,828	(247,426)		(247,426)	12,703	03/31/2037	
66562A-AF-4	Nomad Foods Europe Midco Limited	C.	05/15/2018	CA CASH_CLOSE		18,770	18,770	18,765			5		5		18,770				245	05/15/2024	
66903D-AD-1	Paragon Offshore Finance Company	D.	03/29/2018	CA CASH_CLOSE		85,041	85,041	75,416	71,718	3,699	9,625		13,324		85,041				1,645	07/18/2022	
66984F-AA-3	MINTAKA BIDCO LTD Unitranche Fac	B.	12/05/2018	CA CASH_CLOSE		3,460,174	3,460,173	3,477,487			95,155		95,155		3,460,174	(112,467)		(112,467)	56,531	12/18/2024	
67594F-AA-4	Riverside Resource Recovery Limited - Fa	B.	10/24/2018	CA CASH_CLOSE		44,726,550	44,726,577	43,252,097	46,877,814				(3,625,717)		44,726,550	1,474,453		1,474,453	1,254,072	03/21/2024	
67949*-AB-8	SUNSHINE PURCHASER LIMIT EUR TERM LOAN B	B.	10/15/2018	VARIOUS		6,666,114	4,876,094	5,237,038	4,948,461		956,137	2,285,778	(1,329,641)	784,336	6,666,114	(448,323)		(448,323)	129,299	03/14/2021	
67949*-AC-6	SUNSHINE PURCHASER LIMIT TERM LOAN A	C.	10/15/2018	VARIOUS		3,608,986	2,921,617	2,396,515	2,921,617		1,212,471		1,212,471		3,608,986				153,736	03/14/2020	
67949*-AD-4	SUNSHINE PURCHASER LIMIT TERM LOAN B	C.	10/15/2018	VARIOUS		3,791,954	3,069,737	2,518,013	3,069,737		1,273,941		1,273,941		3,791,954				167,414	03/14/2021	
68278*-AA-5	SOUTH HOOK LNG TERM CO LTD GBP TERM LN	B.	07/23/2018	CA CASH_CLOSE		1,736,946	1,736,946	1,506,046	1,648,811		86,847		86,847	(142,765)	1,736,946	144,053		144,053	16,234	01/23/2030	
68983*-AA-5	TRASCARE BIDCO LIMITED GBP UNITRANCHE	B.	11/29/2018	CA CASH_CLOSE		3,079,604	3,079,604	3,564,289	3,158,999		94,626		94,626		3,079,604	(593,188)		(593,188)	193,662	07/07/2022	
68983*-AB-3	TRASCARE BIDCO LIMITED GBP CAPEX	B.	11/29/2018	CA CASH_CLOSE		1,307,915	1,307,914	1,280,065	1,369,832		13,543		13,543	(89,767)	1,307,915	14,307		14,307	82,286	07/07/2022	
68983*-AC-1	Trascare Bidco Limited Accordion Facil	B.	11/29/2018	CA CASH_CLOSE		1,468,969	1,468,969	1,532,193	1,554,608				(22,416)		1,468,969	(63,223)		(63,223)	92,376	04/10/2024	
69341J-AG-5	Veritas Bermuda Ltd. Repriced USD TL	C.	12/31/2018	CA CASH_CLOSE		25,500	25,500	25,404	25,404		96		96		25,500				1,374	01/27/2023	
L0166M-AB-4	ALISON BIDCO SARL USD 1ST LIEN TE	C.	12/31/2018	CA CASH_CLOSE		10,250	10,250	10,148	10,174		76		76		10,250				328	08/29/2021	
L0166M-AE-8	ALISON BIDCO S.A.R.L. USD 1ST LIEN TE	C.	12/31/2018	CA CASH_CLOSE		10,250	10,250	10,148	10,174		76		76		10,250				328	08/29/2021	
L0174*-AA-1	Allnex (Luxembourg) & Cy USD Term B-2 du	C.	12/31/2018	VARIOUS		332,948	333,724	333,724	333,724						332,948		(776)	(776)	17,411	09/14/2023	
L0175*-AA-0	ALPHA TRAINS FINANCE S.A EUR TERM LOAN A	B.	06/29/2018	CA CASH_CLOSE		237,238	237,238	221,828	244,247				(22,419)		237,238	15,410		15,410	5,347	03/05/2030	
L0175*-AB-8	Alpha Trains Finance S.A Term Loan	B.	12/28/2018	CA CASH_CLOSE		1,440,131	1,440,131	1,396,788	1,478,837				(82,048)		1,440,131	43,342		43,342	33,400	12/31/2035	
L1957L-AB-7	Consolidated Energy Fina First Lien TL	D.	12/31/2018	CA CASH_CLOSE		3,595	3,595	3,586			9		9		3,595				66	05/02/2025	
L2465B-AJ-5	DELTA 2 LUX SARL USD 1ST LIEN TE	D.	01/31/2018	CA CASH_CLOSE		13,743,707	13,743,707	13,613,692	13,648,857		94,850		94,850		13,743,707				57,562	07/30/2021	
L2969E-AB-8	Endo Lux USD Initial Term Ln	C.	12/20/2018	VARIOUS		4,102,844	4,228,750	4,207,606	4,207,606		159		159		4,207,766		(104,922)	(104,922)	244,994	04/27/2024	
L3456H-AD-4	Coveris Holdings S.A. - 2017 Term Loan B	D.	05/01/2018	VARIOUS		2,498,178	2,498,178	2,481,940	2,481,940		16,238		16,238		2,498,178				51,949	06/07/2022	
L5582B-AQ-0	ION Trading Technologies S.a.r.l.	D.	08/15/2018	VARIOUS		1,934,205	1,942,710	1,940,282	1,940,282		12		12		1,940,294		(6,089)	(6,089)	46,256	11/30/2024	
L5582B-AT-4	ION Trading Technologies Incremental USD	D.	12/31/2018	CA CASH_CLOSE		33,519	33,519	33,371			147		147		33,519				396	11/21/2024	
L6232U-AF-4	MALLINCKRODT INTL FIN SA-1L GTD SR SECD	C.	12/31/2018	CA CASH_CLOSE		643,500	643,500	644,709	644,709		(1,210)		(1,210)		643,500				10,125	09/24/2024	
L7300K-AJ-3	ORTHO-CLINICAL DIAGNOSTICS SA Term Loan	C.	12/28/2018	CA CASH_CLOSE		48,271	48,271	48,295			(24)		(24)		48,271				938	06/30/2025	
L9339L-AE-3	Trinseo S.A. Term Loan B	C.	05/22/2018	VARIOUS		392,696	391,232	391,232	391,232						391,233		1,463	1,463	6,574	08/16/2024	
L9339L-AG-8	TRINSEO MATLS OPERATING SCA Term Loan B	C.	12/21/2018	VARIOUS		288,778	298,428	299,547			(6)		(6)		289,542		(10,764)	(10,764)	9,535	09/09/2024	
N1827*-AA-8	CARIBBEAN INFRASTRUCTURE TERM LOAN	D.	10/01/2018	CA CASH_CLOSE		1,215,000	1,215,000	1,215,000	1,215,000						1,215,000				58,593	07/13/2030	
P3562B-AD-4	Digical Limited TL B	C.	04/13/2018	VARIOUS		10,733,191	10,724,008	10,812,502	10,812,502		(37)		(37)		10,812,464		(79,273)	(79,273)	127,972	05/25/2024	
Q0063B-AA-2	ACCOLADE WINES AUSTRALIA GBP TERM LOAN	B.	05/31/2018	CA CASH_CLOSE		36,822,441	36,822,423	43,858,882	37,136,680		320,083		320,083	7,065,186	36,822,441	(7,699,509)		(7,699,509)	1,111,291	02/28/2019	
Q0569*-AA-9	Aspire Schools Financing Services (QLD)	B.	12/31/2018	CA CASH_CLOSE		140,353	140,353	152,602						140,353	(12,249)			(12,249)	2,961	12/31/2038	
Q1298*-AA-5	Icon Cancer Care Senior Term Loan	B.	06/29/2018	CA CASH_CLOSE		144,986	144,986	151,959	149,735		3,262		3,262	2,223	144,986	(10,235)		(10,235)		06/30/2022	
Q3787*-AA-9	FINDEX AUSTRALIA PTY LTD AUD TERM B LOAN	B.	05/31/2018	CA CASH_CLOSE		22,698,000	22,698,006	24,340,500	23,438,000					904,500	22,698,000	(1,642,500)		(1,642,500)	476,850	01/05/2020	
Q3978*-AA-8	Genesicare Pty Limited Tranche B3 (EUR	B.	10/31/2018	CA CASH_CLOSE		8,826,853	8,826,852	8,022,074	8,868,749		454,583		454,583	(846,675)	8,826,853	350,196			350,196	516,107	10/21/2021
Q5688*-AA-8	LYNCH GROUP BIDCO PTY LT TERM LOAN B	B.	09/28/2018	CA CASH_CLOSE		9,206,775	9,206,773	8,972,175	9,960,300					(988,125)	9,206,775	234,600			234,600	515,547	10/30/2020
Q7677*-AB-3	PLENARY HEALTH FIN CO PTY LTD AUST SER B	B.	10/01/2018	CA CASH_CLOSE		1,154,266	1,154,266	1,187,695	1,201,351				(13,656)		1,154,266	(33,429)		(33,429)	29,285	06/30/2040	
Q8803E-AA-1	Transurban Queensland Fin Nts Fltg Rate	B.	06/29/2018	DIRECT		10,171,655	9,981,899	11,248,200	10,546,200					702,000	9,981,899	(1,266,300)	189,756	(1,076,544)	203,662	12/16/2024	
R6236*-AA-8	Norspan LNG AS Fixed Rate Loan	B.	08/14/2018	CA CASH_CLOSE		8,885,625	8,885,623	7,947,000	9,016,500				(1,069,500)		8,885,625	938,625		938,625	101,381	02/14/2024	
T0002*-AA-1	ASR MEDIA EURO TERM LN FAC	B.	12/31/2018	CA CASH_CLOSE		2,169,657	2,169,658	2,225,150	2,250,989		21,697		21,697	(25,839)	2,169,657	(77,189)		(77,189)	131,621	06/23/2022	
T3829*-AA-6	F.C. Internazionale Mila Senior Revolver	B.	11/06/2018	CA CASH_CLOSE		5,706,000	5,705,997	5,781,000							5,706,000	(75,000)		(75,000)	14,230	02/26/2023	
V0000*-AA-0	BC INVTS VIII LTD-USD TERM LOAN FACILITY	D.	05/16/2018	CA CASH_CLOSE		4,700,962	4,700,962	4,573,462	4,589,197		111,765		111,765		4,700,962				229,066	02/05/2021	
V4944*-AA-0	JEEVES INFO SYS AB SEK TERM LN B-1	B.	09/07/2018	CA CASH_CLOSE		771,314	771,314	731,924	835,671					19,283	771,314	20,108		20,108	25,190	12/20/2022	
X0263*-AB-2	Autostrada Wielkopolska Senior Secured	B.	12/31/2018	CA CASH_CLOSE		5,744,441	5,744,444	6,154,200						14,361	5,744,441	(424,129)		(424,129)	54,863	12/31/2024	
X9273*-AA-3	AUTOSTRADA WIELKOPOLSKA TERM LOAN	B.	12/31/2018	CA CASH_CLOSE		3,913,081	3,913,082	4,223,145	3,916,856					320,594	3,913,081	(388,262)		(388,262)	99,751	06/03/2029	
Y3927*-AA-3	INDIANET BIDCO PTE LTD USD TERM LN	D.	10/05/2018	VARIOUS		8,861,570	8,861,570	8,728,647	8,746,725				114,845		8,861,570				345,200	12/18/2020	
8299999. Subtotal - Bonds - Bank Loans						1,464,888,689	1,510,182,769	1,466,407,767	1,099,089,349	31,170	8,218,216	48,896,004	(40,646,618)	4,813,597	1,461,590,993	(15,477,419)	3,297,696	(12,179,723)	45,048,936	XXX	
8399997. Total - Bonds - Part 4						15,960,422,396	16,067,729,805	15,674,9													

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
60177J-11-6	ALLERGAN PLC CNV PREF SERIES A	D	03/02/2018	CONVERSION	14,500,000	8,513,313	8,513,313.00	8,513,313	8,513,313						8,513,313					199,375	
8499999	Subtotal - Preferred Stocks - Industrial and Miscellaneous (Unaffiliated)									34,605,570	XXX	34,605,571	33,711,389	401,634		34,605,572		(2)	(2)	1,550,490	XXX
8999997	Total - Preferred Stocks - Part 4									34,605,570	XXX	34,605,571	33,711,389	401,634		34,605,572		(2)	(2)	1,550,490	XXX
8999998	Total - Preferred Stocks - Part 5										XXX										XXX
8999999	Total - Preferred Stocks									34,605,570	XXX	34,605,571	33,711,389	401,634		34,605,572		(2)	(2)	1,550,490	XXX
00081T-10-8	ACCO Brands Corp-COMMON STOCK		06/13/2018	WEEDEN & CO	32,900,000	432,712		204,220	401,380			(197,160)	(197,160)		204,220		228,492	228,492		3,948	
001055-10-2	AFLAC INC-COMMON STOCK		11/20/2018	WEEDEN & CO	33,000,000	1,475,721		1,185,665	1,448,370			(262,705)	(262,705)		1,185,665		290,056	290,056		34,320	
001084-10-2	AGCO CORP-COMMON STOCK		03/01/2018	WEEDEN & CO	3,000,000	199,640		155,189	214,290			(59,102)	(59,102)		155,188		44,452	44,452		450	
001282-10-2	A H BELO CORP-COMMON STOCK		03/26/2018	WEEDEN & CO	6,200,000	31,748		30,814	29,760			1,054	1,054		30,814					496	
00287Y-10-9	AbbVie Inc-COMMON STOCK		09/27/2018	JONES TRADING INST	21,700,000	2,049,781		1,257,019	2,098,607			(841,588)	(841,588)		1,257,018		792,763	792,763		57,071	
00289E-20-7	ABERCROMBIE & FITCH CO-COMMON STOCK		06/12/2018	WEEDEN & CO	4,100,000	108,356		50,348	71,463			(21,115)	(21,115)		50,348		58,008	58,008		2,460	
004239-10-9	ACADIA REALTY TRUST-COMMON STOCK REIT		12/18/2018	VARIOUS	3,831,000	102,056		100,233	104,816			(4,583)	(4,583)		100,234		1,822	1,822		2,833	
00548A-10-6	ADAMAS PHARMACEUTICALS I-COMMON STOCK		03/09/2018	WEEDEN & CO	3,900,000	107,719		68,312	132,171			(63,859)	(63,859)		68,313		39,406	39,406			
00773T-10-1	ADVANSIX INC-COMMON STOCK		05/01/2018	WEEDEN & CO	38,200,000	1,375,828		1,283,092	1,607,074			(323,982)	(323,982)		1,283,091		92,737	92,737			
007973-10-0	Advanced Energy Industri-COMMON STOCK		10/08/2018	VARIOUS	16,200,000	824,267		951,853	1,093,176			(141,323)	(141,323)		951,853		(127,586)	(127,586)			
013872-10-6	ALCOA CORP-Common Stock		11/28/2018	VARIOUS	84,781,000	3,021,629		3,145,037	4,567,152			(1,422,115)	(1,422,115)		3,145,037		(123,408)	(123,408)			
01877R-10-8	Alliance Resource Partne-COMMON STOCK		12/06/2018	WEEDEN & CO	89,864,000	1,755,434		1,156,698	1,770,321			(613,623)	(613,623)		1,156,698		598,736	598,736		186,018	
020409-10-8	ALMOST FAMILY INC-COMMON STOCK		04/03/2018	MERGER	1,600,000	40,339		40,339	88,560			(48,221)	(48,221)		40,339						
02079K-30-5	Alphabet Inc-COMMON STOCK		12/03/2018	WEEDEN & CO	6,840,000	7,704,774		6,534,805	7,205,256			(670,451)	(670,451)		6,534,805		1,169,969	1,169,969			
023135-10-6	AMAZON.COM INC-COMMON STOCK		12/21/2018	VARIOUS	1,200,000	1,945,136		1,917,798	1,169,470			(553,848)	(553,848)		1,917,798		1,027,338	1,027,338			
023139-88-4	AMBAC FINANCIAL GROUP IN-COMMON STOCK		06/12/2018	WEEDEN & CO	3,300,000	69,469		50,761	52,734			(1,973)	(1,973)		50,761		18,708	18,708			
023436-10-8	AMEDISYS INC-COMMON STOCK		03/01/2018	JONES TRADING INST	2,100,000	118,836		21,798	110,691			(88,893)	(88,893)		21,798		97,038	97,038			
02376R-10-2	AMERICAN AIRLINES GROUP -COMMON STOCK		06/12/2018	WEEDEN & CO	2,300,000	99,299		15,938	119,669			(103,731)	(103,731)		15,938		83,361	83,361		460	
03027X-10-0	AMERICAN TOWER CORP-COMMON STOCK REIT		06/01/2018	WEEDEN & CO	690,000	94,571		97,181	98,442			(1,261)	(1,261)		97,181		(2,610)	(2,610)		1,001	
030371-10-8	AMERICAN VANGUARD CORP COMMON STK		03/27/2018	JONES TRADING INST	12,600,000	262,979		178,687	247,590			(68,903)	(68,903)		178,687		84,292	84,292		378	
030420-10-3	AMERICAN WATER WORKS CO -COMMON STOCK		05/10/2018	WEEDEN & CO	25,550,000	2,130,565		1,395,584	2,337,570			(941,985)	(941,985)		1,395,584		734,981	734,981		22,229	
030975-10-6	AMERIGAS PARTNERS LP-COMMON STOCK LTD PA		11/13/2018	JONES TRADING INST	8,949,000	318,757		335,883	413,712			(77,830)	(77,830)		335,882		(17,125)	(17,125)		34,006	
031162-10-0	Amgen Inc-COMMON STOCK		11/26/2018	WEEDEN & CO	11,460,000	2,224,281		2,022,644	1,992,894			29,750	29,750		2,022,644		201,637	201,637		45,382	
031652-10-0	AMKOR TECHNOLOGY INC-COMMON STOCK		06/21/2018	JONES TRADING INST	52,100,000	472,447		579,536	523,605			55,931	55,931		579,536		(107,089)	(107,089)			
032037-10-3	Ampco-Pittsburgh Corp-COMMON STOCK		03/26/2018	WEEDEN & CO	3,300,000	31,239		58,001	40,920			17,081	17,081		58,001		(26,762)	(26,762)			
032332-50-4	ANITECH SYSTEMS INC-COMMON STOCK		03/01/2018	JONES TRADING INST	2,000,000	15,316		6,600	20,140			(13,540)	(13,540)		6,600		8,716	8,716			
032654-10-5	ANALOG DEVICES INC-COMMON STOCK		11/26/2018	WEEDEN & CO	12,000,000	1,073,808		935,280	1,068,360			(133,080)	(133,080)		935,280		138,528	138,528		22,680	
03349M-10-5	Andeavor-COMMON STOCK		10/01/2018	VARIOUS	11,517,000	176,697		176,697				(1,140,157)	(1,140,157)		176,697					29,907	
03350F-10-6	Andeavor Logistics LP		12/18/2018	VARIOUS	110,983,000	4,055,493		6,021,498	5,126,305			895,193	895,193		6,021,498		(1,966,005)	(1,966,005)		410,864	
03673L-10-3	ANTERO MIDSTREAM PARTNERS LP LTD PARTNER		12/19/2018	VARIOUS	83,180,000	2,158,758		2,436,851	2,415,547			21,304	21,304		2,436,851		(278,093)	(278,093)		133,920	
03674X-10-6	ANTERO RESOURCES CORP-COMMON STOCK		05/30/2018	WEEDEN & CO	177,902,000	3,325,248		3,403,265	3,380,138			23,127	23,127		3,403,266		(78,018)	(78,018)			
03675Y-10-3	ANTERO RESOURCES MIDSTRE-COMMON STOCK		12/18/2018	DTCYID	26,611,000	366,559		625,359	524,769			100,590	100,590		625,359		(258,800)	(258,800)		12,028	
037347-10-1	ANWORTH MORTGAGE ASSET C-COMMON STOCK RE		06/13/2018	WEEDEN & CO	18,100,000	91,174		90,711	98,464			(7,753)	(7,753)		90,711		463	463		5,430	
03762J-10-5	APOLLO COMMERCIAL REAL E-COMMON STOCK		06/12/2018	WEEDEN & CO	4,384,000	82,608		91,866	80,885			10,981	10,981		91,866		(9,258)	(9,258)		4,033	
037833-10-0	APPLE INC-COMMON STOCK		01/25/2018	WEEDEN & CO	4,770,000	822,303		350,643	807,227			(456,584)	(456,584)		350,643		471,660	471,660			
038222-10-5	APPLIED MATERIALS INC-COMMON STOCK		01/01/2018	VARIOUS																12,620	
039483-10-2	Archer-Daniels-Midland C-COMMON STOCK		12/13/2018	VARIOUS	90,620,000	4,072,054		3,228,729	3,632,050			(403,320)	(403,320)		3,228,729		843,325	843,325		121,431	
03957J-10-0	ARCHROCK PARTNERS LP-COMMON STOCK		04/27/2018	MERGER	180,700,000	3,281,444		3,281,444	2,152,137			1,129,307	1,129,307		3,281,444					51,500	
03965L-10-0	ARCONIC INC-COMMON STOCK		05/10/2018	CANTOR	12,548,000	228,910		271,985	341,933			(69,948)	(69,948)		271,984		(43,074)	(43,074)		1,506	
04010E-10-9	Argan Inc-COMMON STOCK		03/09/2018	WEEDEN & CO	7,600,000	323,689		129,034	342,000			(212,966)	(212,966)		129,034		194,655	194,655			
042315-50-7	ARMOUR RESIDENTIAL REIT -COMMON STOCK		06/12/2018	WEEDEN & CO	1,800,000	41,737		36,320	46,296			(9,977)	(9,977)		36,319		5,418	5,418		1,368	
042735-10-0	Arrow Electronics INC-COMMON STOCK		11/02/2018	JONES TRADING INST	8,600,000	644,691		565,313	691,526			(126,213)	(126,213)		565,314		79,377	79,377			
044103-10-5	Ashford Hospitality Trus-COMMON STOCK RE		06/12/2018	WEEDEN & CO	6,400,000	45,816		56,274	43,072			13,202	13,202		56,274		(10,458)	(10,458)		1,536	
04621X-10-8	Assurant Inc-COMMON STOCK		03/27/2018	JONES TRADING INST	4,200,000	380,384		270,923	423,528			(152,605)	(152,605)		270,924		109,460	109,460		2,352	
049164-20-5	ATLAS AIR WORLDWIDE HOLD-COMMON STOCK		06/21/2018	JONES TRADING INST	7,900,000	584,499		371,818	463,335			(91,517)	(91,517)		371,817		212,682	212,682			
053484-10-1	AVALONBAY COMMUNITIES IN-COMMON STOCK RE		01/18/2018	WEEDEN & CO	812,000	135,911		143,904	144,869			(965)	(965)		143,904		(7,993)	(7,993)			
053611-10-9	EVERY DENNISON CORP-COMMON STOCK		10/19/2018	JONES TRADING INST	12,100,000	1,179,811		954,206	1,389,806			(435,600)	(435,600)		954,206		225,605				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
060505-10-4	Bank of America Corp-COMMON STOCK		12/12/2018	VARIOUS	371,200.000	10,029,546		7,369,534	10,957,824	(3,588,290)			(3,588,290)		7,369,535		2,660,011	2,660,011	122,496	
067383-10-9	CR Bard Inc-COMMON STOCK		01/01/2018	MERGER	1,380.000	115,022		115,022	457,111	(342,090)			(342,090)		115,022				307,776	
067806-10-9	Barnes Group Inc-COMMON STOCK		05/10/2018	JONES TRADING INST	21,200.000	1,238,588		1,237,554	1,341,324	(103,770)			(103,770)		1,237,554		1,034	1,034	2,968	
068463-10-8	BARRETT BUSINESS SERVICE-COMMON STOCK		06/13/2018	WEEDEN & CO	2,900.000	241,746		43,358	187,021	(143,663)			(143,663)		43,358		198,388	198,388	1,450	
075887-10-9	BECTON DICKINSON & CO-COMMON STOCK		11/02/2018	JONES TRADING INST	700.000	164,893		115,022							115,021		49,872	49,872	1,575	
077347-30-0	Bel Fuse Inc-COMMON STOCK		06/28/2018	JONES TRADING INST	5,000.000	106,031		161,330	125,875	35,455			35,455		161,330		(55,299)	(55,299)	700	
077454-10-6	BELDEN INC-COMMON STOCK		02/27/2018	WEEDEN & CO	3,200.000	238,426		221,120	246,944	(25,824)			(25,824)		221,120		17,306	17,306	160	
09075E-10-0	BIOVERATIV INC-COMMON STOCK		03/09/2018	VARIOUS	156,600.000	16,315,229		8,402,967	8,443,872	(40,905)			(40,905)		8,402,967		7,912,262	7,912,262		
095229-10-0	BLUCORA INC-COMMON STOCK		06/12/2018	WEEDEN & CO	5,700.000	213,616		52,212	125,970	(73,758)			(73,758)		52,212		161,404	161,404		
097023-10-5	Boeing Co/The-COMMON STOCK		01/26/2018	JONES TRADING INST	7,800.000	2,674,129		990,199	2,300,298	(1,310,099)			(1,310,099)		990,198		1,683,931	1,683,931		
09739D-10-0	BOISE CASCADE CO-COMMON STOCK		06/28/2018	JONES TRADING INST	6,600.000	291,118		196,659	263,340	(66,681)			(66,681)		196,658		94,460	94,460	1,386	
103304-10-1	Boyd Gaming Corp-COMMON STOCK		01/25/2018	WEEDEN & CO	14,200.000	552,441		244,666	497,710	(253,044)			(253,044)		244,666		307,775	307,775	710	
105368-20-3	Brandywine Realty Trust-COMMON STOCK REI		07/11/2018	WEEDEN & CO	3,560.000	60,417		58,283	64,756	(6,474)			(6,474)		58,283		2,134	2,134	1,922	
108035-10-6	BRIDGE BANCORP INC-COMMON STOCK		06/25/2018	JONES TRADING INST	11,800.000	439,204		419,378	413,000	6,378			6,378		419,378		19,826	19,826	5,428	
10807M-10-5	BRIDGEPOINT EDUCATION INC-COMMON STOCK		06/13/2018	WEEDEN & CO	4,500.000	32,444		38,173	37,350	823			823		38,173		(5,729)	(5,729)		
10922N-10-3	BRIGHTHOUSE FINANCIAL INC-COMMON STOCK		04/19/2018	JONES TRADING INST	772.000	39,857		34,070	45,270	(11,200)			(11,200)		34,070		5,787	5,787	42	
109696-10-4	BRINK'S CO/THE-COMMON STOCK		12/03/2018	WEEDEN & CO	15,800.000	1,129,214		1,044,214	1,243,460	(199,246)			(199,246)		1,044,214		85,000	85,000	9,480	
1137M-10-7	BROOKLINE BANCORP INC-COMMON STOCK		06/22/2018	JONES TRADING INST	85,800.000	1,476,170		1,350,500	1,347,060	3,440			3,440		1,350,500		125,670	125,670	5,472	
118230-10-1	BUCKEYE PARTNERS LP-PARTNERSHIP INTEREST		12/21/2018	VARIOUS	109,299.000	3,377,152		3,862,627	5,415,765	2,033,833	3,586,972		(1,553,139)		3,862,627		(485,475)	(485,475)	1,079,585	
12008R-10-7	BUILDERS FIRSTSOURCE INC-COMMON STOCK		06/28/2018	WEEDEN & CO	48,800.000	878,091		783,416	1,063,352	(279,936)			(279,936)		783,416		94,675	94,675		
12466Q-10-4	C&F FINANCIAL CORP-COMMON STOCK		06/22/2018	JONES TRADING INST	1,600.000	98,695		79,542	92,800	(13,258)			(13,258)		79,542		19,153	19,153	1,088	
124805-10-2	CBIZ INC-COMMON STOCK		03/09/2018	WEEDEN & CO	3,300.000	64,312		22,772	50,985	(28,213)			(28,213)		22,772		41,540	41,540		
12508E-10-1	CDK GLOBAL INC-COMMON STOCK		02/27/2018	JONES TRADING INST	2,600.000	180,586		66,324	185,328	(119,004)			(119,004)		66,325		114,261	114,261	390	
125269-10-0	CF INDUSTRIES HOLDINGS I-COMMON STOCK		12/11/2018	JONES TRADING INST	23,900.000	995,420		847,124	1,016,706	(169,582)			(169,582)		847,124		148,296	148,296	28,680	
125906-10-7	CSS INDUSTRIES INC-COMMON STOCK		03/26/2018	WEEDEN & CO	2,900.000	50,696		55,302	80,707	(25,405)			(25,405)		55,302		(4,606)	(4,606)	580	
12618T-10-5	CRA INTERNATIONAL INC-COMMON STOCK		06/13/2018	WEEDEN & CO	2,900.000	156,947		86,886	130,355	(43,469)			(43,469)		86,887		70,060	70,060	986	
12621E-10-3	CNO Financial Group Inc-COMMON STOCK		06/12/2018	WEEDEN & CO	6,900.000	136,640		129,138	170,361	(41,223)			(41,223)		129,138		7,502	7,502	1,932	
126633-10-6	CVR PARTNERS LP-COMMON STOCK LTD PART		11/15/2018	JONES TRADING INST	126,319.000	485,163		604,544	414,326	190,218			190,218		604,544		(119,381)	(119,381)		
126650-10-0	CVS Health Corp-COMMON STOCK		06/29/2018	JONES TRADING INST	14,700.000	954,569		1,252,930	1,065,750	187,180			187,180		1,252,930		(298,361)	(298,361)	14,700	
12673A-10-8	CYS INVESTMENTS INC-COMMON STOCK REIT		06/12/2018	WEEDEN & CO	14,900.000	108,913		125,327	119,647	5,680			5,680		125,327		(16,414)	(16,414)	7,003	
12685J-10-5	CABLE ONE INC-COMMON STOCK		05/11/2018	VARIOUS	3,590.000	2,423,217		1,856,314	2,525,027	(668,713)			(668,713)		1,856,314		566,903	566,903	6,283	
127097-10-3	CABOT OIL & GAS CORP-COMMON STOCK		05/10/2018	CANTOR	15,300.000	349,217		356,834	437,580	(80,746)			(80,746)		356,834		(7,617)	(7,617)	918	
127190-30-4	CACI INTERNATIONAL INC-COMMON STOCK		06/13/2018	WEEDEN & CO	2,300.000	385,095		140,136	304,405	(164,269)			(164,269)		140,136		244,959	244,959		
127387-10-8	CADENCE DESIGN SYSTEMS I-COMMON STOCK		12/11/2018	JONES TRADING INST	28,700.000	1,266,968		616,387	1,200,234	(583,847)			(583,847)		616,387		650,581	650,581		
127686-10-3	CAESARS ENTERTAINMENT CO-COMMON STOCK		06/28/2018	VARIOUS	8,288.000	100,357		46,101	104,837	(58,736)			(58,736)		46,101		54,256	54,256		
133131-10-2	CAMDEN PROPERTY TRUST-COMMON STOCK REIT		11/13/2018	VARIOUS	1,863.000	171,404		167,121	171,508	(4,387)			(4,387)		167,120		4,284	4,284	5,375	
142339-10-0	CARLISLE COS INC-COMMON STOCK		11/05/2018	JONES TRADING INST	6,750.000	672,224		707,873	767,138	(59,265)			(59,265)		707,873		(35,649)	(35,649)	7,695	
147528-10-3	CASEY'S GENERAL STORES I-COMMON STOCK		03/19/2018	WEEDEN & CO	9,200.000	1,036,209		467,772	1,029,848	(562,076)			(562,076)		467,772		568,437	568,437	2,392	
149205-10-6	CATO CORP/THE-COMMON STOCK		06/12/2018	WEEDEN & CO	3,300.000	80,353		58,542	52,536	6,006			6,006		58,542		21,811	21,811	3,267	
150870-10-3	Celanese Corp-COMMON STOCK		12/18/2018	JONES TRADING INST	74,400.000	7,362,672		6,777,137	7,966,752	(1,189,615)			(1,189,615)		6,777,136		585,536	585,536	60,986	
15135B-10-1	CENTENE CORP-COMMON STOCK		06/22/2018	WEEDEN & CO	8,799.000	1,100,879		192,442	887,643	(695,201)			(695,201)		192,442		908,437	908,437		
153527-20-5	Central Garden & Pet Co-COMMON STOCK		06/13/2018	WEEDEN & CO	12,300.000	500,131		310,106	463,833	(153,727)			(153,727)		310,106		190,025	190,025		
154760-40-9	CENTRAL PACIFIC FINANCIA-COMMON STOCK		06/13/2018	WEEDEN & CO	9,400.000	274,541		212,230	280,402	(68,172)			(68,172)		212,230		62,311	62,311	3,760	
16115Q-30-8	CHART INDUSTRIES INC-COMMON STOCK		06/13/2018	WEEDEN & CO	5,200.000	354,488		195,143	243,672	(48,529)			(48,529)		195,143		159,345	159,345		
163731-10-2	CHEMICAL FINANCIAL CORP-COMMON STOCK		06/13/2018	WEEDEN & CO	8,000.000	467,364		314,349	427,760	(113,411)			(113,411)		314,349		153,015	153,015	4,480	
163851-10-8	CHEMOURS CO-COMMON STOCK		09/27/2018	VARIOUS	135,901.000	6,218,354		5,280,726	6,803,204	(1,522,478)			(1,522,478)		5,280,726		937,628	937,628	48,456	
16411R-20-8	CHENIERE ENERGY INC-COMMON STOCK		12/18/2018	DTCYID	5,944.000	353,665		277,620	320,025	(42,405)			(42,405)		277,620		76,045	76,045		
165240-10-2	Chesapeake Lodging Trust-COMMON STOCK RE		12/18/2018	WEEDEN & CO	2,623.000	71,440		71,753	71,057	696			696		71,753		(313)	(313)	3,935	
165303-10-8	CHESAPEAKE UTILITIES COR-COMMON STOCK		06/12/2018	WEEDEN & CO	700.000	52,414		21,431	54,985	(33,555)			(33,555)		21,431		30,983	30,983	228	
166764-10-0	CHEVRON CORP-COMMON STOCK		12/11/2018	VARIOUS	37,042.000	4,248,267		4,011,641	4,637,288	(625,647)			(625,647)		4,011,641		236,626	236,626	165,948	
168905-10-7	CHILDREN'S PLACE INC/THE-COMMON STOCK		06/12/2018	WEEDEN & CO	2,200.000	302,411		133,638	319,770	(186,132)			(186,132)		133,638		168,773	168,773	1,980	
16																				

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
192422-10-3	COGNEX CORP-COMMON STOCK		02/28/2018	WEEDEN & CO	10,400.000	562,512											562,512	562,512		
192576-10-6	COHU INC-COMMON STOCK		03/09/2018	WEEDEN & CO	5,600.000	124,756		53,550	122,920	(69,370)			(69,370)		53,550		71,206	71,206		336
196250-10-4	COLONY NORTHSTAR INC-COMMON STOCK REIT		02/14/2018	JONES TRADING INST	43,000.000	361,458		471,714	490,630	(18,916)			(18,916)		471,714		(110,256)	(110,256)		
197236-10-2	COLUMBIA BANKING SYSTEM -COMMON STOCK		06/13/2018	WEEDEN & CO	6,944.000	297,399		265,891	301,647	(35,757)			(35,757)		265,890		31,509	31,509		3,351
198516-10-6	COLUMBIA SPORTSWEAR CO-COMMON STOCK		06/12/2018	WEEDEN & CO	600.000	54,868		22,625	43,128	(20,503)			(20,503)		22,625		32,243	32,243		264
199333-10-5	Columbus McKinnon Corp/IN-COMMON STOCK		05/15/2018	WEEDEN & CO	35,100.000	1,263,463		742,143	1,403,298	(661,155)			(661,155)		742,143		521,320	521,320		3,159
20030N-10-1	COMCAST CORP-COMMON STOCK		10/31/2018	WEEDEN & CO	45,800.000	1,746,331		1,527,201	1,834,290	(307,089)			(307,089)		1,527,201		219,130	219,130		33,320
200340-10-7	COMERICA INC-COMMON STOCK		12/12/2018	JONES TRADING INST	49,800.000	3,606,374		3,921,333	4,323,138	(401,805)			(401,805)		3,921,333		(314,959)	(314,959)		61,752
201723-10-3	COMMERCIAL METALS CO-COMMON STOCK		03/26/2018	WEEDEN & CO	5,500.000	136,083		109,638	138,580	(28,942)			(28,942)		109,638		26,445	26,445		780
205826-20-9	Comtech Telecommunicatio-COMMON STOCK		03/08/2018	JONES TRADING INST	5,700.000	164,905		66,405	126,084	(59,679)			(59,679)		66,405		98,500	98,500		570
20605P-10-1	CONCHO RESOURCES INC-COMMON STOCK		10/30/2018	WEEDEN & CO	8,700.000	1,180,879		1,242,892	1,306,914	(64,022)			(64,022)		1,242,892		(62,013)	(62,013)		
20825C-10-4	ConocoPhillips-COMMON STOCK		12/11/2018	JONES TRADING INST	9,800.000	640,239		621,308	537,922	83,386			83,386		621,308		18,931	18,931		11,368
209034-10-7	CONSOLIDATED COMMUNICATI-COMMON STOCK		03/26/2018	WEEDEN & CO	3,300.000	36,385		60,891	40,227	20,664			20,664		60,891		(24,506)	(24,506)		1,278
216648-40-2	COOPER COS INC/THE-COMMON STOCK		05/10/2018	WEEDEN & CO	7,090.000	1,629,473		1,748,494	1,544,769	203,725			203,725		1,748,494		(119,021)	(119,021)		213
216831-10-7	COOPER TIRE & RUBBER CO-COMMON STOCK		06/12/2018	WEEDEN & CO	3,300.000	88,007		117,588	116,655	933			933		117,588		(29,581)	(29,581)		693
217798-10-7	CORA Health Services, Inc Common Stock Cl		05/02/2018	RETURN OF CAPITAL		18,889									18,889					
21871D-10-3	CORELOGIC INC/UNITED STA-COMMON STOCK		10/25/2018	JONES TRADING INST	13,900.000	555,010		548,355	642,319	(93,964)			(93,964)		548,355		6,655	6,655		
219350-10-5	Corning Inc-COMMON STOCK		04/19/2018	WEEDEN & CO	62,300.000	1,717,092		1,399,632	1,992,977	(593,345)			(593,345)		1,399,633		317,459	317,459		11,214
22822V-10-1	CROWN CASTLE INTERNATION-COMMON STOCK RE		07/11/2018	WEEDEN & CO	459.000	51,028		48,275	50,954	(2,679)			(2,679)		48,275		2,753	2,753		440
228903-10-6	CRYOLIFE INC-COMMON STOCK		03/01/2018	JONES TRADING INST	7,400.000	138,266		41,573	141,710	(100,137)			(100,137)		41,573		96,693	96,693		
229669-10-6	CUBIC CORP-COMMON STOCK		03/21/2018	JONES TRADING INST	1,900.000	123,469		72,891	112,005	(39,114)			(39,114)		72,891		50,578	50,578		257
231021-10-6	CUMMINS INC-COMMON STOCK		05/14/2018	WEEDEN & CO	18,310.000	2,656,956		2,637,260	3,234,278	(597,018)			(597,018)		2,637,260		19,696	19,696		19,775
232046-10-0	CUSTOMERS BANCORP INC-COMMON STOCK		06/13/2018	WEEDEN & CO	11,800.000	357,016		404,453	306,682	97,771			97,771		404,453		(47,437)	(47,437)		
23311P-10-0	DCP MIDSTREAM PARTNERS LP COMMON UNIT		12/18/2018	VARIOUS	71,747.000	2,431,457		2,684,890	2,316,764	36,003			36,003		2,684,889		(253,432)	(253,432)		205,184
23331A-10-9	DR Horton Inc-COMMON STOCK		11/20/2018	WEEDEN & CO	9,600.000	333,535		287,808	490,272	(202,464)			(202,464)		287,808		45,727	45,727		3,600
23355L-10-6	DXC TECHNOLOGY CO-COMMON STOCK		12/18/2018	VARIOUS	19,706.000	2,002,461		141,136	1,870,099	(825,080)			(825,080)		1,045,020		957,441	957,441		11,062
233912-10-4	DAILY JOURNAL CORP-COMMON STOCK		03/26/2018	WEEDEN & CO	400.000	90,792		44,894	92,088	(47,194)			(47,194)		44,894		45,898	45,898		
235825-20-5	DANA HOLDING CORP-COMMON STOCK		11/08/2018	WEEDEN & CO	77,400.000	1,269,346		2,435,328	2,477,574	(42,246)			(42,246)		2,435,328		(1,165,982)	(1,165,982)		28,320
235851-10-2	Danaher Corp-COMMON STOCK		11/26/2018	VARIOUS	40,000.000	4,084,104		3,056,355	3,712,800	(656,445)			(656,445)		3,056,355		1,027,749	1,027,749		24,800
237266-10-1	DARLING INGREDIENTS INC COMMON STK		06/12/2018	WEEDEN & CO	12,600.000	237,307		157,847	228,438	(70,592)			(70,592)		157,847		79,460	79,460		
244199-10-5	Deere & Co-COMMON STOCK		11/28/2018	WEEDEN & CO	38,640.000	5,724,017		5,016,912	6,047,546	(1,030,635)			(1,030,635)		5,016,912		707,105	707,105		90,169
246647-10-1	DELEK US HOLDINGS INC-COMMON STOCK		06/12/2018	WEEDEN & CO	2,268.000	124,687		26,955	79,244	(52,289)			(52,289)		26,955		97,732	97,732		
247361-70-2	DELTA AIR LINES INC-COMMON STOCK		11/02/2018	JONES TRADING INST	3,800.000	213,196		205,130	212,800	(7,670)			(7,670)		205,130		8,066	8,066		3,648
247916-20-8	Denbury Resources Inc-COMMON STOCK		06/27/2018	JONES TRADING INST	1,340,779.000	6,352,828		3,483,403							3,483,403		2,869,425	2,869,425		
248019-10-1	Deluxe Corp-COMMON STOCK		06/12/2018	WEEDEN & CO	1,700.000	116,046		15,640	130,628	(114,988)			(114,988)		15,640		100,406	100,406		1,020
25179M-10-3	DEVON ENERGY CORP-COMMON STOCK		06/05/2018	WEEDEN & CO	51,000.000	2,004,529		2,003,714	2,111,400	(107,687)			(107,687)		2,003,714		815	815		17,732
25278X-10-9	DIAMONDBACK ENERGY INC-COMMON STOCK		06/19/2018	WEEDEN & CO	16,177.000	2,140,213		1,632,197	2,110,521	(478,324)			(478,324)		1,632,197		508,016	508,016		2,090
253868-10-3	DIGITAL REALTY TRUST INC-COMMON STOCK RE		08/06/2018	JONES TRADING INST	319.000	39,038		37,134	36,334	800			800		37,134		1,904	1,904		
254423-10-6	DINEEQUITY INC-COMMON STOCK		03/26/2018	WEEDEN & CO	700.000	45,779		30,919	35,511	(4,592)			(4,592)		30,919		14,860	14,860		441
25470F-10-4	DISCOVERY COMMUNICATIONS-COMMON STOCK		08/13/2018	WEEDEN & CO	66,800.000	1,729,109		1,394,116	1,494,984	(100,868)			(100,868)		1,394,116		334,993	334,993		
256677-10-5	DOLLAR GENERAL CORP-COMMON STOCK		02/28/2018	JONES TRADING INST	7,200.000	686,115		566,160	669,672	(103,512)			(103,512)		566,159		119,956	119,956		1,872
257454-10-8	DOMINION MIDSTREAM PARTNERS LP COMMON UN		12/27/2018	DTCYID	112,004.000	2,125,816		2,874,852	3,410,522	(535,670)			(535,670)		2,874,851		(749,035)	(749,035)		153,669
257651-10-9	Donaldson Co Inc-COMMON STOCK		12/13/2018	WEEDEN & CO	10,875.000	525,392		423,844	532,331	(108,487)			(108,487)		423,845		101,547	101,547		8,156
258278-10-0	DORMAN PRODUCTS INC-COMMON STOCK		06/22/2018	JONES TRADING INST	5,400.000	988,714		75,416	330,156	(254,740)			(254,740)		75,416		313,298	313,298		
25960R-10-5	DOUGLAS DYNAMICS INC-COMMON STOCK		03/26/2018	WEEDEN & CO	12,500.000	537,090		223,739	472,500	(248,761)			(248,761)		223,739		313,351	313,351		6,313
260543-10-3	Dow Chemical Co/The-COMMON STOCK		01/01/2018	CANTOR																1,426
264411-50-5	DUKE REALTY CORP-COMMON STOCK REIT		01/18/2018	WEEDEN & CO	6,690.000	170,942		148,016	182,035	(34,018)			(34,018)		148,017		22,925	22,925		5,687
26885B-10-0	EOT MIDSTREAM PARTNERS L P LTD PARTNERSH		12/14/2018	VARIOUS	130,762.000	6,023,071		6,760,395	9,558,702	(2,922,612)			(2,922,612)		6,760,395		(737,324)	(737,324)		484,977
26885J-10-3	EOT GP HLDGS LP COMMON UNIT		08/30/2018	DTCYID	32,606.000	684,385		864,745	877,101	(12,357)			(12,357)		864,745		(180,360)	(180,360)		26,346
268948-10-6	EAGLE BANCORP INC-COMMON STOCK		06/22/2018	WEEDEN & CO	13,100.000	823,612		778,970	758,490	20,480			20,480		778,970		44,642	44,642		
26969P-10-8	EAGLE MATERIALS INC-COMMON STOCK		06/28/2018	JONES TRADING INST	19,200.000	2,144,771		1,988,986	2,175,360	(186,374)			(186,374)		1,988,986		155,785	155,785		980
27579R-10-4	EAST WEST BANCORP INC-COMMON STOCK		06/12/2018	WEEDEN & CO	13,800.000	987,385														

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
29273V-10-0	ENERGY TRANSFER EQUITY L P LTD PARTNERSH		12/18/2018	DTCYID	436,797.000	6,138,092		6,492,910	7,539,116	(1,046,207)			(1,046,207)		6,492,909		(354,817)	(354,817)	368,375	
29278N-10-3	Energy Transfer Partners LP COMMON UNIT		09/21/2018	DTCYID	48,679.000	1,102,039		921,980	872,328	49,653			49,653		921,980		180,059	180,059		
29286C-10-7	ENLILITY HOLDINGS INC-COMMON STOCK		03/26/2018	WEEDEN & CO	5,500.000	134,487		173,298	156,035	17,263			17,263		173,299		(38,812)	(38,812)		
29336U-10-7	ENLINK MIDSTREAM PARTNER-ENLINK MIDSTREA		12/18/2018	DTCYID	56,157.000	723,955		1,022,990							1,022,989		(299,034)	(299,034)	21,901	
293389-10-2	Ennis Inc-COMMON STOCK		06/22/2018	JONES TRADING INST	7,100.000	135,796		121,053	147,325	(26,272)			(26,272)		121,053		14,743	14,743	3,550	
29362U-10-4	ENTERGRIS INC-COMMON STOCK		06/12/2018	WEEDEN & CO	7,800.000	297,161		61,897	237,510	(175,613)			(175,613)		61,897		235,264	235,264	1,092	
293639-10-0	ENTERCOM COMMUNICATIONS -COMMON STOCK		03/26/2018	WEEDEN & CO	3,500.000	32,934		27,848	37,800	(9,952)			(9,952)		27,848		5,086	5,086	315	
293792-10-7	ENTERPRISE PRODS PARTNERS L P COMMON UNI		12/19/2018	VARIOUS	630,117.000	16,264,517		19,335,245	16,704,402	2,630,843			2,630,843		19,335,245		(3,070,728)	(3,070,728)	932,598	
29414D-10-0	ENVISION HEALTHCARE CORP-COMMON STOCK		03/26/2018	WEEDEN & CO	2,700.000	102,137		69,633	93,312	(23,679)			(23,679)		69,633		32,504	32,504		
296689-10-2	Essendant Inc-COMMON STOCK		03/26/2018	WEEDEN & CO	2,500.000	19,444		36,300	23,175	13,125			13,125		36,300		(16,856)	(16,856)	350	
297178-10-5	Essex Property Trust Inc-COMMON STOCK RE		08/02/2018	VARIOUS	822.000	193,756		215,786	198,406	17,380			17,380		215,786		(22,030)	(22,030)	3,883	
297187-10-6	ESSEX RENTAL CORP-COMMON STOCK		01/02/2018	CA CASH CLOSE	189,350.000	37,870		24,267	43,551	(19,283)			(19,283)		24,267		13,603	13,603	(37,870)	
30219G-10-8	EXPRESS SCRIPTS HOLDING -COMMON STOCK		03/01/2018	JONES TRADING INST	35,400.000	2,616,046		2,421,118	2,642,256	(221,138)			(221,138)		2,421,119		194,927	194,927		
30225T-10-2	Extra Space Storage Inc-COMMON STOCK REI		01/18/2018	WEEDEN & CO	689.000	56,866		49,744	60,253	(10,509)			(10,509)		49,745		7,121	7,121		
302301-10-6	EZCORP INC-COMMON STOCK		06/12/2018	WEEDEN & CO	7,200.000	94,834		21,888	87,840	(65,952)			(65,952)		21,888		72,946	72,946		
30231G-10-2	Exxon Mobil Corp-COMMON STOCK		12/03/2018	WEEDEN & CO	33,400.000	2,697,586		2,830,915	2,793,576	37,339			37,339		2,830,915		(133,329)	(133,329)	107,882	
30239F-10-6	FBL Financial Group Inc-COMMON STOCK CLA		06/13/2018	WEEDEN & CO	900.000	72,573		7,198	62,685	(55,487)			(55,487)		7,198		65,375	65,375	2,160	
302491-30-3	FMC CORP-COMMON STOCK		10/30/2018	WEEDEN & CO	5,800.000	448,189		333,500	549,028	(215,528)			(215,528)		333,500		114,689	114,689	3,828	
30284*-10-4	FMH Holdings Corp. Common Stock		01/22/2018	CORPORATE ACTION	270.000	1,091,147		270,436	694,682	(424,246)			(424,246)		270,436		820,711	820,711		
303250-10-4	FAIR ISAAC CORP-COMMON STOCK		06/27/2018	JONES TRADING INST	2,700.000	515,699		223,641	413,640	(189,999)			(189,999)		223,641		292,058	292,058		
309627-10-7	FARMERS NATIONAL BANC CO-COMMON STOCK		06/27/2018	JONES TRADING INST	4,000.000	63,958		55,797	59,000	(3,203)			(3,203)		55,797		8,161	8,161	800	
31431B-10-9	FEDERATED NATIONAL HOLDI-COMMON STOCK		06/13/2018	WEEDEN & CO	3,800.000	82,576		71,781	62,966	8,815			8,815		71,782		10,794	10,794	608	
31660B-10-1	FIESTA RESTAURANT GROUP -COMMON STOCK		06/01/2018	JONES TRADING INST	80,618.000	2,012,699		1,390,661	1,531,742	(141,082)			(141,082)		1,390,661		622,038	622,038		
317923-10-0	FINISH LINE INC/THE-COMMON STOCK		06/12/2018	WEEDEN & CO	3,900.000	52,548		52,550	56,667	(4,117)			(4,117)		52,550		(2)	(2)	897	
31946M-10-3	First Citizens BancShare-COMMON STOCK CL		08/16/2018	JONES TRADING INST	1,370.000	621,805		363,128	552,110	(188,982)			(188,982)		363,128		258,677	258,677	959	
31983A-10-3	FIRST COMMUNITY BANC/SHAR-COMMON STOCK		06/27/2018	JONES TRADING INST	5,800.000	191,349		113,700	166,634	(52,934)			(52,934)		113,701		77,648	77,648	4,872	
319850-10-3	FIRST CONNECTICUT BANCOR-COMMON STOCK		06/22/2018	JONES TRADING INST	5,600.000	177,589		99,877	146,440	(46,563)			(46,563)		99,877		77,712	77,712	2,688	
32006W-10-6	FIRST DEFIANCE FINANCIAL-COMMON STOCK		06/13/2018	WEEDEN & CO	1,600.000	100,080		63,779	83,152	(19,373)			(19,373)		63,779		36,301	36,301	960	
32054K-10-3	FIRST INDUSTRIAL REALTY -COMMON STOCK RE		08/06/2018	JONES TRADING INST	1,028.000	33,879		30,817							30,817		3,062	3,062	447	
320557-10-1	FIRST INTERNET BANCORP-COMMON STOCK		06/21/2018	JONES TRADING INST	7,700.000	267,870		234,812	293,755	(58,943)			(58,943)		234,813		33,057	33,057	924	
32055Y-20-1	FIRST INTERSTATE BANC/SYS-COMMON STOCK		06/13/2018	WEEDEN & CO	6,400.000	276,005		147,278	256,320	(109,042)			(109,042)		147,278		128,727	128,727	3,584	
320866-10-6	FIRST MID-ILLINOIS BANC-S-COMMON STOCK		06/13/2018	WEEDEN & CO	2,100.000	82,410		70,812	80,934	(10,122)			(10,122)		70,812		11,598	11,598	714	
33767D-10-5	FirstCash Inc.		06/22/2018	JONES TRADING INST	8,652.000	803,322		334,708	583,577	(248,869)			(248,869)		334,709		468,613	468,613	3,807	
337738-10-8	Fiserv Inc-COMMON STOCK		11/26/2018	WEEDEN & CO	8,100.000	744,981		201,644	655,650	(454,006)			(454,006)		201,644		543,337	543,337		
34959J-10-8	FORTIVE CORP-COMMON STOCK		10/22/2018	VARIOUS	116,300.000	9,312,098		7,830,743	8,414,305	(583,562)			(583,562)		7,830,743		1,481,355	1,481,355	22,598	
35086T-10-9	FOUR CORNERS PROPERTY TR-COMMON STOCK		12/18/2018	JONES TRADING INST	67,000.000	1,806,051		1,276,683	1,721,900	(445,217)			(445,217)		1,276,683		529,368	529,368	49,136	
35352P-10-4	FRANKLIN FINANCIAL NETW-COMMON STOCK		06/25/2018	JONES TRADING INST	8,200.000	317,747		276,025	279,620	(3,595)			(3,595)		276,025		41,722	41,722		
35671D-85-7	FREEMONT-MCMORAN INC-COMMON STOCK		11/28/2018	WEEDEN & CO	151,725.000	2,180,559		1,870,065	2,876,706	(1,006,641)			(1,006,641)		1,870,065		310,494	310,494	13,786	
36162J-10-6	GEO GROUP INC/THE-COMMON STOCK REIT		03/15/2018	VARIOUS	3,112.000	67,332		56,820	73,443	(16,623)			(16,623)		56,820		10,512	10,512	2,236	
36467J-10-8	GAMING AND LEISURE PROPE-COMMON STOCK		10/22/2018	JONES TRADING INST	56,500.000	1,958,079		1,621,502	2,090,500	(468,998)			(468,998)		1,621,502		336,577	336,577	106,785	
369550-10-8	General Dynamics Corp-COMMON STOCK		12/11/2018	JONES TRADING INST	2,480.000	431,519		314,402	504,556	(190,154)			(190,154)		314,402		117,117	117,117	9,002	
37045V-10-0	General Motors Co-COMMON STOCK		01/26/2018	JONES TRADING INST	74,400.000	3,214,757		2,332,068	3,049,656	(717,588)			(717,588)		2,332,068		882,689	882,689		
371901-10-9	GENTEX CORP-COMMON STOCK		11/26/2018	WEEDEN & CO	24,700.000	551,853		439,586	517,465	(77,879)			(77,879)		439,586		112,267	112,267	10,621	
371927-10-4	GENESIS ENERGY L P LTD PARTNERSHIP UNIT		12/19/2018	VARIOUS	163,759.000	3,710,726		4,485,829	3,660,014	825,816			825,816		4,485,829		(775,103)	(775,103)	146,996	
373865-10-4	GERMAN AMERICAN BANCORP -COMMON STOCK		06/13/2018	WEEDEN & CO	3,600.000	132,161		80,097	127,188	(47,091)			(47,091)		80,097		52,064	52,064	1,080	
374689-10-7	GIBALTAR INDUSTRIES INC-COMMON STOCK		03/14/2018	VARIOUS	6,600.000	232,368		138,429	217,800	(79,371)			(79,371)		138,429		93,939	93,939		
37946R-10-9	Global Partners LP/MA-COMMON STOCK LTD P		11/02/2018	JONES TRADING INST	32,810.000	664,466		426,858	547,927	(121,069)			(121,069)		426,858		237,608	237,608	45,934	
37953G-10-3	GLOBAL BRASS & COPPER HO-COMMON STOCK		03/09/2018	WEEDEN & CO	2,400.000	78,207		47,736	79,440	(31,704)			(31,704)		47,736		30,471	30,471	144	
38002*-10-8	Glynlyon Holding Company Common Stock		03/07/2018	RETURN OF CAPITAL		81,421									81,421					
38141G-10-4	Goldman Sachs Group Inc-/COMMON STOCK		08/31/2018	WEEDEN & CO	6,640.000	1,578,938		1,653,161	1,691,606	(38,446)			(38,446)		1,653,161		(74,223)	(74,223)	15,604	
38481F-10-4	Grakon Parent, Inc.(High Common Stock		09/12/2018	CORPORATE ACTION		1,212,000		1,211,528	1,603,960	(392,432)			(392,432)		1,211,528		1,862,714	1,862,714		
387328-10-7	GRANITE CONSTRUCTION INC-COMMON STOCK		09/27/2018	VARIOUS	138,783.000	6,276,473		13,01												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
40701T-10-4	HAMILTON BEACH BRANDS HO-COMMON STOCK		03/01/2018	WEEDEN & CO	900.000	22.485		42.521		19.400			19.400		42.522		(20.037)	(20.037)		.77
40701T-20-3	HAMILTON BEACH BRANDS HO-COMMON STOCK		02/14/2018	EXCHANGE OFFER	900.000				10.747	(10.747)			(10.747)							.77
41043F-20-8	HANGER INC-COMMON STOCK		03/19/2018	WEEDEN & CO	4,600.000	73.531		30.682		72.450			(41.768)		30.682		42.849	42.849		
419879-10-1	HAWAIIAN HOLDINGS INC-COMMON STOCK		06/13/2018	WEEDEN & CO	9,600.000	357.543		50.708		382.560			(331.852)		50.708		306.835	306.835		2.304
421906-10-8	HEALTHCARE SERVICES GROU-COMMON STOCK		06/12/2018	WEEDEN & CO	2,200.000	88.154		72.974		115.984			(43.010)		72.974		15.180	15.180		.844
421946-10-4	HEALTHCARE REALTY TRUST -REIT		10/10/2018	WEEDEN & CO	1,698.000	48.876		53.411		54.540			(1.128)		53.411		(4.535)	(4.535)		1.528
422819-10-2	HEIDRICK & STRUGGLES INT-COMMON STOCK		03/26/2018	WEEDEN & CO	5,500.000	173.269		106.269		135.025			(28.758)		106.269		67.000	67.000		.715
42824C-10-9	HEWLETT PACKARD ENTERPRI-COMMON STOCK		11/13/2018	VARIOUS	114,700.000	1,770.165		2,011.385		1,647.092			364.293		2,011.385		(241.220)	(241.220)		34.410
43283X-10-5	HILTON GRAND VACATIONS I-COMMON STOCK		05/11/2018	CANTOR	100,600.000	4,058.110		3,627.374		4,220.170			(592.796)		3,627.374		430.736	430.736		
43300A-20-3	Hilton Inc.-COMMON STOCK		12/18/2018	VARIOUS	1,403.000	101.432		77.531		112.044			(34.513)		77.531		23.901	23.901		1.031
436106-10-8	HOLLYFRONTIER CORP-COMMON STOCK		06/27/2018	WEEDEN & CO	12,900.000	859.491		456.019		660.738			(204.719)		456.019		403.472	403.472		8.514
437076-10-2	Home Depot Inc/The-COMMON STOCK		12/03/2018	WEEDEN & CO	4,000.000	729.128		147.878		758.120			(610.242)		581.250		581.250	581.250		20.040
437872-10-4	HOMETRUST BANCSHARES INC-COMMON STOCK		06/21/2018	JONES TRADING INST	4,100.000	115.830		77.596		105.575			(27.979)		77.597		38.233	38.233		
438516-10-6	HONEYWELL INTERNATIONAL -COMMON STOCK		05/14/2018	VARIOUS	21,000.000	3,085.272		1,622.333		3,220.560			(1,598.227)		1,622.333		1,462.939	1,462.939		15.645
444097-10-9	HUDSON PACIFIC PROPERTIES-COMMON STOCK RE		12/20/2018	JONES TRADING INST	2,347.000	66.454		77.080		80.385			(3.305)		77.079		(10.625)	(10.625)		2.934
446150-10-4	Huntington Bancshares In-COMMON STOCK		08/16/2018	JONES TRADING INST	45,800.000	734.742		335.069		866.848			(331.779)		335.070		399.672	399.672		10.076
447011-10-7	Huntsman Corp-COMMON STOCK		11/02/2018	VARIOUS	64,700.000	1,634.068		1,017.577		2,153.863			(1,136.286)		1,017.577		616.491	616.491		33.573
448947-50-7	IDT CORP-COMMON STOCK CLASS B		03/26/2018	WEEDEN & CO	3,300.000	32.822		38.606		34.980			3.626		38.605		(5.783)	(5.783)		1.881
451055-10-7	Iconix Brand Group Inc-COMMON STOCK		03/09/2018	WEEDEN & CO	4,000.000	5.240		8.039		5.160			.80		5.240		(201)	(201)		
451680-10-4	IDEXX LABORATORIES INC-COMMON STOCK		12/11/2018	JONES TRADING INST	8,010.000	1,586.079		896.159		1,252.604			(356.445)		896.159		689.920	689.920		
452568-10-1	IMPAX LABORATORIES INC-COMMON STOCK		05/04/2018	EXCHANGE OFFER	3,500.000	70.462		70.462		58.275			12.187		70.462					
456650-10-3	Infinity Property & Casu-COMMON STOCK		02/27/2018	JONES TRADING INST	200.000	23.851		14.078		21.200			(7.122)		14.078		9.773	9.773		
45688C-10-7	INGEVITY CORP-COMMON STOCK		10/19/2018	JONES TRADING INST	34,000.000	3,024.094		1,269.000		2,395.980			(1,126.980)		1,269.000		1,755.094	1,755.094		
457030-10-4	INGLES MARKETS INC-COMMON STOCK		06/13/2018	WEEDEN & CO	2,800.000	81.543		68.861		96.880			(28.019)		68.861		12.682	12.682		924
45765U-10-3	INSIGHT ENTERPRISES INC-COMMON STOCK		06/13/2018	WEEDEN & CO	6,400.000	317.346		87.602		245.056			(157.454)		87.602		229.744	229.744		
45774N-10-8	INNPHOS HOLDINGS INC-COMMON STOCK		03/06/2018	WEEDEN & CO	3,700.000	158.598		201.932		172.901			29.031		201.932		(43.334)	(43.334)		
45791H-10-6	Insurance Claims Managem Common Stock		02/23/2018	CORPORATE ACTION	237.000	90.305		340.553		562.843			(222.290)		340.553		(250.248)	(250.248)		
457985-20-8	INTEGRA LIFESCIENCES HOL-COMMON STOCK		06/22/2018	WEEDEN & CO	11,000.000	735.576		340.920		526.460			(185.540)		340.920		394.656	394.656		
458140-10-0	Intel Corp-COMMON STOCK		01/09/2018	WEEDEN & CO	55,000.000	2,397.198		1,111.732		2,538.800			(1,427.068)		1,111.732		1,285.466	1,285.466		
458334-10-9	Inter Parfums Inc-COMMON STOCK		03/26/2018	WEEDEN & CO	1,100.000	51.476		31.904		47.795			(15.891)		31.904		19.572	19.572		
458676-10-1	INTERDIGITAL INC/PA-COMMON STOCK		06/12/2018	WEEDEN & CO	2,900.000	241.957		141.378		220.835			(79.457)		141.377		100.580	100.580		1.015
459044-10-3	International Bancshares-COMMON STOCK		06/13/2018	WEEDEN & CO	3,200.000	138.116		84.816		127.040			(42.224)		84.816		53.300	53.300		1.056
46120E-60-2	INTUITIVE SURGICAL INC-COMMON STOCK		11/28/2018	WEEDEN & CO	1,680.000	867.386		384.378		613.099			(228.721)		384.378		483.008	483.008		
46146L-10-1	INVESTORS BANCORP INC-COMMON STOCK		08/16/2018	VARIOUS	109,407.000	1,419.609		1,289.556		1,518.569			(229.013)		1,289.556		130.053	130.053		26.867
46187W-10-7	INVITATION HOMES INC-COMMON STOCK REIT		11/01/2018	VARIOUS	9,059.000	201.604		174.344		213.521			(39.176)		174.344		27.260	27.260		1.613
46600J-10-6	IXYS Corp-COMMON STOCK		01/22/2018	CA CASH CLOSE	4,200.000	96.600		44.169		100.590			(56.421)		44.169		52.431	52.431		
46625H-10-0	JPMorgan Chase & Co-COMMON STOCK		12/13/2018	JONES TRADING INST	23,300.000	2,357.044		1,931.437		2,491.702			(560.266)		1,931.437		425.607	425.607		57.784
466313-10-3	Jabil Inc.-COMMON STOCK		01/26/2018	CANTOR	52,200.000	1,374.488		1,077.178		1,370.250			(293.072)		1,077.178		297.310	297.310		
47012E-10-6	JAKKS PACIFIC INC-COMMON STOCK		03/26/2018	WEEDEN & CO	22,600.000	48.928		88.140		53.110			35.030		88.140		(39.212)	(39.212)		3.680
477143-10-1	JETBLUE AIRWAYS CORP-COMMON STOCK		06/12/2018	WEEDEN & CO	6,300.000	118.325		39.330		140.742			(101.412)		39.330		78.995	78.995		
482539-10-3	KLX INC-COMMON STOCK		10/09/2018	VARIOUS	52,800.000	4,601.750		1,194.012		3,603.600			(1,362.193)		2,241.406		2,360.344	2,360.344		
483007-70-4	Kaiser Aluminum Corp-COMMON STOCK		10/08/2018	JONES TRADING INST	11,000.000	1,169.932		1,067.387		1,175.350			(107.963)		1,067.388		102.544	102.544		18.132
483548-10-3	Kaman Corp-COMMON STOCK		06/13/2018	WEEDEN & CO	4,200.000	303.911		144.514		247.128			(102.614)		144.513		159.398	159.398		1.680
484836-20-0	KANSAS CITY LIFE INSURAN-COMMON STOCK		02/28/2018	WEEDEN & CO	400.000	17.994		18.546		18.100			.446		18.546		(552)	(552)		108
48667F-10-9	GlynnDevins (KCity Holdi Common Stock		11/19/2018	CORPORATE ACTION	1,088.000	809.119		9.357		171.304			(161.948)		9.357		799.762	799.762		
489170-10-0	KENAMETAL INC-COMMON STOCK		06/12/2018	WEEDEN & CO	9,200.000	356.925		294.768		445.372			(150.604)		294.768		62.157	62.157		
49338L-10-3	KEYSIGHT TECHNOLOGIES IN-COMMON STOCK		12/18/2018	WEEDEN & CO	42,101.000	2,568.831		1,598.618		1,751.402			(152.784)		1,598.618		970.213	970.213		
49427F-10-8	KILROY REALTY CORP-COMMON STOCK REIT		10/02/2018	JONES TRADING INST	471.000	34.312		33.773		16.050			(1.132)		33.774		538	538		299
49428J-10-9	KIMBALL ELECTRONICS INC-COMMON STOCK		01/29/2018	JONES TRADING INST	126,939.000	2,403.850		1,775.733		2,316.637			(540.904)		1,775.733		628.117	628.117		
49446R-10-9	Kimco Realty Corp-COMMON STOCK REIT		03/15/2018	VARIOUS	3,786.000	54.826		73.276		68.716			4.561		73.277		(18.451)	(18.451)		
50060P-10-6	KOPPERS HOLDINGS INC-COMMON STOCK		06/13/2018	WEEDEN & CO	4,600.000	190.141		188.866		234.140			(45.274)		188.866		1.275	1.275		
501242-10-1	Kulicke & Soffa Industri-COMMON STOCK		06/21/2018	CANTOR	5,100.000	121.566		48.629		124.109			(75.479)		48.629		72.937	72.937		
511656-10-0	LAKELAND FINANCIAL CORP-COMMON STOCK		03/09/2018	WEEDEN & CO	12,750.000	620.185		398.285		618.248			(219.962)		398.286		221.899	221.899		2.805
513272-10-4	LAMB WESTON HOLDINGS INC-COMMON STOCK		10/31/2018	VARIOUS																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
53071M-85-6	LIBERTY VENTURES-COMMON STOCK		04/04/2018	EXCHANGE OFFER	10,980,000	417,599		417,599	595,555	(177,957)			(177,957)		417,599						
531229-40-9	LIBERTY SIRIUSXM GROUP-COMMON STOCK		12/17/2018	JONES TRADING INST	29,900,000	1,152,878		1,028,431	1,185,834	(157,403)			(157,403)		1,028,431		124,447	124,447			
531229-60-7	LIBERTY SIRIUSXM GROUP-COMMON STOCK		12/17/2018	JONES TRADING INST	30,100,000	1,160,728		1,025,007	1,193,766	(168,759)			(168,759)		1,025,007		135,721	135,721			
531229-85-4	LIBERTY MEDIA CORP-LIBER-COMMON STOCK		11/13/2018	JONES TRADING INST	32,600,000	1,043,209		1,293,742	1,113,616	180,126			180,126		1,293,742		(250,533)	(250,533)			
54142L-10-9	LOGMEIN INC-COMMON STOCK		06/28/2018	VARIOUS	1,000	76		76	84	(8)			(8)		76					8	
546347-10-5	LOUISIANA-PACIFIC CORP-COMMON STOCK		06/27/2018	JONES TRADING INST	11,800,000	320,460		321,423	309,868	11,555			11,555		321,422		(962)	(962)		3,068	
55024U-10-9	LUMENTUM HOLDINGS INC-COMMON STOCK		12/04/2018	WEEDEN & CO	22,700,000	1,045,340		948,819	1,110,030	(161,211)			(161,211)		948,820		96,520	96,520			
55261F-10-4	M&T Bank Corp-COMMON STOCK		06/11/2018	WEEDEN & CO	5,700,000	1,017,404		620,576	974,643	(354,067)			(354,067)		620,575		396,829	396,829		8,835	
55306N-10-4	MKS INSTRUMENTS INC-COMMON STOCK		12/04/2018	VARIOUS	21,600,000	1,817,771		1,220,284	2,041,200	(820,916)			(820,916)		1,220,285		597,486	597,486		13,928	
55336V-10-0	MPLX LP COMMON UNIT		12/19/2018	VARIOUS	243,137,000	8,104,883		10,741,111	8,624,069	2,117,041			2,117,041		10,741,110		(2,636,227)	(2,636,227)		457,705	
55345K-10-3	MRC GLOBAL INC-COMMON STOCK		03/09/2018	WEEDEN & CO	2,800,000	50,847		38,547	47,376	(8,829)			(8,829)		38,547		12,300	12,300			
55406E-10-2	Mid-America Pet Foods (M Common Stock)		04/04/2018	RETURN OF CAPITAL		5,643									5,636		7	7			
554382-10-1	MACERICH CO/THE-COMMON STOCK REIT		12/20/2018	JONES TRADING INST	876,000	36,960		66,441	57,536	8,905			8,905		66,441		(29,481)	(29,481)		2,602	
556269-10-8	STEVEN MADDEN LTD-COMMON STOCK		06/21/2018	JONES TRADING INST	3,150,000	170,656		76,073	157,105	(71,032)			(71,032)		76,073		94,583	94,583		1,260	
55825T-10-3	MADISON SQUARE GARDEN CO-COMMON STOCK		10/19/2018	JONES TRADING INST	16,030,000	4,718,503		2,844,257	3,379,926	(535,669)			(535,669)		2,844,257		1,874,246	1,874,246			
559079-20-7	Magellan Health Inc-COMMON STOCK		06/12/2018	WEEDEN & CO	1,800,000	168,786		96,060	173,790	(77,730)			(77,730)		96,060		72,726	72,726			
559080-10-6	MAGELLAN MIDSTREAM PARTNER LP COMMON UN		12/19/2018	VARIOUS	126,183,000	7,311,630		8,029,502	8,951,422	(921,920)			(921,920)		8,029,502		(717,872)	(717,872)		437,204	
563571-40-5	MANITOWOC CO INC/THE-COMMON STOCK		05/11/2018	WEEDEN & CO	25,525,000	628,921		611,713	1,004,154	(392,441)			(392,441)		611,712		17,209	17,209			
56418H-10-0	MANPOWERGROUP INC-COMMON STOCK		05/03/2018	JONES TRADING INST	29,600,000	2,802,836		2,999,668	3,732,856	(733,188)			(733,188)		2,999,668		(196,832)	(196,832)			
564563-10-4	MANTECH INTERNATIONAL CO-COMMON STOCK		06/13/2018	WEEDEN & CO	4,400,000	244,431		129,751	220,836	(91,085)			(91,085)		129,751		114,680	114,680		2,200	
570535-10-4	Market Corp-COMMON STOCK		06/12/2018	WEEDEN & CO	142,000	157,677		41,393	161,756	(120,363)			(120,363)		41,393		116,284	116,284			
57060D-10-8	MarketAxess Holdings Inc-COMMON STOCK		06/12/2018	WEEDEN & CO	400,000	86,220		37,884	80,700	(42,816)			(42,816)		37,884		48,336	48,336		336	
57164Y-10-7	Marriott Vacations World-COMMON STOCK		06/12/2018	WEEDEN & CO	2,500,000	303,553		191,735	338,025	(146,290)			(146,290)		191,736		111,817	111,817		3,000	
573331-10-5	MARTIN MIDSTREAM PARTNER-COMMON STOCK LT		11/06/2018	JONES TRADING INST	107,800,000	4,226,076		1,961,590	1,509,200	452,390			452,390		1,961,590		(535,514)	(535,514)		173,142	
574599-10-6	MASCO CORP-COMMON STOCK		12/12/2018	JONES TRADING INST	41,300,000	1,231,282		1,507,115	1,814,722	(307,607)			(307,607)		1,507,116		(275,834)	(275,834)		17,966	
574795-10-0	MASIMO CORP-COMMON STOCK		06/22/2018	WEEDEN & CO	10,600,000	1,075,703		665,884	898,880	(232,996)			(232,996)		665,884		409,819	409,819			
576323-10-9	MASTECH INC COMMON STK		06/28/2018	JONES TRADING INST	16,800,000	860,880		584,883	822,360	(237,477)			(237,477)		584,883		275,997	275,997			
576360-10-4	MasterCard Inc-COMMON STOCK		12/06/2018	WEEDEN & CO	42,300,000	8,660,077		1,258,199	6,402,528	(5,144,329)			(5,144,329)		1,258,199		7,401,878	7,401,878		42,300	
576869-10-5	Matson Inc-COMMON STOCK		06/13/2018	WEEDEN & CO	2,900,000	107,414		123,835	86,536	37,299			37,299		123,835		(16,421)	(16,421)		1,160	
577128-10-1	MATTHEWS INTERNATIONAL C-COMMON STOCK		03/05/2018	WEEDEN & CO	2,400,000	127,161		98,460	126,720	(28,260)			(28,260)		98,460		28,701	28,701		912	
581550-10-3	McKesson Corp-COMMON STOCK		06/29/2018	JONES TRADING INST	3,160,000	422,638		514,392	492,802	21,590			21,590		514,392		(91,754)	(91,754)		2,149	
58470H-10-1	MEDIFAST INC-COMMON STOCK		06/28/2018	JONES TRADING INST	7,900,000	1,236,238		123,945	551,499	(427,554)			(427,554)		123,945		1,112,293	1,112,293		7,584	
587376-10-4	MERCANTILE BANK CORP-COMMON STOCK		06/22/2018	WEEDEN & CO	7,700,000	289,090		195,985	272,349	(76,364)			(76,364)		195,986		93,104	93,104		3,388	
59001K-10-0	Meritor Inc-COMMON STOCK		06/12/2018	WEEDEN & CO	10,400,000	225,938		273,448	243,984	29,464			29,464		273,448		(47,510)	(47,510)			
59156R-10-8	MetLife Inc-COMMON STOCK		11/26/2018	WEEDEN & CO	8,500,000	373,332		341,053	429,760	(88,707)			(88,707)		341,053		32,279	32,279		14,110	
595112-10-3	Micron Technology Inc-Common Stock		12/04/2018	VARIOUS	26,000,000	1,018,633		504,920	1,069,120	(564,200)			(564,200)		504,920		513,713	513,713			
609720-10-7	MONMOUTH REAL ESTATE INV-COMMON STOCK RE		06/13/2018	WEEDEN & CO	10,400,000	160,068		124,758	185,120	(60,362)			(60,362)		124,758		35,310	35,310		3,536	
610236-10-1	MONRO MUFFLER BRAKE INC-COMMON STOCK		03/09/2018	WEEDEN & CO	4,700,000	255,238		173,963	267,665	(93,702)			(93,702)		173,962		81,276	81,276		846	
61166W-10-1	MONSANTO COMPANY-COMMON STOCK		05/14/2018	WEEDEN & CO	6,100,000	761,744		544,753	712,358	(167,605)			(167,605)		544,752		216,992	216,992		6,588	
617446-44-8	Morgan Stanley-COMMON STOCK		12/13/2018	JONES TRADING INST	96,600,000	3,929,676		4,245,979	5,068,602	(822,623)			(822,623)		4,245,979		(316,303)	(316,303)		106,260	
626755-10-2	MURPHY USA INC-COMMON STOCK		09/27/2018	WEEDEN & CO	26,787,000	2,308,833		1,420,378	2,152,603	(732,225)			(732,225)		1,420,378		888,455	888,455			
62913M-10-7	NGL ENERGY PARTNERS LP-COMMON STOCK LTD		11/14/2018	JONES TRADING INST	59,700,000	580,244		1,140,275	838,785	301,490			301,490		1,140,275		(560,031)	(560,031)		93,132	
62942X-30-6	NRG YIELD INC-COMMON STOCK		03/26/2018	WEEDEN & CO	3,000,000	50,024		71,289	56,550	14,739			14,739		71,289		(21,265)	(21,265)		894	
62944T-10-5	NVR INC-COMMON STOCK		05/14/2018	WEEDEN & CO	930,000	2,840,408		1,547,539	3,262,645	(1,715,106)			(1,715,106)		1,547,539		1,292,869	1,292,869			
629579-10-3	NACCO INDUSTRIES INC-COMMON STOCK		06/13/2018	VARIOUS	900,000	31,686			33,885	(33,885)			(33,885)		31,686					297	
635017-10-6	NATIONAL BEVERAGE CORP-COMMON STOCK		03/21/2018	JONES TRADING INST	4,700,000	416,246		72,667	457,968	(385,301)			(385,301)		72,667		343,579	343,579			
635906-10-0	NATIONAL HEALTHCARE CORP-COMMON STOCK		06/13/2018	WEEDEN & CO	500,000	34,703		22,523	30,470	(7,947)			(7,947)		22,523		12,180	12,180		240	
636330-10-4	National Health Investor-COMMON STOCK RE		06/12/2018	WEEDEN & CO	1,800,000	133,981		124,531	135,684	(11,153)			(11,153)		124,530		9,451	9,451		1,093	
637071-10-1	National Oilwell Varco I-COMMON STOCK		12/12/2018	JONES TRADING INST	15,410,000	444,249		554,264	555,068	(804)			(804)		554,264		(110,015)	(110,015)		3,853	
637215-10-4	National Presto Industri-COMMON STOCK		03/01/2018	WEEDEN & CO	500,000	44,541		40,337	49,725	(9,388)			(9,388)		40,336		4,205	4,205		3,000	
64110D-10-4	NETAPP INC-COMMON STOCK		10/31/2018	WEEDEN & CO	48,300,000	3,790,535		1,992,322	2,671,956	(679,634)			(679,634)		1,992,322		1,798,213	1,798,213		57,960	
646025-10-6	NEW JERSEY RESOURCES COR-COMMON STOCK		06/12/2018	WEEDEN & CO	1,700																

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
65506L-10-5	NOBLE MIDSTREAM PARTNERS-COMMON STOCK		12/17/2018	VARIOUS	8,760,000	292,266		233,214	438,000	(204,786)			(204,786)		233,214		59,052	59,052		18,342
65506L-MM-4	Noble Midstream Partners LP-Common Stock		01/02/2018	CONVERSION	183,334,000	7,415,860		7,415,860	9,166,700	(1,750,840)			(1,750,840)		7,415,860					
655844-10-8	NORFOLK SOUTHERN CORP-COMMON STOCK		12/03/2018	WEEDEN & CO	18,760,000	3,257,506		2,308,073	2,718,324	(410,251)			(410,251)		2,308,073		949,433	949,433		57,030
666807-10-2	Northrop Grumman Corp-COMMON STOCK		05/11/2018	CANTOR	14,030,000	4,567,715		1,617,462	4,305,947	(2,688,486)			(2,688,486)		1,617,461		2,950,254	2,950,254		15,433
67018T-10-5	NU SKIN ENTERPRISES INC-COMMON STOCK		03/21/2018	JONES TRADING INST	3,000,000	223,159		105,533	204,690	(99,157)			(99,157)		105,533		117,626	117,626		1,095
67058H-10-2	NUSTAR ENERGY LP-COMMON STOCK LTD PART		12/04/2018	WEEDEN & CO	43,200,000	1,099,668		1,167,696	1,293,840	1,179,262		1,305,406	(126,144)		1,167,696		(68,028)	(68,028)		125,064
67066G-10-4	NVIDIA CORP-COMMON STOCK		11/19/2018	WEEDEN & CO	5,000,000	767,821		155,900	967,500	(811,600)			(811,600)		155,900		611,921	611,921		2,250
674599-10-5	Occidental Petroleum Cor-COMMON STOCK		12/12/2018	VARIOUS	32,900,000	2,293,358		2,353,548	2,423,414	(69,866)			(69,866)		2,353,548		(60,190)	(60,190)		76,328
680033-10-7	Old National Bancorp/IN-COMMON STOCK		06/13/2018	WEEDEN & CO	19,115,000	351,578		238,001	333,357	(95,556)			(95,556)		238,002		113,576	113,576		4,970
681919-10-6	Omicron Group Inc		10/31/2018	WEEDEN & CO	19,200,000	1,426,733		1,434,624	1,398,336	36,288			36,288		1,434,624		(7,891)	(7,891)		46,080
68210P-10-7	OMEGA PROTEIN CORP-COMMON STOCK		01/02/2018	CA CASH CLOSE	3,900,000	85,800		36,175	85,800	(49,625)			(49,625)		36,175		49,625	49,625		
68235P-10-8	ONE GAS INC-ONE GAS INC		11/20/2018	WEEDEN & CO	36,700,000	3,095,124		2,273,999	2,688,642	(414,643)			(414,643)		2,273,999		821,125	821,125		67,528
682680-10-3	ONEOK INC COMMON STK		12/18/2018	VARIOUS	377,521,000	22,336,383		12,678,105	20,178,498	(7,500,393)			(7,500,393)		12,678,105		9,658,278	9,658,278		901,593
68375N-10-3	OPKO Health Inc-Common Stock		03/09/2018	WEEDEN & CO	9,653,000	34,335		65,995	47,300	18,695			18,695		65,995		(31,660)	(31,660)		
68633D-10-3	CRITANI FINANCIAL CORP-COMMON STOCK		06/13/2018	WEEDEN & CO	8,500,000	139,028		140,814	139,400	1,414			1,414		140,814		(1,786)	(1,786)		4,250
688239-20-1	Oshkosh Corp-COMMON STOCK		05/11/2018	WEEDEN & CO	10,300,000	762,233		397,780	936,167	(538,387)			(538,387)		397,780		364,453	364,453		4,944
690732-10-2	OIENS & MINOR INC-COMMON STOCK		06/12/2018	WEEDEN & CO	1,800,000	29,614		66,134	33,984	32,150			32,150		66,134		(36,520)	(36,520)		468
690742-10-1	OIENS CORNING-COMMON STOCK		02/21/2018	JONES TRADING INST	65,100,000	5,468,567		4,369,047	5,985,294	(1,616,247)			(1,616,247)		4,369,047		1,099,520	1,099,520		13,671
69329Y-10-4	PDL BIOPHARMA INC-COMMON STOCK		06/13/2018	WEEDEN & CO	64,400,000	176,138		135,884	176,456	(40,572)			(40,572)		135,884		40,254	40,254		
693475-10-5	PNC Financial Services G-COMMON STOCK		08/17/2018	WEEDEN & CO	34,320,000	4,960,377		3,753,847	4,952,033	(1,198,186)			(1,198,186)		3,753,847		1,206,530	1,206,530		84,084
69924R-10-8	Paramount Group Inc-COMMON STOCK REIT		03/05/2018	WEEDEN & CO	4,239,000	60,586		72,568	67,188	5,380			5,380		72,568		(11,982)	(11,982)		403
700517-10-5	PARK HOTELS & RESORTS IN-COMMON STOCK RE		03/15/2018	JONES TRADING INST	695,000	18,678		19,909	19,981	(73)			(73)		19,909		(1,231)	(1,231)		
700658-10-7	PARK NATIONAL CORP-COMMON STOCK		06/12/2018	WEEDEN & CO	50,000	5,819		3,240	5,200	(1,960)			(1,960)		3,240		2,579	2,579		108
701094-10-4	Parker-Hannifin Corp-COMMON STOCK		02/26/2018	JONES TRADING INST	14,280,000	2,629,711		1,693,010	2,850,002	(1,156,992)			(1,156,992)		1,693,010		936,701	936,701		9,425
70450Y-10-3	PayPal Holdings Inc-COMMON STOCK		12/10/2018	VARIOUS	129,000,000	11,049,830		7,607,739	9,496,980	(1,889,241)			(1,889,241)		7,607,739		3,442,091	3,442,091		
70959W-10-3	Penske Automotive Group -COMMON STOCK		06/25/2018	JONES TRADING INST	11,800,000	580,239		209,769	564,630	(354,861)			(354,861)		209,769		370,470	370,470		8,142
717081-10-3	Pfizer Inc-COMMON STOCK		12/03/2018	WEEDEN & CO	12,464,000	574,886		317,302	451,446	(134,144)			(134,144)		317,302		257,584	257,584		16,951
718549-20-7	PHILLIPS 66 PARTNERS LP COMMON UNIT		12/18/2018	DTCYID	66,640,000	3,122,125		3,931,716	2,927,412	458,261			458,261		3,931,717		(809,592)	(809,592)		180,733
71943U-10-4	PHYSICIANS REALTY TRUST-COMMON STOCK REI		05/14/2018	JONES TRADING INST	2,130,000	32,089		40,545	38,319	2,226			2,226		40,545		(8,456)	(8,456)		960
720279-10-8	PIER 1 IMPORTS INC-COMMON STOCK		06/12/2018	WEEDEN & CO	6,600,000	17,929		32,142	27,324	4,818			4,818		32,142		(14,213)	(14,213)		
72201P-61-3	PIMCO FDS SHORT TERM FLTG NAV PORT II		11/30/2018	DIRECT	671,927,000	6,724,487		6,723,982	3,245,253	(805)			(805)		6,723,983		504	504		51,454
72346Q-10-4	PINNACLE FINANCIAL PARTN-COMMON STOCK		06/25/2018	VARIOUS	12,825,000	833,116		791,386	791,386	(58,862)			(58,862)		791,386		41,730	41,730		3,591
72348P-10-4	PINNACLE FOODS INC-COMMON STOCK		10/30/2018	MERGER	3,600,000	131,345		131,345	214,092	(82,747)			(82,747)		131,345					159,876
724078-10-0	PIPER JAFFRAY COS COMMON STK		06/13/2018	WEEDEN & CO	2,000,000	160,246		95,567	172,500	(76,933)			(76,933)		95,567		64,679	64,679		4,740
726503-10-5	PLAINS ALL AMERICAN PIPELINE L.P. LTD PA		12/18/2018	VARIOUS	490,070,000	11,021,789		16,440,831	10,115,045	6,325,786			6,325,786		16,440,831		(5,419,042)	(5,419,042)		295,128
729132-10-0	PLEXUS CORP-COMMON STOCK		10/08/2018	VARIOUS	23,500,000	1,320,647		1,247,871	1,426,920	(179,049)			(179,049)		1,247,871		72,776	72,776		
733174-70-0	POPULAR INC-COMMON STOCK		06/12/2018	WEEDEN & CO	5,400,000	302,652		193,110	227,136	(34,026)			(34,026)		193,110		109,542	109,542		4,800
736508-84-7	PORTLAND GENERAL ELECTRI-COMMON STOCK		06/12/2018	WEEDEN & CO	1,200,000	47,995		29,998	54,696	(24,698)			(24,698)		29,998		17,997	17,997		408
74164F-10-3	PRIMORIS SERVICES CORP-COMMON STOCK		06/25/2018	JONES TRADING INST	4,400,000	121,874		52,957	119,636	(66,679)			(66,679)		52,957		68,917	68,917		1,416
74164M-10-8	Primerica Inc-COMMON STOCK		06/22/2018	VARIOUS	4,900,000	495,065		152,551	497,595	(345,044)			(345,044)		152,551		342,514	342,514		2,450
74267C-10-6	ProAssurance Corp-COMMON STOCK		06/12/2018	WEEDEN & CO	700,000	27,334		40,005	(22,868)				(22,868)		17,137		10,197	10,197		3,717
74340W-10-3	Prologis Inc-COMMON STOCK		08/06/2018	JONES TRADING INST	969,000	63,109		52,018	62,510	(10,492)			(10,492)		52,018		11,091	11,091		1,218
743606-10-5	PROSPERITY BANCSHARES INC COMMON STK		06/12/2018	WEEDEN & CO	5,100,000	378,137		236,800	357,357	(120,557)			(120,557)		236,800		141,337	141,337		1,836
74386T-10-5	PROVIDENT FINANCIAL SERV-COMMON STOCK		06/13/2018	WEEDEN & CO	7,200,000	201,915		139,660	194,184	(54,524)			(54,524)		139,660		62,255	62,255		3,960
745867-10-1	PULTE GROUP INC-COMMON STOCK		07/25/2018	WEEDEN & CO	51,800,000	1,504,558		1,744,194	1,722,350	21,844			21,844		1,744,194		(239,636)	(239,636)		9,324
74727A-10-4	QCR HOLDINGS INC-COMMON STOCK		06/22/2018	WEEDEN & CO	3,600,000	175,956		93,993	154,260	(60,267)			(60,267)		93,993		81,963	81,963		612
749685-10-3	RPM INTERNATIONAL INC-COMMON STOCK		05/10/2018	WEEDEN & CO	21,470,000	1,072,438		764,538	1,125,457	(360,919)			(360,919)		764,538		307,900	307,900		13,741
74972G-10-3	RPX CORP-COMMON STOCK		06/13/2018	WEEDEN & CO	39,200,000	410,293		562,394	526,848	35,546			35,546		562,394		(152,101)	(152,101)		1,960
750236-10-1	RADIAN GROUP INC COMMON STK		06/12/2018	WEEDEN & CO	3,900,000	66,140		47,573	80,379	(32,806)			(32,806)		47,573		18,567	18,567		20
75508B-10-4	RAYONIER ADVANCED MATERI-COMMON STOCK		05/11/2018	JONES TRADING INST	18,600,000	354,887		375,229	380,370	(5,141)			(5,141)		375,229		(20,342)	(20,342)		1,302
755111-50-7	Raytheon Co-COMMON STOCK		10/22/2018	WEEDEN & CO	10,010,000	1,903,021		1,319,166	1,880,379	(561,										

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
76009N-10-0	RENT-A-CENTER INC/TX-COMMON STOCK		03/08/2018	JONES TRADING INST	25,350.000	210,856		262,847	281,385	(18,538)			(18,538)		262,846		(51,990)	(51,990)		
76131V-20-2	RETAIL PROPERTIES OF AME-COMMON STOCK RE		06/18/2018	JONES TRADING INST	5,094.000	62,417		67,397	68,463	(1,067)			(1,067)		67,397		(4,980)	(4,980)	843	
761624-10-5	REX AMERICAN RESOURCES C-COMMON STOCK		03/26/2018	WEEDEN & CO	1,300.000	97,738		41,628	107,627	(65,999)			(65,999)		41,628		56,110	56,110		
76169C-10-0	REXFORD INDUSTRIAL REALT-COMMON STOCK		06/12/2018	WEEDEN & CO	6,400.000	198,409		127,500	186,624	(59,124)			(59,124)		127,500		70,909	70,909		1,024
761713-10-6	REYNOLDS AMERICAN INC-COMMON STOCK		01/01/2018	MERGER																10,200
772926-10-3	ROSS STORES INC-COMMON STOCK		12/03/2018	WEEDEN & CO	6,200.000	536,450		286,776	497,550	(210,774)			(210,774)		286,776		249,674	249,674		5,177
781846-30-8	RUSH ENTERPRISES INC-COMMON STOCK		06/28/2018	JONES TRADING INST	7,100.000	312,104		312,681	342,291	(29,610)			(29,610)		312,681		(577)	(577)		
783859-10-1	S&T Bancorp Inc-COMMON STOCK		08/16/2018	JONES TRADING INST	16,486.000	741,778		651,811	656,308	(4,497)			(4,497)		651,811		89,967	89,967		11,870
78409V-10-4	S&P GLOBAL INC-COMMON STOCK		10/25/2018	JONES TRADING INST	23,570.000	4,074,538		3,455,334	3,992,758	(537,424)			(537,424)		3,455,334		619,204	619,204		35,355
786CVR-20-9	Safeway PDC LLC-COMMON STOCK		02/23/2018	CA CASH CLOSE	3,400.000	3,014		3,451	3,451						3,451		(437)	(437)		162
786CVR-30-8	Safeway PDC LLC-COMMON STOCK		04/27/2018	CORPORATE ACTION	3,400.000	9		166	166						166		(157)	(157)		67
800013-10-4	SANDERSON FARMS INC-COMMON STOCK		06/12/2018	WEEDEN & CO	400.000	41,266		30,199	55,512	(25,313)			(25,313)		30,199		11,067	11,067		256
801056-10-2	Samina Corp-COMMON STOCK		06/12/2018	WEEDEN & CO	23,200.000	627,664		788,525	765,600	22,925			22,925		788,525		(160,861)	(160,861)		
80586C-20-6	Sbarro LLC First Out Equit		10/29/2018	SKARAM	30,519.000	31			686,678	(213,633)		473,045	(686,678)				31	31		
806882-10-6	SCHNITZER STEEL INDUSTRI-COMMON STOCK		06/12/2018	WEEDEN & CO	3,700.000	120,753		61,316	123,950	(62,634)			(62,634)		61,316		59,437	59,437		1,388
81725T-10-0	SENSIENT TECHNOLOGIES CO-COMMON STOCK		03/19/2018	WEEDEN & CO	3,000.000	213,550		112,318	219,450	(107,132)			(107,132)		112,318		101,232	101,232		990
81768T-10-8	SERVISFIRST BANCSHARES I-COMMON STOCK		06/22/2018	WEEDEN & CO	21,400.000	944,012		776,677	888,100	(111,423)			(111,423)		776,677		167,335	167,335		3,424
822634-10-1	SHELL MIDSTREAM PARTNERS L P LTD PARTNER		12/14/2018	DTCYID	132,425.000	2,805,323		4,609,394	3,948,914	660,481			660,481		4,609,394		(1,804,071)	(1,804,071)		159,877
828806-10-9	SIMON PROPERTY GROUP INC-COMMON STOCK RE		05/08/2018	JONES TRADING INST	258.000	40,577		22,909	44,309	(21,400)			(21,400)		22,909		17,668	17,668		503
830879-10-2	SKYWEST INC-COMMON STOCK		06/28/2018	JONES TRADING INST	16,400.000	846,177		180,421	870,840	(690,419)			(690,419)		180,420		665,757	665,757		3,785
831865-20-9	AO SMITH CORP-COMMON STOCK		03/29/2018	JONES TRADING INST	38,400.000	2,430,076		1,362,436	2,353,152	(90,716)			(90,716)		1,362,436		1,067,640	1,067,640		6,912
83413U-10-0	SOLAR CAPITAL LTD-COMMON STOCK		03/26/2018	WEEDEN & CO	2,900.000	58,545		63,757	58,609	5,148			5,148		63,757		(5,212)	(5,212)		1,189
84265V-10-5	SOUTHERN COPPER CORP-COMMON STOCK		12/11/2018	JONES TRADING INST	32,800.000	1,060,558		1,256,748	1,556,960	(299,612)			(299,612)		1,256,749		(196,191)	(196,191)		45,920
845467-10-9	SOUTHWESTERN ENERGY CO-COMMON STOCK		01/16/2018	VARIOUS	37,416.000				208,781	(200,752)			(200,752)							
846511-10-3	SPARK ENERGY INC-COMMON STOCK		06/21/2018	JONES TRADING INST	17,200.000	171,907		143,476	213,280	(69,804)			(69,804)		143,476		28,431	28,431		6,235
847215-10-0	SpartanNash Co-COMMON STOCK		06/13/2018	WEEDEN & CO	11,200.000	282,053		351,181	298,816	52,365			52,365		351,182		(69,129)	(69,129)		3,864
84756N-10-9	SPECTRA ENERGY PARTNERS LP COMMON STK		05/23/2018	DTCYID	73,939.000	2,450,437		3,248,410	2,923,548	324,862			324,862		3,248,410		(797,973)	(797,973)		82,561
848574-10-9	SPIRIT AEROSYSTEMS HOLDI-COMMON STOCK		12/13/2018	JONES TRADING INST	10,000.000	736,758		538,381	872,500	(334,119)			(334,119)		538,381		198,377	198,377		3,400
84863T-10-6	SPOK HOLDINGS INC-COMMON STOCK		03/26/2018	WEEDEN & CO	4,400.000	66,992		43,411	68,860	(25,449)			(25,449)		43,412		23,580	23,580		550
858119-10-0	STEEL DYNAMICS INC-COMMON STOCK		11/02/2018	JONES TRADING INST	12,800.000	522,809		389,939	552,064	(162,125)			(162,125)		389,939		132,870	132,870		7,200
858586-10-0	STEPAN CO-COMMON STOCK		03/19/2018	WEEDEN & CO	1,200.000	100,378		44,189	94,764	(50,575)			(50,575)		44,189		56,189	56,189		24
85917A-10-0	Sterling Bancorp/DE-COMMON STOCK		06/12/2018	WEEDEN & CO	5,600.000	138,989		90,944	137,760	(46,816)			(46,816)		90,944		48,045	48,045		784
864482-10-4	SUBURBAN PROPANE PARTNER-COMMON STOCK		11/13/2018	JONES TRADING INST	10,400.000	233,664		337,323	251,888	85,435			85,435		337,323		(103,659)	(103,659)		24,960
866082-10-0	SUMMIT HOTEL PROPERTIES -COMMON STOCK		06/12/2018	WEEDEN & CO	5,700.000	80,674		70,286	86,811	(16,525)			(16,525)		70,286		10,388	10,388		2,052
866674-10-4	SUN COMMUNITIES INC COMMON STK		10/04/2018	VARIOUS	346.000	34,540		30,232	30,232						30,232		4,308	4,308		737
86765K-10-9	SUNOCO LP COMMON STK		12/10/2018	WEEDEN & CO	41,900.000	1,138,182		1,376,865	1,189,960	186,905			186,905		1,376,865		(238,683)	(238,683)		103,765
867892-10-1	SUNSTONE HOTEL INVESTORS-COMMON STOCK RE		10/11/2018	JONES TRADING INST	4,238.000	65,318		55,820	70,054	(14,235)			(14,235)		55,819		9,499	9,499		3,015
871237-10-3	SYKES ENTERPRISES INC-COMMON STOCK		06/13/2018	WEEDEN & CO	4,500.000	131,297		59,681	141,525	(81,844)			(81,844)		59,680		71,617	71,617		
87162W-10-0	SYNNEX CORP-COMMON STOCK		03/09/2018	WEEDEN & CO	3,600.000	437,704		81,439	489,420	(407,981)			(407,981)		81,439		356,265	356,265		1,260
87165B-10-3	SYNCHRONY FINANCIAL-COMMON STOCK		09/28/2018	VARIOUS	212,500.000	6,829,610		6,505,577	8,204,625	(1,699,048)			(1,699,048)		6,505,577		324,033	324,033		74,088
871851-10-1	SYSTEMAX INC-COMMON STOCK		03/09/2018	WEEDEN & CO	4,100.000	118,844		38,132	136,407	(98,275)			(98,275)		38,132		80,712	80,712		6,601
872275-10-2	TCF FINL CORP COMMON STK		09/28/2018	VARIOUS	26,500.000	631,622		344,931	543,250	(198,319)			(198,319)		344,931		286,691	286,691		11,925
872380-10-3	TOP CAPITAL CORP-COMMON STOCK		08/14/2018	EXCHANGE OFFER	1,603,372.000	24,050,580		24,050,580	24,499,524	(448,944)			(448,944)		24,050,580					1,154,428
87305R-10-9	TTM TECHNOLOGIES INC-COMMON STOCK		11/02/2018	VARIOUS	54,400.000	895,719		889,620	852,448	37,172			37,172		889,619		(53,900)	(53,900)		
874054-10-9	TAKE-TWO INTERACTIVE SOF-COMMON STOCK		06/12/2018	WEEDEN & CO	3,000.000	341,813		67,596	329,340	(261,744)			(261,744)		67,596		274,217	274,217		
874696-10-7	TALLGRASS ENERGY GP LP-COMMON STOCK		12/18/2018	VARIOUS	47,816.000	1,026,238		1,059,603	5,916,163	(246,420)			(246,420)		1,059,602		(33,364)	(33,364)		48,175
874697-10-5	TALLGRASS ENERGY PARTNER-COMMON STOCK		07/03/2018	VARIOUS	129,033.000	5,722,287		5,669,743	5,916,163	(246,420)			(246,420)		5,669,744		324,033	324,033		174,289
87612G-10-1	TARGA RES CORP COMMON STK		12/14/2018	VARIOUS	132,310.000	5,667,546		4,801,946	6,043,881	(1,673,286)			(1,673,286)		4,801,946		865,600	865,600		366,447
878237-10-6	Tech Data Corp-COMMON STOCK		06/22/2018	WEEDEN & CO	4,700.000	400,158		224,880	460,459	(235,579)			(235,579)		224,879		175,279	175,279		
87901J-10-5	TEGNA Inc-COMMON STOCK		05/10/2018	WEEDEN & CO	50,000.000	534,413		698,000	704,000	(6,000)			(6,000)		698,000		(163,587)	(163,587)		7,000
879360-10-5	TELEDYNE TECHNOLOGIES INC COMMON STK		06/22/2018	WEEDEN & CO	2,900.000	583,658		256,761	525,335	(268,574)			(268,574)		256,761		326,897	326,897		
879369-10-6	Telexflex Inc-COMMON STOCK		10/22/2018	WEEDEN & CO	3,580.000	855,882		522,558	890,776	(368,218)			(368,218)		522,558		333,324</			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
890516-10-7	Tootsie Roll Industries -COMMON STOCK		02/28/2018	JONES TRADING INST	2,137,000	72,491		61,171	77,787	(16,616)			(16,616)		61,170		11,321	11,321		196
89055F-10-3	TOPBUILD CORP-COMMON STOCK		09/27/2018	WEEDEN & CO	23,500,000	1,354,210		1,500,007	1,779,890	(279,883)			(279,883)		1,500,008		(145,798)	(145,798)		
891826-10-9	TOWER INTERNATIONAL INC-COMMON STOCK		06/13/2018	WEEDEN & CO	1,600,000	51,135		48,880	48,880	(13,427)			(13,427)		35,453		15,682	15,682		384
891906-10-9	Total System Services IN-COMMON STOCK		12/10/2018	WEEDEN & CO	5,400,000	460,312		207,026	427,086	(220,060)			(220,060)		207,026		253,286	253,286		2,808
89214P-10-9	TOWNE BANK/PORTSMOUTH VA-COMMON STOCK		06/13/2018	WEEDEN & CO	12,000,000	387,361		271,674	369,000	(97,326)			(97,326)		271,674		115,687	115,687		3,360
896047-50-3	TRIBUNE MEDIA CO-COMMON STOCK		05/11/2018	JONES TRADING INST	11,400,000	428,160		446,259	484,158	(37,899)			(37,899)		446,258		(18,098)	(18,098)		2,850
902104-10-8	II-VI INC COMMON STK		06/12/2018	WEEDEN & CO	7,100,000	341,081		150,546	333,345	(182,799)			(182,799)		150,546		190,535	190,535		
90328M-10-7	USANA HEALTH SCIENCES IN-COMMON STOCK		06/27/2018	JONES TRADING INST	5,600,000	655,760		238,448	414,680	(176,232)			(176,232)		238,448		417,312	417,312		
90539J-10-9	UNION BANKSHARES CORP-COMMON STOCK		06/12/2018	WEEDEN & CO	3,100,000	128,321		82,537	112,127	(29,590)			(29,590)		82,537		45,784	45,784		1,302
909839-10-2	UNITED COMMUNITY FINANCI-COMMON STOCK		06/28/2018	JONES TRADING INST	13,800,000	153,544		82,307	125,994	(43,687)			(43,687)		82,307		71,237	71,237		1,656
910304-10-4	United Financial Bancorp-COMMON STOCK		06/13/2018	WEEDEN & CO	5,700,000	97,418		74,683	100,548	(25,865)			(25,865)		74,683		22,735	22,735		1,368
91324P-10-2	UnitedHealth Group Inc-COMMON STOCK		05/10/2018	VARIOUS	36,150,000	8,532,977		2,928,951	7,969,629	(5,040,678)			(5,040,678)		2,928,951		5,604,026	5,604,026		22,350
918284-10-0	VSE CORP-COMMON STOCK		03/12/2018	WEEDEN & CO	10,200,000	515,458		147,708	493,986	(346,279)			(346,279)		147,708		367,750	367,750		714
91834#-10-7	Van Pool Transportation Common Stock		05/22/2018	CORPORATE ACTION	15,485,000	4,384,150		1,548,513	2,816,654	(1,268,141)			(1,268,141)		1,548,513		2,835,637	2,835,637		
91914J-10-2	VALERO ENERGY PARTNERS LP COMMON UNIT		11/08/2018	DTCYID	73,511,000	3,078,968		2,934,971	3,271,240	(336,268)			(336,268)		2,934,971		143,997	143,997		157,093
92214X-10-6	VAREX IMAGING CORP-COMMON STOCK		10/22/2018	JONES TRADING INST	30,400,000	790,861		1,238,896	1,221,168	17,728			17,728		1,238,897		(448,036)	(448,036)		
92240M-10-8	VECTOR GROUP LTD-COMMON STOCK		06/13/2018	WEEDEN & CO	10,804,000	214,414		219,128	241,794	(22,666)			(22,666)		219,128		(4,714)	(4,714)		8,653
92276F-10-0	Ventas Inc-COMMON STOCK REIT		02/15/2018	WEEDEN & CO	960,000	49,200		21,826	57,610	(35,784)			(35,784)		21,826		27,374	27,374		758
923454-10-2	VERITIV CORP-COMMON STOCK		05/14/2018	WEEDEN & CO	1,165,000	35,393		28,474	33,669	(5,195)			(5,195)		28,474		6,919	6,919		
92532W-10-3	VERSUM MATERIALS INC-COMMON STOCK		04/30/2018	WEEDEN & CO	41,500,000	1,458,048		1,641,153	1,570,775	70,378			70,378		1,641,153		(183,105)	(183,105)		2,075
92553P-20-1	Viacom Inc-COMMON STOCK CLASS B		12/11/2018	JONES TRADING INST	25,000,000	738,435		730,000	770,250	(40,250)			(40,250)		730,000		8,435	8,435		20,000
000000-00-0	Virginia Public Building-REVENUE		01/01/2018	EXCHANGE OFFER		271,508				215			215		271,508					
000000-00-0	Virginia Public Building-REVENUE BONDS		01/01/2018	EXCHANGE OFFER		8,477,080				6,742			6,742		8,477,080					
92826C-83-9	VISA INC-COMMON STOCK		12/11/2018	VARIOUS	55,400,000	7,690,748		4,210,342	6,316,708	(2,106,366)			(2,106,366)		4,210,342		3,480,406	3,480,406		43,221
92924F-10-6	WGL HOLDINGS INC-COMMON STOCK		03/26/2018	WEEDEN & CO	1,300,000	107,175		70,054	111,592	(41,538)			(41,538)		70,053		37,122	37,122		663
929328-10-2	WSFS FINANCIAL CORP-COMMON STOCK		06/13/2018	WEEDEN & CO	3,700,000	192,880		127,107	177,045	(49,938)			(49,938)		127,108		65,772	65,772		740
931142-10-3	Walmart Inc-COMMON STOCK		04/19/2018	WEEDEN & CO	10,100,000	884,819		623,212	997,375	(374,163)			(374,163)		623,212		261,607	261,607		5,252
93148P-10-2	Walker & Dunlop Inc-COMMON STOCK		06/12/2018	WEEDEN & CO	1,700,000	100,884		40,244	80,750	(40,506)			(40,506)		40,243		60,641	60,641		850
938824-10-9	WASHINGTON FEDERAL INC-COMMON STOCK		06/12/2018	WEEDEN & CO	2,400,000	79,804		56,245	82,200	(25,955)			(25,955)		56,245		23,559	23,559		816
940610-10-8	WASHINGTON TRUST BANCORP-COMMON STOCK		06/13/2018	WEEDEN & CO	2,200,000	132,665		125,984	117,150	8,834			8,834		125,984		5,681	5,681		1,804
947890-10-9	WEBSTER FINANCIAL CORP-COMMON STOCK		06/12/2018	WEEDEN & CO	4,900,000	326,151		197,039	275,184	(78,145)			(78,145)		129,039		129,112	129,112		2,891
949746-10-1	Wells Fargo & Co-COMMON STOCK		02/05/2018	JONES TRADING INST	57,400,000	3,381,763		2,901,070	3,482,458	(581,388)			(581,388)		2,901,070		480,693	480,693		22,386
950400-10-4	Welltower Inc-COMMON STOCK REIT		05/14/2018	VARIOUS	917,000	50,070		64,666	58,477	6,189			6,189		64,666		(14,596)	(14,596)		1,038
95306-10-5	WEST PHARMACEUTICAL SVCS INC COMMON STK		01/01/2018	VARIOUS																2,223
958254-10-4	WESTERN GAS PARTNERS LP COMMON UNIT		12/18/2018	VARIOUS	141,317,000	6,562,359		7,624,293	6,573,759	824,508			824,508		7,624,293		(1,061,934)	(1,061,934)		488,342
95825R-10-3	WESTERN GAS EQUITY PARTNERS LP COMMON UN		12/27/2018	VARIOUS	95,249,000	2,849,080		3,387,905	819,081	(37,415)			(37,415)		3,387,904		(538,824)	(538,824)		112,276
962166-10-4	Weyerhaeuser Co-COMMON STOCK		03/06/2018	VARIOUS	4,158,000	149,487		145,075	146,611	(1,537)			(1,537)		145,074		4,413	4,413		652
962879-10-2	Wheaton Precious Metals -COMMON STOCK		05/14/2018	WEEDEN & CO	35,570,000	773,345		442,135	787,164	(345,029)			(345,029)		442,135		331,210	331,210		3,201
96524V-10-6	WHITEHORSE FINANCE INC-COMMON STOCK		03/26/2018	WEEDEN & CO	3,800,000	48,007		57,072	50,996	6,076			6,076		57,072		(9,065)	(9,065)		2,698
969203-10-8	Willbros Group Inc-COMMON STOCK		06/01/2018	CA CASH CLOSE	247,723,000	148,634		339,381	351,767	(12,386)			(12,386)		339,381		(190,747)	(190,747)		
969457-10-0	WILLIAMS COS INC COMMON STK		12/18/2018	VARIOUS	160,280,000	4,354,036		4,484,786	2,390,081	(508,609)			(508,609)		4,484,785		(130,749)	(130,749)		68,616
96949L-10-5	WILLIAMS PARTNERS L P COMMON STK		08/13/2018	VARIOUS	391,574,000	16,873,223		14,401,854	13,621,630	(782,165)			(782,165)		14,401,858		2,471,368	2,471,368		624,817
97650J-10-8	WINTRUST FINANCIAL CORP-COMMON STOCK		06/12/2018	WEEDEN & CO	2,100,000	200,278		110,335	172,977	(62,642)			(62,642)		110,335		89,943	89,943		798
981419-10-4	World Acceptance Corp-COMMON STOCK		06/13/2018	WEEDEN & CO	2,500,000	287,724		159,621	201,800	(42,179)			(42,179)		159,621		128,103	128,103		
981475-10-6	World Fuel Services Corp-COMMON STOCK		03/21/2018	JONES TRADING INST	2,600,000	63,540		92,093	73,164	18,929			18,929		92,093		(28,553)	(28,553)		312
981558-10-9	WORLDPAY INC-COMMON STOCK		11/12/2018	WEEDEN & CO	4,000,000	353,711		208,400	294,200	(85,800)			(85,800)		208,400		145,311	145,311		
981811-10-2	Worthington Industries I-COMMON STOCK		06/12/2018	VARIOUS	160,870,000	7,402,416		5,392,588	7,087,932	(1,695,344)			(1,695,344)		5,392,588		2,009,828	2,009,828		33,782
98421B-10-0	Xperi Corp-COMMON STOCK		03/09/2018	WEEDEN & CO	8,300,000	198,043		319,163	202,520	116,643			116,643		319,162		(121,119)	(121,119)		1,660
98923T-10-4	ZEDGE INC-COMMON STOCK		03/26/2018	WEEDEN & CO	1,100,000	3,896		3,344	3,024	320			320		3,344		552	552		
989701-10-7	ZIONS BANCORPORATION-COMMON STOCK		08/16/2018	JONES TRADING INST	86,300,000	4,642,250		4,104,457	4,386,629	(282,172)			(282,172)		4,104,458		537,792	537,792		63,862
98978V-10-3	Zoetis Inc-COMMON STOCK		12/18/2018	WEEDEN & CO	78,400,000	6,901,626		3,696,225	5,647,936	(1,951,711)			(1,951,711)		3,696,225		3,205,401	3,205,401		34,815
ANN674-BL-2	ORTHOFIX INTERNATIONAL N-COMMON STOCK		06/12/2018	WEEDEN & CO	700,000	39,461		30,066												

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21
										11	12	13	14	15						
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date
867224-10-7	SUNCOR ENERGY INC-COMMON STOCK		12/11/2018	JONES TRADING INST	17,619,000	540,761		578,272	646,970	(68,698)			(68,698)		578,272		(37,511)	(37,511)	4,759	
878742-20-4	TECK RESOURCES LTD-COMMON STOCK		11/02/2018	VARIOUS	285,500,000	6,968,472		5,765,367	7,471,535	(1,706,168)			(1,706,168)		5,765,366		1,203,106	1,203,106	105,558	
89679A-20-9	TRISURA GROUP LTD-COMMON STOCK		01/10/2018	WEEDEN & CO	66,000	1,385		824	1,369	(545)			(545)		824		561	561		
35905B-10-7	FRONTERA ENERGY CORP-COMMON STOCK		06/11/2018	VARIOUS	60,000,000	1,723,543		1,792,365							1,790,007	(2,358)	(66,464)	(68,822)		
01609W-10-2	Alibaba Group Holding Ltd-ADR		10/10/2018	JONES TRADING INST	19,780,000	2,782,264		3,317,966	3,410,665	(92,699)			(92,699)		3,317,966		(535,702)	(535,702)		
02090Z-MM-8	Alpha Petrium Holdco - Common Stock		02/28/2018	CORPORATE ACTION	2,820,594,000	20,000,000		20,000,000	20,000,014	(14)			(14)		20,000,000				3,646,666	
03938L-20-3	ArcelorMittal-ADR		12/13/2018	VARIOUS	79,199,000	1,958,215		1,952,009	2,558,920	(606,911)			(606,911)		1,952,009		6,206	6,206	5,877	
088606-10-8	BHP Billiton Ltd-ADR		12/12/2018	VARIOUS	157,615,000	7,234,545		4,699,554	7,248,714	(2,549,160)			(2,549,160)		4,699,554		2,534,991	2,534,991	371,971	
204448-10-4	CIA DE MINAS BUENAVENTUR-ADR		05/14/2018	WEEDEN & CO	50,100,000	778,586		213,426	705,408	(491,982)			(491,982)		213,426		565,160	565,160	1,503	
26874R-10-8	Eni SpA-ADR		12/11/2018	JONES TRADING INST	40,700,000	1,293,177		1,572,904	1,350,833	222,071			222,071		1,572,904		(279,727)	(279,727)	79,441	
29446M-10-2	Equinor ASA, ADR		11/14/2018	JONES TRADING INST	110,700,000	2,660,934		2,289,188	2,371,194	(82,006)			(82,006)		2,289,189		371,745	371,745	75,287	
31573A-10-9	FIBRIA CELLULOSE SA-ADR		10/31/2018	WEEDEN & CO	41,300,000	792,950		288,274	607,110	(318,836)			(318,836)		288,274		504,676	504,676	4,675	
38059T-10-6	GOLD FIELDS LTD-ADR		05/14/2018	WEEDEN & CO	29,340,000	111,621		138,778	126,162	12,616			12,616		138,778		(27,157)	(27,157)	1,237	
000000-00-0	Ritekro (cayman) Ltd - Private Equity		06/20/2018	CORPORATE ACTION	15,000,000			2		(1)			(1)							
6903KA-YY-4	Paragon Offshore Finance Company-Class A		03/09/2018	CORPORATE ACTION	2,462,000	2,462		1,231	2,462	(1,231)			(1,231)		1,231		1,231	1,231		
69343P-10-5	LUKOIL PJSC-ADR		12/04/2018	JONES TRADING INST	10,800,000	800,223		551,013	822,620	(71,607)			(71,607)		551,013		249,210	249,210	38,386	
752344-30-9	RANDGOLD RESOURCES LTD-ADR		05/14/2018	WEEDEN & CO	7,447,000	591,651		703,520	736,434	(32,914)			(32,914)		703,520		(111,869)	(111,869)	14,894	
767204-10-0	RIO TINTO PLC-ADR		12/12/2018	JONES TRADING INST	10,300,000	487,948		458,957	545,179	(86,222)			(86,222)		458,957		28,991	28,991	31,851	
803866-30-0	SASOL LTD-ADR		12/12/2018	JONES TRADING INST	11,300,000	341,611		323,597	386,573	(62,976)			(62,976)		323,597		18,014	18,014	8,133	
806857-10-8	Schlumberger Ltd-COMMON STOCK		12/11/2018	JONES TRADING INST	19,700,000	816,407		1,448,153	1,327,583	120,570			120,570		1,448,153		(631,746)	(631,746)	29,550	
825724-20-6	SIEMENS GOLD LTD-ADR		05/14/2018	WEEDEN & CO	7,780,000	24,348		15,147	37,778	(22,631)			(22,631)		15,148		9,200	9,200	3	
833635-10-5	Sociedad Quimica y Minera-ADR		12/03/2018	WEEDEN & CO	57,020,000	2,626,934		1,409,233	3,385,277	(1,976,044)			(1,976,044)		1,409,233		1,217,701	1,217,701	155,767	
84473L-10-5	SOUTH32 LTD-ADR		12/04/2018	WEEDEN & CO	17,406,000	201,393		84,593	235,416	(150,823)			(150,823)		84,593		116,800	116,800	8,529	
864323-10-0	Subsea 7 SA-ADR		05/14/2018	WEEDEN & CO	23,600,000	346,416		275,419	355,180	(79,761)			(79,761)		275,419		70,997	70,997	14,762	
88031M-10-9	TENARIS SA-ADR		12/13/2018	WEEDEN & CO	31,800,000	732,704		987,927	1,013,148	(25,221)			(25,221)		987,928		(255,224)	(255,224)	43,884	
89151E-10-9	TOTAL SA-SPONSORED ADR		11/13/2018	JONES TRADING INST	49,490,000	2,735,955		2,655,013	2,735,807	(80,794)			(80,794)		2,655,013		80,942	80,942	109,873	
90400P-10-1	ULTRAPAR PARTICIPACOES S-ADR		05/14/2018	WEEDEN & CO	61,675,000	936,501		1,227,671	1,401,873	(174,202)			(174,202)		1,227,671		(291,170)	(291,170)	16,998	
915436-10-9	UPM-KYMMENE OYJ-ADR		12/12/2018	JONES TRADING INST	10,000,000	263,997		203,190	310,300	(107,110)			(107,110)		203,190		60,807	60,807	24,278	
91912E-10-5	VALE SA-ADR		12/04/2018	WEEDEN & CO	189,800,000	2,665,175		1,486,256	2,321,254	(834,998)			(834,998)		1,486,256		1,178,919	1,178,919	119,083	
980228-30-8	WOODSIDE PETROLEUM LTD-ADR		12/11/2018	JONES TRADING INST	7,200,000	160,858		199,936	185,328	14,608			14,608		199,936		(39,078)	(39,078)	8,964	
000000-00-0	Telford Offshore Ltd Private Equity		06/13/2018	DIRECT	78,717,000	133,779		85,650							85,650		48,129	48,129	1,239	
60084W-10-1	ADIENT PLC-COMMON STOCK		01/30/2018	VARIOUS	110,500,000	7,558,158		8,719,757	8,696,350	23,407			23,407		8,719,757		(1,161,599)	(1,161,599)	27,748	
60129K-10-4	AIRCASSTLE LTD-COMMON STOCK		06/12/2018	WEEDEN & CO	3,200,000	67,357		42,439	74,848	(32,409)			(32,409)		42,440		24,917	24,917	1,792	
60176J-10-9	ALLEGION PLC-COMMON STOCK		10/22/2018	JONES TRADING INST	44,200,000	3,659,754		2,039,920	3,516,552	(1,476,632)			(1,476,632)		2,039,921		1,619,833	1,619,833	33,404	
602602-10-3	AMDOCS LTD-COMMON STOCK		05/14/2018	WEEDEN & CO	37,400,000	2,458,739		1,664,816	2,448,952	(784,136)			(784,136)		1,664,816		793,923	793,923	9,350	
603764-13-4	ANGLO AMERICAN PLC-COMMON STOCK		11/05/2018	WEEDEN & CO	109,600,000	1,880,642		1,311,094	2,296,716	(934,975)			(934,975)	(50,647)	1,006,908	(304,755)	873,734	568,979		
605384-10-5	ASPEN INSURANCE HOLDINGS-COMMON STOCK		06/12/2018	WEEDEN & CO	2,900,000	123,162		135,474	117,740	17,734			17,734		135,475		(12,313)	(12,313)	1,392	
629183-10-3	EATON CORP PLC-COMMON STOCK		11/14/2018	JONES TRADING INST	22,300,000	1,632,515		1,704,389	1,761,923	(57,534)			(57,534)		1,704,389		(71,874)	(71,874)	58,872	
630337-10-2	EMERALD PLANTATION HOLDI-COMMON STOCK		06/26/2018	DIRECT	3,030,000,000	166,650		174,225	265,125	(22,725)			(22,725)		174,225		(7,575)	(7,575)		
63075P-10-1	Enstar Group Ltd-COMMON STOCK		06/13/2018	WEEDEN & CO	500,000	106,938		53,411	100,375	(46,964)	68,175		(46,964)		53,412		53,526	53,526		
63157S-10-6	Ensco PLC-COMMON STOCK		03/09/2018	WEEDEN & CO	11,040,000	52,549		66,155	65,246	909			909		66,155		(13,606)	(13,606)	111	
636738-10-5	FRESH DEL MONTE PRODUCE -COMMON STOCK		06/12/2018	WEEDEN & CO	700,000	30,473		16,942	33,969	(16,428)			(16,428)		16,942		13,531	13,531	210	
639420-10-7	Glencore PLC-COMMON STOCK		11/05/2018	WEEDEN & CO	305,483,000	982,406		1,234,642	1,611,227	(276,598)			(276,598)	(99,987)	986,860	(247,783)	(4,454)	(252,237)		
65509L-10-1	LiivaNova PLC-COMMON STOCK		03/28/2018	WEEDEN & CO	1,100,000	93,160		69,116	87,912	(18,796)			(18,796)		69,117		24,043	24,043		
65634*-10-6	Longitude Holdings Ltd. Common Stock		03/01/2018	CORPORATE ACTION	59,195,000	1,409,014		408,622	412,650	(4,028)			(4,028)		408,622		1,000,392	1,000,392		
66095L-10-9	DELPHI AUTOMOTIVE PLC-COMMON STOCK		12/04/2018	VARIOUS	66,771,000	5,742,549		5,681,232	5,664,184	17,048			17,048		5,681,231		61,318	61,318	48,790	
67945M-10-7	Seagate Technology PLC-COMMON STOCK		12/13/2018	JONES TRADING INST	16,100,000	637,748		631,442	673,624	(42,182)			(42,182)		631,442		6,306	6,306	30,429	
69319H-10-2	Validus Holdings Ltd-COMMON STOCK		03/27/2018	JONES TRADING INST	4,000,000	270,003		178,360	187,680	(9,320)			(9,320)		178,360		91,643	91,643	1,520	
69329Z-10-0	VENATOR MATERIALS PLC-COMMON STOCK		04/30/2018	WEEDEN & CO	86,200,000	1,551,383		1,729,660	1,906,744	(177,084)			(177,084)		1,729,660		(178,277)	(178,277)		
H84989-10-4	TE CONNECTIVITY LTD-COMMON STOCK		06/29/2018	JONES TRADING INST	43,800,000	3,915,043		3,442,518	4,162,752	(720,234)			(720,234)		3,442,518		472,525	472,525	36,792	
L9340P-10-1	TRINSEO SA-COMMON STOCK		09/27/2018	VARIOUS	51,100,000	3,964,981		2,858,719	3,709,860	(851,141)			(851,141)		2,858,718		1,106,263	1,106,263	88	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 4

Showing All Long-Term Bonds and Stocks SOLD, REDEEMED or Otherwise DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	Change In Book/Adjusted Carrying Value					16	17	18	19	20	21	
										11	12	13	14	15							
CUSIP Identification	Description	Foreign	Disposal Date	Name of Purchaser	Number of Shares of Stock	Consideration	Par Value	Actual Cost	Prior Year Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ Decrease	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (11+12-13)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Book/ Adjusted Carrying Value at Disposal Date	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Bond Interest/ Stock Dividends Received During Year	Stated Contractual Maturity Date	
Y2745C-10-2	GOLAR LNG PARTNERS LP-COMMON STOCK LTD P	C	11/05/2018	JONES TRADING INST	58,368.000	880,838		1,203,702	1,330,790	(127,088)			(127,088)		1,203,703		(322,865)	(322,865)	101,123		
Y7545H-10-9	SEADRILL PARTNERS LLC-COMMON STOCK LTD P	C	12/17/2018	WEEDEN & CO	395,944.000	835,075		1,115,716	1,449,155	(333,439)			(333,439)		1,115,716		(280,641)	(280,641)	118,784		
Y8564M-10-5	TEEKAY LNG PARTNERS LP-COMMON STOCK LTD	C	11/14/2018	JONES TRADING INST	34,105.000	482,557		733,598	687,216	46,382			46,382		733,598		(251,041)	(251,041)	19,099		
Y8565J-10-1	TEEKAY OFFSHORE PARTNERS-COMMON STOCK LT	C	11/14/2018	JONES TRADING INST	87,987.000	151,980		227,006	207,649	19,357			19,357		227,007		(75,027)	(75,027)	3,519		
Y8565N-10-2	TEEKAY TANKERS LTD-CMN STK-CLASS A	C	06/13/2018	WEEDEN & CO	19,800.000	20,572		49,896	27,720	22,176			22,176		49,896		(29,324)	(29,324)	594		
9099999	Subtotal - Common Stocks - Industrial and Miscellaneous (Unaffiliated)					798,586,549	XXX	671,056,399	772,042,830	(124,378,371)		8,889,452	(133,267,823)	(158,132)	681,326,942	(438,029)	117,259,607	116,821,578	20,507,265	XXX	
57633*-10-5	MassMutual International LLC		12/31/2018	VARIOUS	1,036.000			2,916,718,935	2,335,023,425	1,624,735,525		1,257,307,241	367,428,284		2,916,718,935						
9199999	Subtotal - Common Stocks - Parent, Subsidiaries and Affiliates					2,916,718,935	XXX	2,916,718,935	2,335,023,425	1,624,735,525		1,257,307,241	367,428,284		2,916,718,935						XXX
464287-65-5	ISHARES RUSSELL 2000 ETF-ETF EQUITY		03/01/2018	WEEDEN & CO	1,200.000	180,166		138,130	182,952	(44,822)			(44,822)		138,130		42,036	42,036	695		
57629E-49-8	MMI PREMIER VALUE FUND-CLASS R3		03/23/2018	DIRECT	4,570.000	86,700		38,482	118,509	(80,027)			(80,027)		38,482		48,218	48,218	1,391		
57630C-65-5	MASSMUTUAL PREMIER VALUE-CLASS R4		03/23/2018	DIRECT	5,053.000	96,157		101,677	131,277	(29,600)			(29,600)		101,677		(5,520)	(5,520)	2,126		
57630C-66-3	MASSMUTUAL PREMIER VALUE-CLASS I		03/23/2018	DIRECT	5,083.000	96,669		102,036	132,053	(30,017)			(30,017)		102,036		(5,367)	(5,367)	2,335		
57630E-72-7	MASSMUTUAL SELECT LARGE -CLASS R4		01/29/2018	MERGER	12,465.000	116,454		99,597	16,857						116,454		5,981				
68385C-50-1	OPPENHEIMER GLOBAL REAL -CLASS L		08/24/2018	VARIOUS	5,525,668.000	20,715,960		22,845,606	22,993,616	(1,434,171)			(1,434,171)		22,462,860		(1,746,900)	(1,746,900)	1,192,529		
81369Y-50-6	ENERGY SELECT SECTOR SPD-ETF EQUITY		11/13/2018	VARIOUS	50,700.000	3,388,805		3,370,325	3,663,582	(293,257)			(293,257)		3,370,325		18,480	18,480	97,969		
6069E@-10-1	BABSON CAPITAL GLOBAL IN-GLOBAL CR DISTR	D	10/31/2018	CORPORATE ACTION	23,645.000	2,857,606		2,364,510	2,621,281	(481,178)			(481,178)		2,364,510		493,096	493,096			
60R5P5-24-5	Barings Global Investment Funds plc - Em	D	11/28/2018	VARIOUS	429,581.000	49,964,000		43,178,593	40,789,022	(7,898,566)			(7,898,566)		43,178,593		6,785,407	6,785,407	7,663		
60R5PL-85-1	Babson Capital Global In-US HIGH YIELD B	D	12/11/2018	DIRECT	163,629.000	20,546,858		17,753,716	20,762,848	(3,009,132)			(3,009,132)		17,753,716		2,793,142	2,793,142			
667585-68-0	OPPENHEIMERFUNDS ICAY - MUTUAL FUND	D	06/18/2018	DIRECT	227,971.000	31,308,718		23,975,842	30,163,859	(6,512,951)			(6,512,951)		23,975,851		7,332,867	7,332,867	404,612		
9299999	Subtotal - Common Stocks - Mutual Funds					129,358,093	XXX	113,985,371	121,658,596	(19,796,864)			(19,796,864)		113,602,634		15,755,459	15,755,459	1,715,301	XXX	
9799997	Total - Common Stocks - Part 4					3,844,663,577	XXX	3,701,760,705	3,228,724,851	1,480,560,290		1,266,196,693	214,363,597	(158,132)	3,711,648,511	(438,029)	133,015,066	132,577,037	22,222,566	XXX	
9799998	Total - Common Stocks - Part 5					290,856,291	XXX	302,960,479							302,960,480		(12,104,189)	(12,104,189)	1,768,082	XXX	
9799999	Total - Common Stocks					4,135,519,868	XXX	4,004,721,184	3,228,724,851	1,480,560,290		1,266,196,693	214,363,597	(158,132)	4,014,608,991	(438,029)	120,910,877	120,472,848	23,990,648	XXX	
9899999	Total - Preferred and Common Stocks					4,170,125,438	XXX	4,039,326,755	3,262,436,240	1,480,961,924		1,266,196,693	214,765,231	(158,132)	4,049,214,563	(438,029)	120,910,875	120,472,846	25,541,138	XXX	
9999999	Totals					24,859,504,095	XXX	24,451,284,288	18,304,656,078	1,477,633,326		23,396,320	1,326,928,798	(3,155,787)	24,753,620,613	(33,106,228)	105,883,482	72,777,254	492,420,433	XXX	

E14.103

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
912810-QA-9	US TREASURY N/B-NOTE		02/28/2018	VARIOUS	04/11/2018	VARIOUS	210,000	229,541	228,557	229,434		(107)		(107)			(877)	(877)	3,890	2,735
912810-RS-9	US TREASURY N/B-BOND		12/19/2018	VARIOUS	12/19/2018	VARIOUS	2,480,000	2,232,539	2,217,717	2,232,918		379		379			(15,201)	(15,201)	18,410	14,250
912828-4V-9	United States Treasury N-UNSECURED		12/12/2018	BANK OF AMERICA CORP	12/17/2018	NOMURA SECURITIES IN	750,000	747,598	750,967	747,601		4		4			3,366	3,366	7,383	7,090
912828-50-9	United States Treasury N-UNSECURED		12/19/2018	ROYAL BANK SCOTLAND	12/20/2018	BANK OF AMERICA CORP	500,000	500,938	500,762	500,933		(4)		(4)			(171)	(171)	907	793
912828-65-3	US TREASURY N/B-NOTE		12/04/2018	VARIOUS	12/19/2018	VARIOUS	3,180,000	3,086,023	3,093,264	3,087,974		1,951		1,951			5,290	5,290	16,733	12,936
912828-J8-4	US TREASURY N/B-NOTE		08/21/2018	VARIOUS	09/21/2018	VARIOUS	5,230,000	5,128,399	5,123,298	5,133,723		5,324		5,324			(10,425)	(10,425)	31,521	25,332
912828-L3-2	US TREASURY N/B-NOTE		12/04/2018	VARIOUS	12/19/2018	VARIOUS	3,600,000	3,504,734	3,511,961	3,508,225		3,491		3,491			3,736	3,736	10,886	7,490
912828-M9-8	US TREASURY N/B-NOTE		01/31/2018	WELLS FARGO	02/27/2018	CREDIT AGRICOLE CIB	250,000	245,479	244,824	245,581		102		102			(757)	(757)	1,016	748
912828-WN-6	US TREASURY N/B-NOTE		06/29/2018	VARIOUS	07/27/2018	VARIOUS	1,700,000	1,668,805	1,665,590	1,669,564		759		759			(3,974)	(3,974)	7,271	4,708
0599999. Subtotal - Bonds - U.S. Governments							17,900,000	17,344,056	17,336,940	17,355,953		11,899		11,899			(19,013)	(19,013)	97,957	76,082
035198-AB-6	Angolan Government Inter-SENIOR UNSECURE	D	05/02/2018	GOLDMAN	11/14/2018	MORGAN	3,750,000	3,749,513	3,651,563	3,749,619		106		106			(98,056)	(98,056)	161,563	
040114-H0-6	Argentine Republic Gover-SENIOR UNSECURE	D	01/04/2018	DTCYID	05/02/2018	DTCYID	600,000	594,420	542,100	594,489		69		69			(52,389)	(52,389)	11,065	
25714P-DII-5	Dominican Republic Inter-SENIOR UNSECURE	D	02/08/2018	JP MORGAN SECURITIES	12/13/2018	BANK OF AMERICA CORP	14,700,000	14,700,000	13,854,750	14,700,000							(845,250)	(845,250)	801,558	
699149-AF-7	Paraguay Government Inte-SENIOR UNSECURE	D	03/08/2018	JP MORGAN SECURITIES	11/21/2018	CITIGROUP GLOBAL MAR	9,400,000	9,400,000	8,732,600	9,400,000							(667,400)	(667,400)	369,942	
AR4942-80-1	Senegal Government Inter-SENIOR UNSECURE	B	03/06/2018	CITIGROUP GLOBAL MAR	11/16/2018	BNP PARIBAS	8,470,198	9,294,750	7,811,868	8,470,198					(824,553)	(658,330)	(1,482,883)		275,542	
P1910W-PU-7	Provincia de Buenos Aire-SENIOR UNSECURE	B	10/16/2018	VARIOUS	10/16/2018	VARIOUS	193,353	162,265	162,265	162,265									7,659	7,659
P75735-AL-7	ARGENTINE REPUBLIC GOVER-SENIOR UNSECURE	B	02/07/2018	VARIOUS	07/25/2018	NOMURA SECURITIES IN	3,679,829	3,935,970	3,173,853	3,708,658		(2,173)		(2,173)		(225,139)	(534,804)	(759,943)	102,153	14,035
V71795-AH-7	Ghana Government Interna-SENIOR UNSECURE	D	03/26/2018	JEFFERIES INTL LTD	09/24/2018	BARCLAYS BANK PLC IWH	200,000	217,000	210,080	215,646		(1,355)		(1,355)			(5,566)	(5,566)	10,019	2,231
V7691D-AZ-9	Senegal Government Inter-SENIOR UNSECURE	B	10/16/2018	VARIOUS	11/15/2018	VARIOUS	765,969	734,031	715,733	724,980		184		184		(9,235)	(9,247)	(18,482)	23,238	21,906
X55005-UE-9	Ukraine Government Inter-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	627,000	632,486	632,486	632,486									6,074	6,074
1099999. Subtotal - Bonds - All Other Governments							42,386,349	43,420,435	39,487,298	42,358,341		(3,169)		(3,169)		(1,058,927)	(2,871,042)	(3,929,969)	1,768,813	51,905
207726-F4-5	State of Connecticut-GENERAL OBLIGATION		10/04/2018	IN-KIND TRANSFER	10/17/2018	RAYMOND JAMES	100,000	112,888	111,779	112,871		(17)		(17)			(1,092)	(1,092)	553	
1799999. Subtotal - Bonds - U.S. States, Territories and Possessions							100,000	112,888	111,779	112,871		(17)		(17)		(1,092)	(1,092)		553	
167593-AN-2	Chicago O'Hare Internati-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER	10/17/2018	RAYMOND JAMES	175,000	222,096	221,702	222,068		(28)		(28)			(366)	(366)	3,357	
59259Y-BY-4	Metropolitan Transportat-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER	10/17/2018	SUMRIDGE PARTNERS LL	535,000	685,496	685,051	685,395		(101)		(101)			(343)	(343)	15,260	
645420-AX-1	New Hope Cultural Educat-REVENUE BONDS		02/08/2018	DTCYID	11/08/2018	DTCYID	2,000,000	2,014,900	2,000,000	2,013,838		(1,062)		(1,062)			(13,838)	(13,838)	87,333	
646139-W3-5	New Jersey Turnpike Auth-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER	10/17/2018	MARKETAXESS FINANCIA	150,000	212,124	211,403	212,086		(39)		(39)			(683)	(683)	3,336	
73358W-CII-2	Port Authority of New Yo-REVENUE BONDS		10/04/2018	IN-KIND TRANSFER	10/17/2018	RAYMOND JAMES	100,000	119,474	118,709	119,462		(12)		(12)			(753)	(753)	2,635	
74442P-CT-0	PUBLIC FINANCE AUTHORITY-REVENUE BONDS		02/01/2018	PIK BOND	04/25/2018	CALL 100	441,000	441,516	441,000	441,247		(269)		(269)			(247)	(247)	10,290	
3199999. Subtotal - Bonds - U.S. Special Revenues							3,401,000	3,695,606	3,677,865	3,694,096		(1,511)		(1,511)		(16,230)	(16,230)		122,211	
00116*-AA-9	AFC-Dell Holding Corp. Senior Sub Note		09/30/2018	PIK BOND	10/01/2018	IN-KIND TRANSFER	16,052	15,856	16,054	16,053		8		8		190		190	159	
00187E-AB-3	API Technologies Corp- Sr Sub Nt PIK ANHEUSER-BUSCH INBEV FIN-SENIOR UNSECURE		03/31/2018	PIK BOND	04/20/2018	PREPAYMENTS W/PENALT	39,676	39,765	39,676	39,762		(4)		(4)			(86)	(86)	661	
035242-AM-8	ANHEUSER-BUSCH INBEV FIN GTD NT		08/01/2018	IN-KIND TRANSFER	11/13/2018	EXCHANGE OFFER	1,615,000	1,672,887	1,672,173	1,672,173		(714)		(714)					21,506	
035242-AN-6	ANHEUSER-BUSCH INBEV FIN GTD NT		10/04/2018	IN-KIND TRANSFER	11/13/2018	EXCHANGE OFFER	4,335,000	4,422,003	4,421,324	4,421,324		(679)		(679)					60,184	
035242-AP-1	ANHEUSER-BUSCH INBEV FIN GTD NT		08/09/2018	MARKETAXESS FINANCIA	11/13/2018	EXCHANGE OFFER	400,000	392,300	392,510	392,510		210		210					4,137	487
05352A-AC-4	Avantor Inc-SENIOR UNSECURED		08/29/2018	GOLDMAN	11/14/2018	VARIOUS	2,050,000	2,119,188	2,096,068	2,116,775		(2,413)		(2,413)			(20,707)	(20,707)	115,313	76,875
05588F-AA-3	BCC Software, Inc. Senior Sub Note		09/30/2018	PIK BOND	10/01/2018	IN-KIND TRANSFER	18,702	18,699	18,699	18,699		12		12		347		347	520	
075887-BZ-1	Becton Dickinson and Co-SENIOR UNSECURED		01/05/2018	EXCHANGE OFFER	06/25/2018	CALL 103.928142	10,000,000	10,524,642	10,392,814	10,830,608		(86,848)		(86,848)			(437,794)	(437,794)	607,925	
103557-AA-2	Boyer USA Inc-2ND LIEN		03/27/2018	WELLS FARGO	11/15/2018	VARIOUS	3,792,000	3,792,000	3,962,640	3,792,000							170,640	170,640	165,219	
126650-CX-6	CVS Health Corp-SENIOR UNSECURED		03/06/2018	BANK OF AMERICA CORP	08/09/2018	CITIGROUP GLOBAL MAR	310,000	305,641	308,174	305,781		139		139			2,393	2,393	5,702	
14040H-BY-0	Capital One Financial Co-SENIOR UNSECURE		04/26/2018	MORGAN	12/04/2018	DEUTSCHE BANK SECURI	575,000	574,494	569,486	574,578		83		83			(5,092)	(5,092)	11,903	
151371-AA-8	Centene Escrow I Corp-SENIOR UNSECURED		05/09/2018	CITIGROUP GLOBAL MAR	06/15/2018	NOMURA SECURITIES IN	5,385,000	5,385,000	5,465,775	5,385,000							80,775	80,775	20,904	

E15

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
172967-LW-9	Citigroup Inc-SENIOR UNSECURED		04/16/2018	CITIGROUP GLOBAL MAR	06/11/2018	BARCLAYS CAPITAL INC	400,000	400,000	392,116	400,000							(7,884)	(7,884)	2,264	
18051-AA-8	Clarion Brands LLC Senior Sub Note		06/30/2018	PIK BOND	09/21/2018	PREPAYMENTS W/O PENA	39,654	39,577	39,654	39,581		5		5			73	73	1,660	
18051-AB-6	Clarion Brands LLC Senior Sub Note		06/30/2018	PIK BOND	09/21/2018	PREPAYMENTS W/O PENA	50,060	50,006	50,060	49,968		(38)		(38)			92	92	2,596	
18947-AA-4	Clubessentials LLC Senior Sub Note		05/02/2018	DIRECT	10/01/2018	IN-KIND TRANSFER	13,222,525	12,958,074	12,992,198	12,992,198		30,431		30,431		3,693		3,693		
212015-AR-2	Continental Resources In-SENIOR UNSECURE		02/20/2018	VARIOUS	05/29/2018	EXCHANGE OFFER	400,000	395,813	395,922	395,922		109		109					8,313	3,579
21775-AA-3	CORA Health Services, In Senior Sub Note		03/31/2018	PIK BOND	05/02/2018	PREPAYMENTS W/O PENA	16,967	17,307	16,967	17,245		(61)		(61)			(278)	(278)	192	
247916-AH-2	Denbury Resources Inc-SENIOR UNSECURED		01/11/2018	EXCHANGE OFFER	08/20/2018	VARIOUS	5,740,000	4,113,667	6,073,400	4,200,672		87,005		87,005		1,872,728	1,872,728	113,280		
26885-AA-1	ERG HLDG CO LLC SR SUB NT		03/31/2018	PIK BOND	05/25/2018	CORPORATE ACTION	6,738	6,738	6,738	6,738									139	
26885-AB-9	Evolution Research (ERG Senior Sub Note		03/31/2018	PIK BOND	05/25/2018	CORPORATE ACTION	6,153	6,215	6,153	6,207		(8)		(8)			(54)	(54)	132	
278642-AF-0	eBay Inc-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER	10/18/2018	MORGAN	901,000	732,590	717,845	732,689		98		98		(14,844)	(14,844)	9,711		
28444U-AQ-9	Equinix Inc-SENIOR UNSECURED		10/29/2018	MORGAN	11/26/2018	VARIOUS	3,319,000	3,364,636	3,352,498	3,364,185		(451)		(451)		(11,687)	(11,687)	70,338	57,414	
302316-AW-2	EXXON MOBIL CORPORATION-SR UNSECURED		07/20/2018	VARIOUS	08/03/2018	GOLDMAN	2,800,000	2,876,317	2,865,968	2,876,181		(136)		(136)		(10,213)	(10,213)	49,917	34,398	
31428X-BP-0	FedEx Corp-SENIOR UNSECURED		07/09/2018	VARIOUS	10/12/2018	CITIGROUP GLOBAL MAR	23,709,000	22,657,239	22,440,806	22,681,769		24,530		24,530		(240,963)	(240,963)	573,231	354,631	
34958-AA-7	Fortistar Energy Recycli Secured Mezzani		10/05/2018	PIK NOTE BUY UP	12/20/2018	VARIOUS	1,508,707	1,508,400	1,508,707	1,508,495		95		95			212	212	28,130	
361448-BC-6	GATX Corp-SENIOR UNSECURED		05/03/2018	CITIGROUP GLOBAL MAR	06/15/2018	CITIGROUP GLOBAL MAR	315,000	315,000	315,630	315,000							630	630	1,672	
38141G-WZ-3	Goldman Sachs Group Inc-/SENIOR UNSECURE		04/18/2018	GOLDMAN	06/11/2018	MORGAN	475,000	475,000	467,395	475,000						(7,605)	(7,605)	2,786		
39535-AA-6	Greenleaf Power Consolid Sub Note (6% PI		09/30/2018	PIK BOND	10/01/2018	VARIOUS	1,255,488	1,251,670	1,255,282	1,259,506		(552)		(552)		8,389	(4,224)	4,165	15,394	
40573L-AW-6	Halfmoon Parent Inc-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER	10/17/2018	U. S. BANCORP	150,000	147,736	145,884	147,736		(1)		(1)		(1,852)	(1,852)	653		
41024H-IM-3	Handi Quilter (HQ Acquis Senior Sub Note		09/30/2018	PIK BOND	10/23/2018	PREPAYMENTS W/O PENA	4,164	4,159	4,164	4,158		(2)		(2)			6	6	198	
41138-AA-3	Happy Floors Acquisition Senior Sub Note		04/30/2018	VARIOUS	04/30/2018	PREPAYMENTS W/O PENA	11,340	11,400	11,340	11,398		(2)		(2)			(57)	(57)	341	
43534-AA-3	Hollandia Produce LP Senior Sub Note		06/30/2018	VARIOUS	10/01/2018	IN-KIND TRANSFER	46,079	37,910	45,868	45,868		804		804		7,153		7,153	651	
44701Q-BD-3	Huntsman International L-SENIOR UNSECURE		08/06/2018	BANK OF AMERICA CORP	10/05/2018	DEUTSCHE BANK SECURI	575,000	596,563	589,375	595,723		(840)		(840)		(6,348)	(6,348)	11,869	6,794	
448579-AF-9	Hyatt Hotels Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER	10/17/2018	MORGAN	472,000	484,635	479,906	484,602		(32)		(32)		(4,696)	(4,696)	2,162		
451102-BQ-9	Icahn Enterprises LP / I-SENIOR UNSECURE		02/14/2018	EXCHANGE OFFER	11/26/2018	VARIOUS	4,248,999	4,249,000	4,165,776	4,249,294		294		294		(83,517)	(83,517)	260,518		
458140-BF-6	Intel Corp-SENIOR UNSECURED		04/12/2018	VARIOUS	06/18/2018	EXCHANGE OFFER	15,961,000	15,951,559	15,952,065	15,952,065		506		506					314,547	75,021
46647P-AR-7	JPMorgan Chase & Co-SENIOR UNSECURED		04/16/2018	JP MORGAN SECURITIES	12/12/2018	SUMRIDGE PARTNERS LL	400,000	400,000	389,556	400,000						(10,444)	(10,444)	10,280		
49327M-2G-8	KEY BANK NA-SR UNSECURED		04/20/2018	DTCYID	09/14/2018	DTCYID	345,000	340,670	340,191	341,568		898		898		(1,377)	(1,377)	3,924	819	
49456B-AP-6	Kinder Morgan Inc/DE-SENIOR UNSECURED		02/22/2018	MIZUHO SECURITIES	12/12/2018	SCOTIA CAPITAL MARKE	365,000	363,620	355,386	363,688		68		68		(8,302)	(8,302)	12,338		
56616X-AM-9	MACYS RETAIL HLDGS INC-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER	10/17/2018	JP MORGAN SECURITIES	300,000	244,301	240,819	244,341		40		40		(3,522)	(3,522)	4,650		
60871R-AG-5	MOLSON COORS BREWING CO-SENIOR UNSECURED		06/12/2018	VARIOUS	12/12/2018	MORGAN	335,000	304,276	299,678	305,901		1,625		1,625		(6,223)	(6,223)	9,185	4,095	
60936-AA-9	Money Mailer Holding Cor Senior Sub Note		08/31/2018	PIK BOND	11/17/2018	CALL 6.3496359	62,671	57,985	3,979	3,979		(1,336)	52,670	(54,006)				2,158		
674599-ON-3	Occidental Petroleum Cor-SENIOR UNSECURE		02/28/2018	BARCLAYS CAPITAL INC	04/24/2018	MILLENNIUM ADVISORS	190,000	188,617	187,344	188,612		(5)		(5)		(1,268)	(1,268)	1,197		
693506-BP-1	PPG Industries Inc-SENIOR UNSECURED		06/19/2018	VARIOUS	10/26/2018	CITIGROUP GLOBAL MAR	14,800,000	14,615,322	14,057,040	14,621,589		6,267		6,267		(564,549)	(564,549)	374,625	166,521	
69863B-AB-5	PANOS Brands LLC Senior Sub Note		09/30/2018	VARIOUS	10/01/2018	IN-KIND TRANSFER	1,871,143	1,870,897	1,871,059	1,871,059		6		6		156		156	624	
703481-AA-9	Patterson-UTI Energy Inc-SENIOR UNSECURE		01/11/2018	VARIOUS	09/10/2018	EXCHANGE OFFER	17,090,000	17,122,338	17,120,255	17,120,255		(2,083)		(2,083)					433,160	
74456Q-BV-7	Public Service Electric -SECURED		05/02/2018	MIZUHO SECURITIES	08/03/2018	BANK OF AMERICA CORP	8,800,000	8,745,528	8,854,560	8,745,320		(208)		(208)		109,240	109,240	92,070		
755111-BU-4	Raytheon Co-SENIOR UNSECURED NOTE		07/16/2018	RBC CAPITAL MARKETS	08/03/2018	U. S. BANCORP	5,700,000	6,445,705	6,434,160	6,442,769		(2,936)		(2,936)		(8,609)	(8,609)	86,450	47,003	
75846-AA-4	Reelcraft Ind. SR SUB NT		09/30/2018	PIK BOND	10/01/2018	IN-KIND TRANSFER	20,291	20,036	20,290	20,290		11		11		243		243	600	
78469Q-AP-7	SPS SERVICER ADVANCE REC-SPART 2016-T1 A		10/04/2018	IN-KIND TRANSFER	10/15/2018	PAYDOWN	400,000	400,318	400,000	400,000									843	759
80386W-AA-3	SASOL Financing USA LLC-SENIOR UNSECURED		10/16/2018	VARIOUS	10/16/2018	VARIOUS	243,000	246,749	246,749	246,749									753	

E15.1

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
84265V-AE-5	SOUTHERN COPPER CORP-SENIOR UNSECURED NO		10/04/2018	IN-KIND TRANSFER	11/21/2018	JPMILON	625,000	741,331	692,813	740,931		(400)		(400)			(48,118)	(48,118)	25,781	
84265V-AG-0	SOUTHERN COPPER CORP-NOTE		08/01/2018	IN-KIND TRANSFER	11/21/2018	VARIOUS	450,000	461,867	417,126	461,814		(54)		(54)			(44,688)	(44,688)	12,994	
852061-AA-8	SPRINT COMMUNICATIONS IN-FIRST LIEN		04/17/2018	WELLS FARGO	10/05/2018	JP MORGAN SECURITIES	225,000	261,563	256,183	257,557		(4,006)		(4,006)			(1,374)	(1,374)	10,117	231
868008-AA-7	SUNVAIR INC SR SUB NT		09/30/2018	PIK BOND	10/01/2018	IN-KIND TRANSFER	77,529	76,849	76,849			1,078		1,078		9,296			26	
86033G-CS-7	Tenet Healthcare Corp-FIRST LIEN		01/05/2018	BANK OF AMERICA CORP	11/20/2018	VARIOUS	2,616,000	2,589,840	2,459,346	2,592,770		2,930		2,930			(133,423)	(133,423)	174,416	68,897
88163V-AD-1	TEVA PHARM FIN CO LLC-SENIOR NOTE		02/28/2018	VARIOUS	06/26/2018	DIRECT	950,000	904,948	941,204	905,362		414		414			35,843	35,843	23,532	5,287
902494-BD-4	Tyson Foods Inc-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER	10/17/2018	BANK OF AMERICA CORP	280,000	256,629	256,110	256,637		9		9			(527)	(527)	4,848	
911365-BK-9	United Rentals North Ame-SENIOR UNSECURE		10/24/2018	WELLS FARGO	11/27/2018	VARIOUS	7,765,000	7,765,000	7,729,250	7,765,000							(35,750)	(35,750)	34,055	
92826C-AF-9	VISA INC-SR UNSECURED		07/05/2018	VARIOUS	08/03/2018	U. S. BANCORP	5,700,000	5,998,873	6,015,495	5,997,717		(1,156)		(1,156)			17,778	17,778	109,184	71,846
928668-AU-6	Volkswagen Group of Amer-SENIOR UNSECURE		11/07/2018	CITIGROUP GLOBAL MAR	11/28/2018	BARCLAYS CAPITAL INC	400,000	395,520	382,645	395,527		7		7			(12,882)	(12,882)	897	
929160-AW-9	Vulcan Materials Co-SENIOR UNSECURED		02/20/2018	GOLDMAN	12/10/2018	EXCHANGE OFFER	18,000,000	17,979,660	17,978,916	17,978,916		(744)		(744)					674,450	
929176-AA-1	Vrio Finco 1 LLC / Vrio -SECURED		05/01/2018	VARIOUS	06/08/2018	CALL 101	820,000	813,572	828,200	821,752		(20)		(20)			6,448	6,448	18,066	1,176
929176-AC-7	Vrio Finco 1 LLC / Vrio -SECURED		05/01/2018	VARIOUS	06/08/2018	CALL 101	2,010,000	2,013,510	2,030,100	2,033,527		(83)		(83)			(3,427)	(3,427)	42,084	1,889
963320-AV-8	Whirlpool Corp-SENIOR UNSECURED		10/04/2018	IN-KIND TRANSFER	10/17/2018	MILLENNIUM ADVISORS	715,000	617,736	611,847	617,770		34		34			(5,923)	(5,923)	12,334	
97771*-AF-0	Wolf-Gordon, Inc. Senior Sub Note		06/30/2018	PIK BOND	08/20/2018	PREPAYMENTS W/O PENA	31,298	31,549	31,298	31,527		(22)		(22)			(229)	(229)	1,286	
06781*-AA-3	Nustef Banking USD SR SUB NT		09/30/2018	PIK BOND	10/01/2018	IN-KIND TRANSFER	17,347	16,976	17,345	17,344		11		11		358		358	438	
U74079-AM-3	Netflix Inc-SENIOR UNSECURED		10/25/2018	VARIOUS	12/14/2018	GOLDMAN SACHS INTERN	11,357,003	11,445,061	11,399,589	11,355,761		(103)		(103)		(89,196)	43,828	(45,368)	75,871	1,317
U85069-AD-2	Stillwater Mining Co-SENIOR UNSECURED		10/16/2018	VARIOUS	11/19/2018	GOLDMAN	836,000	806,875	794,790	807,059		184		184			(12,269)	(12,269)	20,930	18,035
U9033G-AA-1	UGI International LLC-SENIOR UNSECURED		10/18/2018	BNP PARIBAS	11/22/2018	CITIGROUP	2,507,120	2,536,160	2,525,923	2,507,120						(29,040)	18,803	(10,237)	7,016	
136375-CP-5	Canadian National Railwa-SENIOR UNSECURE	A	07/03/2018	VARIOUS	08/03/2018	BARCLAYS CAPITAL INC	6,200,000	5,790,752	5,840,152	5,791,708		956		956			48,444	48,444	113,779	88,857
35905B-AA-5	Frontera Energy Corp-SENIOR UNSECURED	A	06/20/2018	JP MORGAN CHASE	06/26/2018	DIRECT	850,000	840,157	841,500	840,156		(1)		(1)			1,344	1,344	229	
89346D-AF-4	TransAlta Corp-SENIOR UNSECURED	A	10/04/2018	IN-KIND TRANSFER	10/17/2018	MORGAN	340,000	335,977	334,910	335,997		20		20			(1,087)	(1,087)	6,545	
009279-AC-4	First Quantum Minerals L-SENIOR UNSECURE	A	10/16/2018	VARIOUS	11/15/2018	VARIOUS	502,000	473,135	466,233	473,356		221		221			(7,123)	(7,123)	3,185	1,516
045167-EG-4	Asian Development Bank-SENIOR UNSECURED	D	07/11/2018	VARIOUS	08/03/2018	BANK OF AMERICA CORP	6,800,000	6,647,998	6,683,788	6,648,325		327		327			35,463	35,463	87,295	58,888
05968D-AB-6	Banco Internacional del -UNSECURED	D	10/04/2018	IN-KIND TRANSFER	11/19/2018	HSBC SECURITIES INC	450,000	431,182	433,350	431,372		190		190			1,978	1,978	4,194	
05968L-AK-8	BANCOLOMBIA SA-SUBORDINATED	D	02/01/2018	EXCHANGE OFFER	04/05/2018	DTCYID	108,200	101,948	104,413	102,156		209		209			2,257	2,257	822	1,821
06120T-AA-6	Bank of China Ltd-SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	410,000	398,315	398,315	398,315									9,883	9,883
09681L-AG-5	BOC Aviation Ltd-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	376,000	383,477	383,477	383,477									7,990	7,990
24668P-AE-7	DELHAIZE GROUP SA-SENIOR UNSECURED NOTE	D	04/23/2018	DTCYID	05/16/2018	DTCYID	1,200,000	1,200,000	1,209,300	1,200,000							9,300	9,300	1,820	
279158-AC-3	Ecopetrol SA-SENIOR UNSECURED NOTE	D	10/04/2018	IN-KIND TRANSFER	12/06/2018	TENDERED	641,000	692,663	712,241	692,430		(234)		(234)			19,811	19,811	6,597	
279158-AE-9	Ecopetrol SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	774,000	819,666	819,666	819,666									3,537	3,537
279158-AJ-8	Ecopetrol SA-SR UNSECURED	D	05/01/2018	JP MORGAN SECURITIES	06/26/2018	DIRECT	600,000	681,900	660,600	681,682		(218)		(218)			(21,082)	(21,082)	12,046	5,531
40009V-AA-6	Growthpoint Properties I-SENIOR UNSECURE	D	05/01/2018	UBS - LONDON	06/26/2018	DIRECT	600,000	574,950	566,280	575,001		51		51			(8,721)	(8,721)	20,367	15,177
42953L-AA-0	Hidrovias International -SENIOR UNSECURE	D	04/24/2018	DTCYID	09/18/2018	DTCYID	500,000	500,000	508,125	500,000							8,125	8,125	8,971	
45780U-AB-0	Patrimonio EN Fideicomis-SENIOR UNSECURE	D	01/17/2018	DTCYID	12/12/2018	DTCYID	1,200,000	1,200,000	1,098,000	1,200,000							(102,000)	(102,000)	63,467	
46507N-AE-0	ISRAEL ELECTRIC CORP LTD-SECURED	D	03/27/2018	CITIGROUP GLOBAL MAR	06/05/2018	CITIGROUP GLOBAL MAR	800,000	800,000	786,800	800,000							(13,200)	(13,200)	8,178	
46507W-AB-6	Israel Electric Corp Ltd-SECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	200,000	219,404	219,404	219,404									4,392	4,392
472141-AA-8	JBS USA LUX SA / JBS USA-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	523,000	626,549	626,549	626,549									13,623	13,623
58406H-AA-8	Medco Platinum Road Pte -FIRST LIEN	C	10/16/2018	VARIOUS	10/17/2018	VARIOUS	542,000	532,515	532,515	532,517		2		2			(2)	(2)	6,352	6,199
591555-AD-9	Metinvest BV-SENIOR UNSECURED	D	01/23/2018	DTCYID	01/24/2018	DTCYID	300,000	297,534	298,500	297,534							966	966	8,525	
591555-AE-7	Metinvest BV-SENIOR UNSECURED	D	04/04/2018	ING BANK NV	06/05/2018	CITIGROUP GLOBAL MAR	900,000	891,126	884,250	891,178		52		52			(6,928)	(6,928)	8,311	
63883K-AA-3	Natura Cosmeticos SA-SENIOR UNSECURED	D	04/04/2018	ING BANK NV	06/05/2018	CITIGROUP GLOBAL MAR	800,000	788,664	785,000	788,651		(13)		(13)			(3,651)	(3,651)	23,844	
64131B-AB-9	Neuberger Berman CLO XXI-SERIES 2016-22A	D	01/25/2018	DTCYID	10/19/2018	DTCYID	1,100,000	1,100,000	1,088,750	1,100,000							(11,250)	(11,250)		
67092R-AB-4	OCP CLO 2016-12 Ltd-SERIES 2016-12A CLAS	D	01/05/2018	DEUTSCHE BANK SECURI	10/17/2018	PAYDOWN	10,445,000	10,486,780	10,445,000	10,445,000		(41,780)		(41,780)					396,429	79,597
		D	01/05/2018	DEUTSCHE BANK SECURI	10/18/2018	PAYDOWN	8,200,000	8,242,640	8,200,000	8,200,000		(42,640)		(42,640)					327,895	65,699

E15.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21	
											12	13	14	15	16						
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends	
675757-AB-4	Odebrecht Drilling Norbe-FIRST LIEN	D	01/03/2018	EXCHANGE OFFER	06/14/2018	VARIOUS	2,292,538	453,433	2,201,051	830,657				377,224			1,370,394	1,370,394	6,691		
690330-AC-1	OVERSEA-CHINESE BANKING-SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	418,000	415,726	415,726	415,726									5,774		5,774
71568P-AE-9	Perusahaan Listrik Negar-SENIOR UNSECURE	D	06/12/2018	VARIOUS	10/18/2018	VARIOUS	13,000,000	13,094,020	13,048,750	13,091,086		(2,934)		(2,934)			(42,336)	(42,336)	297,176		17,410
71645W-AQ-4	PETROBRAS GLOBAL FINANCE-SENIOR UNSECURE	D	02/14/2018	UBS - LONDON	06/26/2018	DIRECT	900,000	873,000	812,250	873,193		193		193			(60,943)	(60,943)	26,813		4,469
71647N-AN-9	PETROBRAS GLOBAL FINANCE-SENIOR UNSECURE	D	02/16/2018	VARIOUS	06/26/2018	DIRECT	3,630,000	3,511,195	3,048,656	3,511,504		309		309			(462,849)	(462,849)	138,832		52,893
71647N-AQ-2	PETROBRAS GLOBAL FINANCE-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	899,000	1,021,023	1,001,841	1,019,717		(1,305)		(1,305)			(17,877)	(17,877)	35,160		27,892
716540-BR-2	PETROLEOS MEXICANOS-SR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	189,877	189,877	189,877									3,072		3,072
716540-CB-6	PETROLEOS MEXICANOS-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	219,189	219,189	219,189									2,874		2,874
73181L-AA-9	Polys Finance PLC-SENIOR UNSECURED	D	01/24/2018	DTCYID	09/26/2018	CA CASH CLOSE	1,300,000	1,300,000	1,202,500	1,202,500		(97,500)		(97,500)					40,224		
76706A-AA-2	Rio Energy SA / UGEN SA -SECURED	D	01/25/2018	JP MORGAN CHASE	07/26/2018	VARIOUS	9,437,000	9,372,545	7,621,338	9,375,948		3,402		3,402			(1,754,609)	(1,754,609)	313,111		
781467-AB-1	Rumo Luxembourg Sarl-SENIOR UNSECURED	D	01/10/2018	DEFAULT	03/21/2018	CITIGROUP GLOBAL MAR	400,000	397,176	395,000	397,195		19		19			(2,195)	(2,195)	4,243		
78440P-AE-8	SK Telecom Co Ltd-SENIOR UNSECURED	D	04/09/2018	DTCYID	11/05/2018	DTCYID	1,500,000	1,496,745	1,478,850	1,497,052		307		307			(18,202)	(18,202)	31,406		
78520L-AB-6	SABIC Capital II BV-SENIOR UNSECURED	D	10/03/2018	NOMURA INTL PLC	12/20/2018	GOLDMAN SACHS INTERN	10,000,000	9,975,000	10,000,000	9,974,799		(201)		(201)			25,201	25,201	92,500		
87927Y-AA-0	Telecom Italia SpA/Milan-SENIOR UNSECURE	D	04/11/2018	STIFEL NICOLAUS	10/05/2018	GOLDMAN	545,000	559,988	524,633	558,935		(1,052)		(1,052)			(34,302)	(34,302)	24,887		10,677
87938W-AI-3	Telefonica Emisiones SAU-SENIOR UNSECURE	D	02/27/2018	GOLDMAN	06/22/2018	GOLDMAN	365,000	365,000	333,533	365,000							(31,467)	(31,467)	5,459		
88032W-AH-9	Tencent Holdings Ltd-SENIOR UNSECURED	D	01/11/2018	DTCYID	08/01/2018	DTCYID	200,000	199,918	185,020	199,917		(1)		(1)			(14,897)	(14,897)	4,230		
88167A-AD-3	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D	02/27/2018	GOLDMAN SACHS INTERN	06/26/2018	DIRECT	495,000	432,655	433,506	435,839		3,185		3,185			(2,334)	(2,334)	5,968		1,579
88167A-AF-8	TEVA PHARMACEUTICALS NE-SENIOR UNSECURED	D	06/05/2018	VARIOUS	06/26/2018	DIRECT	2,260,000	1,678,437	1,649,511	1,680,415		1,977		1,977			(30,904)	(30,904)	58,778		34,625
91911T-AH-6	VALE OVERSEAS LIMITED GTD NT	D	02/14/2018	JEFFERIES & CO	06/26/2018	DIRECT	60,000	70,950	66,972	70,828		(122)		(122)			(3,856)	(3,856)	2,464		974
91911T-AK-9	VALE OVERSEAS LIMITED-SENIOR UNSECURED	D	02/14/2018	JEFFERIES & CO	06/26/2018	DIRECT	230,000	273,700	258,888	273,316		(384)		(384)			(14,428)	(14,428)	9,927		4,217
98420E-AC-9	XLIT LTD GTD SUB NT	D	04/18/2018	BARCLAYS CAPITAL INC	12/19/2018	MILLENNIUM ADVISORS	400,000	401,320	394,764	401,194		(126)		(126)			(6,430)	(6,430)	12,905		989
A29866-AA-7	JBS Investments GmbH-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/29/2018	VARIOUS	418,000	427,723	426,912	431,614		(160)		(160)			(4,702)	(4,702)	19,753		15,118
AP1575-61-6	Geopark Ltd-FIRST LIEN	D	02/06/2018	EXCHANGE OFFER	10/11/2018	DTCYID	1,300,000	1,950,000	1,302,600	1,825,338		(124,662)		(124,662)			(522,738)	(522,738)	90,133		
AQ3069-59-0	Petroamazonas EP-SENIOR UNSECURED	D	02/06/2018	CITIGROUP GLOBAL MAR	06/26/2018	DIRECT	500,000	482,000	452,500	484,757		2,757		2,757			(32,257)	(32,257)	8,993		450
ARS374-09-5	Teva Pharmaceutical Fina-SENIOR UNSECURE	B	03/12/2018	NOMURA INTL PLC	05/10/2018	CITIGROUP GLOBAL MAR	428,796	454,385	442,196	438,738		(248)		(248)			(15,399)	(15,399)	3,216		
AS9612-80-3	InterXion Holding NV-SENIOR UNSECURED	B	10/31/2018	EXCHANGE OFFER	11/08/2018	GOLDMAN SACHS INTERN	1,146,400	1,203,961	1,208,019	1,179,859		(211)		(211)			(23,891)	(23,891)	21,782		
F43596-AJ-8	OIA CGM SA-SENIOR UNSECURED	B	10/22/2018	BARCLAYS CAPITAL INC	12/14/2018	VARIOUS	4,542,502	4,608,000	4,499,291	4,542,500							(65,500)	(65,500)	144,437		98,208
F6076*-AA-8	Marle SAS Maurice Euro CI A Bonds	B	06/22/2018	PIK NOTE BUY UP	06/22/2018	CORPORATE ACTION	53,696	52,153	53,696	52,153							1,543	1,543			
GOR34E-AA-1	Alpha Star Holding Ltd-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	209,000	208,582	208,639	208,586		4		4			53	53	260		202
G12370-AA-6	Eurotorg LLC Via Bonitro-SENIOR UNSECURE	D	10/16/2018	VARIOUS	11/14/2018	VARIOUS	1,351,000	1,378,285	1,362,897	1,376,217		(2,069)		(2,069)			(13,320)	(13,320)	71,749		37,301
G1315R-AD-3	BRASKEM FINANCE LTD-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	216,054	216,054	216,054									33		33
G1987Z-AB-6	CDBL FUNDING 1-SR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	203,708	203,708	203,708									3,306		3,306
G20769-AA-6	Central China Real Estat-FIRST LIEN	D	04/19/2018	VARIOUS	06/26/2018	DIRECT	470,000	460,600	452,106	461,106		506		506			(9,000)	(9,000)	9,420		4,073
G2119W-AF-3	CHINA EVERGRANDE GROUP-SECURED	D	05/02/2018	HSBC BANK PLC IN LON	06/26/2018	DIRECT	250,000	235,500	233,367	235,864		364		364			(2,497)	(2,497)	9,271		6,563
G2140A-AC-1	CIFI HOLDINGS GROUP-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	209,000	211,544	211,590	211,536		(8)		(8)			54	54	5,984		5,984
G2140A-AJ-6	CIFI Holdings Group Co L-SENIOR UNSECURE	D	06/08/2018	UBS - LONDON	06/26/2018	DIRECT	220,000	218,350	218,933	218,366		16		16			567	567	2,647		2,059
G2300T-AA-0	Comunicaciones Celulares-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	376,000	385,870	386,716	385,854		(16)		(16)			862	862	5,170		5,026
G2583X-AA-9	CSN ISLANDS XI CORP-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	215,000	215,406	212,673	215,337		(69)		(69)			(2,665)	(2,665)	6,318		3,547
G27649-AG-0	Digicel Ltd-SENIOR UNSECURED	D	02/14/2018	NOMURA INTL PLC	06/26/2018	DIRECT	1,300,000	1,247,220	1,092,702	1,250,234		3,014		3,014			(157,532)	(157,532)	71,906		40,219
G2941D-AC-6	DTEK FINANCE PLC-1ST LIEN	D	01/01/2018	PIK BOND	04/26/2018	JP MORGAN SECURITIES	60,178	64,025	63,939	63,754		(271)		(271)			186	186	2,138		
G3165U-AB-7	C&W Senior Financing DAC-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	211,613	211,613	211,613									218		218
G4035E-AA-1	GOLD FIELDS OROGEN HOLD BVI-NT REGS	D	10/16/2018	VARIOUS	11/14/2018	VARIOUS	836,000	833,910	832,907	833,936		26		26			(1,030)	(1,030)	2,717		1,019
G55555-AG-4	Logan Property Holdings -SENIOR UNSECURE	D	05/02/2018	CREDIT SUISSE AG DUB	06/26/2018	DIRECT	470,000	418,888	417,556	420,148		1,260		1,260			(2,591)	(2,591)	14,599		11,035

E15.3

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
G5555-AJ-8	Logan Property Holdings -SENIOR UNSECURE	D	05/02/2018	HSBC BANK PLC IN LON	06/26/2018	DIRECT	450,000	441,900	442,192	442,266		366		366			(74)	(74)	8,686	4,542
G5635P-AF-6	Longfor Properties Co Lt-SENIOR UNSECURE	D	05/09/2018	CITIGROUP GLOBAL MAR	06/26/2018	DIRECT	460,000	425,948	425,904	426,315		367		367			(411)	(411)	9,200	6,513
G6463B-AB-1	New Metro Global Ltd-SENIOR UNSECURED Ooredoo International Fi-SENIOR UNSECURE	D	10/16/2018		10/16/2018	VARIOUS	669,000	664,972	665,082	665,039		68		68		42	42	5,826	5,649	
G6753Y-AA-2	PETRA DIAMONDS US TREAS-2ND LIEN	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	418,000	395,821	395,821	395,821									4,964	4,964
G7028A-AB-9	Powerlong Real Estate Ho-FIRST LIEN	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	544,000	529,720	529,720	529,720									18,077	18,077
G72005-AJ-3	QIB Sukuk Ltd-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	199,330	199,330	199,358		28		28			(29)	(29)	3,074	3,005
G7304Z-AB-9	Sable International Fina-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/22/2018	VARIOUS	836,000	816,262	815,681	816,368		106		106			(687)	(687)	11,064	10,808
G77636-AB-7	SHIMAO PROPERTY HLDGS-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	418,000	438,131	440,192	438,091		(40)		(40)			2,101	2,101	6,147	5,987
G81043-AG-9	TENGI ZHOEVROIL FIN CO IN-SECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	209,000	218,803	218,724	218,781		(23)		(23)			(57)	(57)	3,306	3,209
G87602-AA-9	Times China Holdings Ltd-FIRST LIEN	D	05/02/2018	BNP PARIBAS	06/26/2018	DIRECT	430,000	419,680	414,966	420,213		533		533			(5,247)	(5,247)	11,870	7,988
G8904A-AF-7	Telford Offshore Ltd-TELFORD OFFSHORE LT	D	06/25/2018	VARIOUS	06/26/2018	VARIOUS	1,429,525	1,369,325	1,115,918	1,371,800		2,474		2,474			(255,882)	(255,882)	3,043	
G8T524-AB-9	TRANSNEFT (TRANS CAP INV)-SENIOR UNSECURE	D	01/11/2018	DEFAULT	08/07/2018	MATURITY	200,000	206,500	200,000	200,000		(6,500)		(6,500)					17,400	7,685
G90039-AD-3	Tullow Oil PLC-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	418,000	418,606	418,606	418,602		(4)		(4)			4	4	610	73
G91235-AB-0	Cia Brasileira de Alumin-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	209,000	218,645	218,645	218,624		(21)		(21)			21	21	509	431
G9400P-AA-2	Yuzhou Properties Co Ltd-FIRST LIEN	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	193,523	193,523	193,523									2,822	2,822
G9884T-AD-3	Yuzhou Properties Co Ltd-FIRST LIEN	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	335,000	333,337	333,337	333,337									11,395	11,395
G9884T-AG-6	Altice Financing SA-FIRST LIEN	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	753,000	751,118	751,118	751,118									2,079	2,079
L0178W-AF-9	Consolidated Energy Fina-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	217,099	217,099	217,099									4,830	4,830
L19570-AD-2	CSN RESOURCES SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	642,000	618,102	611,645	618,460		358		358			(6,815)	(6,815)	11,243	8,661
L21779-AA-8	Evraz Group SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	376,000	399,895	399,500	399,840		(55)		(55)			(340)	(340)	6,893	6,721
L34396-AA-5	GoI Finance Inc-SENIOR UNSECURED	D	05/01/2018	VARIOUS	06/26/2018	DIRECT	650,000	638,373	517,075	638,678		306		306			(121,603)	(121,603)	24,646	11,103
L4441R-AA-4	Klabin Finance SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	376,000	340,750	340,750	340,750									1,375	1,375
L5828L-AB-5	MHP SE-SENIOR UNSECURED	D	05/01/2018	JEFFERIES & CO	06/26/2018	DIRECT	600,000	616,800	606,300	616,406		(394)		(394)			(10,106)	(10,106)	29,192	22,346
L6366M-AF-0	Millicom International C-SENIOR UNSECURE	D	10/16/2018	VARIOUS	11/15/2018	VARIOUS	1,586,000	1,466,888	1,446,558	1,467,690		802		802			(21,132)	(21,132)	29,984	22,362
L6388G-AB-6	Minerva Luxembourg SA-SENIOR UNSECURED	D	02/01/2018	CITIGROUP GLOBAL MAR	06/26/2018	DIRECT	300,000	291,150	258,375	291,434		284		284			(33,059)	(33,059)	9,155	2,252
L78043-AD-5	JEFFERIES & CO	D	05/02/2018		06/26/2018	DIRECT	650,000	638,495	594,945	638,686		191		191			(43,741)	(43,741)	7,403	2,591
L7877X-AB-5	QGOG CONSTELLATION SA-1ST LIEN	D	05/16/2018	VARIOUS	05/16/2018	NOMURA INTL PLC	152,766	65,661	65,689	65,661							28	28	344	338
L79090-AA-1	Rumo Luxembourg Sarl-SENIOR UNSECURED	D	10/16/2018	VARIOUS	11/15/2018	VARIOUS	418,000	435,765	434,198	435,598		(167)		(167)			(1,400)	(1,400)	7,150	5,737
L79090-AB-9	Rumo Luxembourg Sarl-SENIOR UNSECURED	D	03/21/2018	CITIGROUP GLOBAL MAR	06/26/2018	DIRECT	400,000	395,200	363,850	395,369		169		169			(31,519)	(31,519)	10,314	4,243
L8800M-AF-0	SEVERSTAL (STEEL CAP)-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	213,556	213,556	213,556									6,131	6,131
M1995Y-AG-1	CBQ Finance Ltd-SENIOR UNSECURED	D	05/30/2018	VARIOUS	09/04/2018	VARIOUS	16,000,000	15,895,320	16,097,300	15,899,124		3,804		3,804			198,176	198,176	219,167	3,889
M25354-AC-1	CBQ Finance Ltd-SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	418,000	430,358	430,358	430,358									12,888	12,888
M2851H-AA-2	DP WORLD LTD-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	420,000	474,466	474,466	474,466									8,311	8,311
M4752S-DU-7	Turkiye Garanti Bankasi -SR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	203,865	203,865	203,865									4,936	4,936
M4752S-EV-4	Turkiye Garanti Bankasi -SENIOR UNSECURE	B	10/16/2018	VARIOUS	10/16/2018	VARIOUS	144,725	142,974	142,974	142,974									1,338	1,338
M63751-AB-3	KOC Holding AS-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	418,000	389,785	389,785	389,785									1,890	1,890
M7871F-AA-1	Petkim Petrokimya Holdin-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	216,000	198,277	198,277	198,277									2,820	2,820
M8222M-AA-0	Ras Laffan Liquefied Nat-SECURED	D	10/16/2018	VARIOUS	10/23/2018	VARIOUS	500,000	539,000	539,500	538,928		(72)		(72)			572	572	1,662	1,297
M8933F-AP-2	Turkiye Is Bankasi-SR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	460,000	455,382	455,618	455,433		51		51			185	185	12,439	12,299
M8933F-DJ-3	Turkiye Is Bankasi-SR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	418,000	388,740	388,740	388,740									9,637	9,637
M8973M-AD-5	Turkiye Sinai Kalkinma B-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	335,000	314,733	316,324	314,837		104		104			1,487	1,487	8,403	8,303
M90345-AA-3	Turkiye Sise ve Cam Fabr-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	251,000	242,694	242,694	242,694									4,652	4,652
M9037B-KF-5	TURKIYE VAKIFLAR BANKASI-SECURED	B	10/16/2018	VARIOUS	10/18/2018	VARIOUS	240,475	231,160	230,339	229,743		22		22		(1,438)	596	(842)	2,613	2,598

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
M9T40N-AB-3	Turk Telekomunikasyon AS-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	314,000	307,638	308,544	307,690				51			855	855	3,892	3,827
	Equate Petrochemical BV-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	293,000	286,071	286,071	286,071									5,638	5,638
N30420-AA-6	GTH FINANCE BV-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	376,000	391,200	391,200	391,200									12,873	12,873
N3783A-AA-7	InterXion Holding NV-SENIOR UNSECURED	B	09/18/2018	BAMLINTLTD	10/31/2018	EXCHANGE OFFER	1,130,600	1,204,688	1,203,961	1,203,961			(727)	(727)					20,297	14,198
N47279-AJ-8	MARFRIG HOLDINGS EUROPE -SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	628,000	637,953	634,803	637,455		(497)		(497)			(2,653)	(2,653)	21,130	15,063
N54468-AF-5	METINVEST BV-SECURED	D	02/14/2018	CREDIT SUISSE SEC (E	04/19/2018	CA_CASH_CLOSE	793,246	814,901	797,212	797,212		(17,689)		(17,689)					59,121	5,370
N5657T-AE-6	Metinvest BV-SENIOR UNSECURED	D	06/05/2018	CITIGROUP GLOBAL MAR	06/26/2018	DIRECT	800,000	785,400	758,920	785,436		36		36			(26,516)	(26,516)	11,900	8,311
N5657T-AK-2	Metinvest BV-SENIOR UNSECURED	D	10/16/2018	VARIOUS	11/14/2018	VARIOUS	1,318,000	1,283,136	1,256,809	1,283,384		248		248			(26,574)	(26,574)	18,325	13,294
N5657T-AL-0	Nostrum Oil & Gas Financ-SENIOR UNSECURED	D	05/01/2018	CITIGROUP GLOBAL MAR	05/14/2018	BNP PARIBAS	820,000	838,040	822,460	837,865		(175)		(175)			(15,405)	(15,405)	20,227	17,858
N64884-AB-0	Teva Pharmaceutical Fina-SENIOR UNSECURED	B	05/10/2018	CITIGROUP GLOBAL MAR	05/17/2018	EXCHANGE OFFER	424,980	442,410	442,395	442,395		(16)		(16)					3,376	3,216
N8539T-AD-6	Teva Pharmaceutical Fina-SENIOR UNSECURED	B	10/16/2018	VARIOUS	10/16/2018	VARIOUS	1,320,499	1,393,069	1,384,674	1,382,545		(242)		(242)		(10,282)	2,128	(8,154)	11,664	9,283
N8539T-AH-7	VEON Holdings BV-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	251,000	239,173	239,173	239,173									4,142	4,142
N9353V-AJ-9	VTR Finance BV-FIRST LIEN	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	878,000	900,266	899,889	900,249		(17)		(17)			(360)	(360)	15,426	15,258
N9417J-AB-7	Axtel SAB de CV-SENIOR UNSECURED	D	10/16/2018	VARIOUS	11/15/2018	VARIOUS	1,268,000	1,301,433	1,196,694	1,298,892		(2,540)		(2,540)			(102,199)	(102,199)	45,888	19,379
P0606P-AC-9	Banco de Bogota SA-SUBORDINATED	D	05/01/2018	STIFEL NICOLAUS EURO	06/26/2018	DIRECT	350,000	363,895	356,125	363,671		(224)		(224)			(7,546)	(7,546)	13,611	10,391
P09252-AK-6	BANCO DE BOGOTA SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	293,000	281,098	281,098	281,098									2,599	2,599
P09252-AM-2	BANCO DE BOGOTA SA-SENIOR UNSECURED	D	05/01/2018	NOMURA INTL PLC	06/26/2018	DIRECT	400,000	436,352	430,000	435,357		(995)		(995)			(5,357)	(5,357)	6,028	1,464
P2253T-UK-6	Cemex SAB de CV-FIRST LIEN	D	05/01/2018	NOMURA INTL PLC	06/26/2018	DIRECT	400,000	436,352	430,000	435,357		(995)		(995)			(5,357)	(5,357)	6,028	1,464
P2253T-UK-6	CENT ELET BRASILEIRAS SA-SENIOR UNSECURED	D	03/29/2018	DTCYID	04/20/2018	DTCYID	500,000	518,750	517,500	517,978		(772)		(772)			(478)	(478)	7,925	6,016
P22854-AF-3	Cia Brasileira de Alumim-SENIOR UNSECURED	D	10/16/2018	VARIOUS	11/15/2018	VARIOUS	628,000	612,300	608,375	612,418		118		118			(4,043)	(4,043)	11,228	9,860
P3059U-AA-8	Elementia SAB de CV-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	200,849	200,849	200,849									2,906	2,906
P3713L-AA-6	Banco do Brasil SA/Cayma-SENIOR UNSECURED	D	05/02/2018	JEFFERIES & CO	06/26/2018	DIRECT	880,000	848,760	812,240	849,363		603		603			(37,123)	(37,123)	18,202	12,323
P3772W-AH-5	Fermaca Enterprises S de-FIRST LIEN	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	510,411	525,086	525,086	525,086									1,446	1,446
P39198-AA-7	GNL Quintero SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	206,388	206,388	206,388									2,045	2,045
P4909L-AA-8	Grupo Idesa SA de CV-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	463,000	399,921	399,921	399,921									11,951	11,951
P4954W-AA-8	Patrimonio EN Fideicomis-SENIOR UNSECURED	D	06/05/2018	CITIGROUP GLOBAL MAR	06/26/2018	DIRECT	800,000	787,200	789,672	787,244		44		44			2,428	2,428	10,606	8,178
P56243-AD-3	Mexico City Airport Trus-SECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	200,000	176,378	176,378	176,378									2,322	2,322
P6629M-AD-4	Nexa Resources Peru SAA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	606,000	598,431	598,431	598,431									1,401	1,401
P67848-AA-2	Nemak SAB de CV-SENIOR UNSECURED	B	10/16/2018	VARIOUS	11/14/2018	VARIOUS	477,711	497,540	486,859	490,996		(121)		(121)		(6,423)	(4,137)	(10,560)	1,975	1,354
P71340-AA-4	Pampa Energia SA-SENIOR UNSECURED	D	03/28/2018	UBS - LONDON	06/26/2018	DIRECT	400,000	413,708	372,000	413,364		(344)		(344)			(41,364)	(41,364)	12,667	5,750
P7464E-AA-4	Pampa Energia SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	293,000	270,351	270,351	270,351									5,102	5,102
P7873P-AE-6	Rio Energy SA / UGEN SA -SECURED	D	05/01/2018	VARIOUS	06/26/2018	DIRECT	550,000	543,151	467,060	543,308		158		158			(76,248)	(76,248)	15,230	2,635
P8512U-AA-3	Transportadora de Gas In-SR UNSECURED	D	10/16/2018	VARIOUS	11/01/2018	VARIOUS	836,000	851,683	851,784	859,245		(381)		(381)			(7,461)	(7,461)	12,376	3,442
P83077-AA-6	Transportadora de Gas de-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	251,000	239,078	239,078	239,078									7,718	7,718
P9308R-AZ-6	YPF SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	502,000	506,869	506,869	506,869									2,726	2,726
P989MJ-BG-5	YPF SA-SENIOR UNSECURED	D	03/21/2018	CITIGROUP GLOBAL MAR	06/26/2018	DIRECT	900,000	895,500	804,375	895,644		144		144			(91,269)	(91,269)	26,931	10,773
P989MJ-BL-4	YPF SA-SENIOR UNSECURED	D	02/14/2018	VARIOUS	06/26/2018	DIRECT	1,000,000	909,180	800,000	909,575		395		395			(109,575)	(109,575)	37,139	11,006
P989MJ-BN-0	FirstRand Bank Ltd-SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	293,000	284,943	284,943	284,943									8,800	8,800
S29371-GG-0	Nexi Capital SpA-SECURED	B	09/03/2018	VARIOUS	11/14/2018	VARIOUS	3,383,702	3,491,544	3,392,159	3,395,808		(595)		(595)		(95,142)	(3,648)	(98,790)	69,013	42,648
T6S18H-AA-6	Nexi Capital SpA-SECURED	B	08/16/2018	CITIGMUK	11/08/2018	CITIGMUK	8,024,799	7,930,874	8,060,912	8,015,310		544		544		83,892	45,602	129,494	142,819	74,132
T6S18H-AB-4	Turkish Airlines 2015-1 -SECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	262,961	232,247	232,247	232,247									951	951
U0567P-AA-4	EASTERN & SOUTHERN AFRIC-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	209,489	209,489	209,489									999	999
V0000J-AC-8	HTA GROUP LTD/MAURITIUS-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	324,000	332,910	332,910	332,889		(21)		(21)			21	21	3,285	3,121
V4256B-AA-2	OCF SA-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	219,097	219,097	219,097									6,825	6,825
V6560A-AD-4	Zenith Bank PLC-SENIOR UNSECURED	D	03/29/2018	BROWN BROS	07/25/2018	CITIGROUP GLOBAL MAR	1,400,000	1,446,389	1,417,500	1,443,283		(3,106)		(3,106)			(25,785)	(25,785)	67,973	35,564

E15.5

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21	
											12	13	14	15	16						
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/(Decrease)	Current Year's (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (12 + 13 - 14)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends	
X7330V-AA-9	RESIDOMO SRC-SECURED	B	10/16/2018	VARIOUS	11/14/2018	VARIOUS	285,713	292,018	288,265	288,221				(27)		(3,770)	45	(3,725)	423	27	
Y06942-UF-4	Bank of East Asia Ltd/Th-SUBORDINATED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	209,000	203,738	203,638	203,741				3			(103)	(103)	3,832	3,785	
Y1R029-BG-4	KAZKOMMERTSBANK JSC-SENIOR UNSECURED	D	05/24/2018	VARIOUS	06/26/2018	DIRECT	590,000	589,705	587,935	589,744				39			(1,809)	(1,809)	15,864	12,523	
Y202ER-AD-2	ABJA Investment Co Pte L-SENIOR UNSECURE	D	01/19/2018	AUSTRALIA & NEW ZEAL	05/31/2018	BARCLAYS CAPITAL INC	2,000,000	1,986,800	1,802,500	1,987,012				212			(184,512)	(184,512)	39,361		
Y39656-AC-0	Industrial & Commercial -SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	210,515	210,515	210,515									708	708	
Y44680-CF-4	JSW STEEL LTD SR UNSECURED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	409,000	408,489	408,286	408,492				3			(206)	(206)	8,419	8,311	
Y48585-DU-7	KEB Hana Bank-SUBORDINATED NOTE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	418,000	410,531	410,531	410,531									99	99	
Y62014-AA-6	Nakilat Inc-FIRST LIEN	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	418,000	460,929	460,929	460,929									7,467	7,467	
Y62526-AA-9	National Savings Bank-SENIOR UNSECURED	D	01/05/2018	DTCYID	09/18/2018	MATURITY	400,000	413,200	400,000	400,000				(13,200)					35,500	10,946	
Y7140V-AA-8	Saka Energi Indonesia PT-SENIOR UNSECURE	D	10/16/2018	VARIOUS	11/28/2018	VARIOUS	836,000	778,525	768,075	779,059				534			(10,984)	(10,984)	18,911	16,638	
Y73650-LE-7	Rural Electrification Co-SENIOR UNSECURE	D	06/27/2018	GOLDMAN SACHS INTERN	10/31/2018	VARIOUS	10,000,000	9,637,200	9,081,500	9,648,316				11,116			(566,816)	(566,816)	282,639	105,990	
Y7578E-AA-2	Press Metal Labuan Ltd-SENIOR UNSECURED	D	10/16/2018	VARIOUS	10/23/2018	VARIOUS	836,000	796,802	795,919	796,916				114			(997)	(997)	19,005	18,503	
Y8T6JP-AA-4	Southern Gas Corridor CJ-SENIOR UNSECURE	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	251,000	274,309	274,309	274,309									1,055	1,055	
Y93541-AA-1	Vanke Real Estate Hong K-SENIOR UNSECURE	D	04/02/2018	STATE STREET BANK AN	07/25/2018	GOLDMAN SACHS INTERN	300,000	284,063	277,680	284,473				411			(6,793)	(6,793)	8,546	4,803	
3899999. Subtotal - Bonds - Industrial and Miscellaneous (Unaffiliated)							407,714,129	403,313,588	400,630,390	403,575,523				107,863	52,670		(226,364)	(2,945,134)	(3,171,498)	9,302,261	2,666,705
05533U-AF-5	BBVA Bancomer SA/Texas-SUBORDINATED	D	01/11/2018	DEFAULT	03/21/2018	CITIGROUP GLOBAL MAR	300,000	298,515	290,250	298,504				(11)			(8,254)	(8,254)	2,819		
G012B1-AA-1	AHLI UNITED SUKUK LTD-JR SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	209,000	206,720	206,720	206,720									5,460	5,460	
G0226H-AC-7	Alfa Bank AO Via Alfa Bo-ALFA BANK	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	226,000	212,461	212,461	212,461									3,666	3,666	
M7301X-AA-2	NBK TIER 1 FNC LTD-JUNIOR SUBORDINATED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	314,000	315,915	315,845	315,910				(5)			(65)	(65)	451	351	
M7S27Z-SN-3	NATIONAL BK OF ABU DHABI-JUNIOR SUBORDIN	D	10/16/2018	VARIOUS	12/13/2018	VARIOUS	878,000	873,610	875,805	873,644				34			2,161	2,161	19,142	15,237	
P1400B-AD-1	BANCO MERC DE NORTE	D	10/16/2018	VARIOUS	11/14/2018	VARIOUS	586,000	591,860	578,675	591,796				(64)			(13,121)	(13,121)	2,798	1,119	
P1400B-AE-9	Banco Mercantil del Nort-JR SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	418,000	424,274	424,274	424,274									885	885	
P16259-AM-8	BBVA Bancomer SA/Texas-SUBORDINATED	D	03/21/2018	CITIGROUP GLOBAL MAR	06/26/2018	DIRECT	300,000	290,400	262,500	290,523				123			(28,023)	(28,023)	6,791	2,819	
P4949B-AN-4	Grupo Bimbo SAB de CV-SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	251,000	252,255	252,255	252,255									3,692	3,692	
P5R6DP-AA-8	Hau Unibanco Holding SA-JR SUBORDINATED	D	10/16/2018	VARIOUS	10/16/2018	VARIOUS	346,000	331,148	331,148	331,148									7,300	7,300	
Y1R019-AA-9	CHINA LIFE INSURANCE-SUBORDINATED	D	10/16/2018	VARIOUS	10/18/2018	VARIOUS	481,000	470,189	470,115	470,189							(74)	(74)	5,612	5,505	
4899999. Subtotal - Bonds - Hybrid Securities							4,309,000	4,267,347	4,220,048	4,267,424				77				(47,376)	(47,376)	58,616	46,034
05618E-AA-9	Barings Capital Finance LLC - Investment		12/14/2018	DIRECT	12/27/2018	DIRECT	2,645,650,000	2,645,650,000	2,645,650,000	2,645,650,000									6,708,599		
05618E-IM-0	Barings Capital Finance LLC - Investment		12/07/2018	DIRECT	12/11/2018	DIRECT	278,050,000	278,050,000	278,050,000	278,050,000											
47231E-AE-0	JEFFERIES FINANCE LLC-REVOLVING CR FACIL		05/21/2018	DIRECT	05/25/2018	DIRECT	360,855,000	360,855,000	360,855,000	360,855,000										532,050	
57628H-AH-1	MASSMUTUAL ASSET FINANCE LLC Senior Secu		07/20/2018	DIRECT	12/27/2018	DIRECT	336,494,160	336,494,160	336,494,160	336,494,160										1,930,613	
72403*-AH-5	PIONEERS GATE LLC 2016-2 MPOE Note		03/23/2018	DIRECT	03/29/2018	DIRECT	1,640,323	1,640,323	1,640,323	1,640,323											
72403*-AJ-1	PIONEERS GATE LLC 2016-3 Insignia Jet No		03/05/2018	DIRECT	06/28/2018	DIRECT	64,209,087	64,209,087	64,209,087	64,209,087										1,029,721	
72403*-AL-6	PIONEERS GATE LLC 2016-4 Solar Tetris Wa		03/30/2018	DIRECT	04/20/2018	DIRECT	11,129,973	11,129,973	11,129,973	11,129,973										75,431	
72403*-AP-7	PIONEERS GATE LLC 2017-5 CERBERUS		08/13/2018	DIRECT	08/17/2018	DIRECT	39,280,000	39,280,000	39,280,000	39,280,000										451,002	
72403*-AR-3	PIONEERS GATE LLC 2017-3 AEF (Amur)		10/04/2018	DIRECT	10/17/2018	DIRECT	102,606,531	102,606,531	102,606,531	102,606,531										1,061,679	
72403*-AS-1	PIONEERS GATE LLC 2017-6 FS FUNDING		10/29/2018	DIRECT	11/08/2018	DIRECT	111,800,000	111,800,000	111,800,000	111,800,000										1,793,036	
72403*-AX-0	PIONEERS GATE LLC 2018-1 MPOF Note		09/26/2018	DIRECT	10/30/2018	DIRECT	11,232,581	11,232,581	11,232,581	11,232,581										144,747	
72403*-AZ-5	PIONEERS GATE LLC 2018-5 OPTN (E11ington		12/10/2018	DIRECT	12/12/2018	DIRECT	495,251	495,251	495,251	495,251										861	
N7516H-AA-1	ROCKALL CLO BV EURO CL VF-1 SR SECQ VAR	B	10/01/2018	DIRECT	12/17/2018	VARIOUS	5,107,948	5,206,050	5,107,950	5,107,950										12,903	

E156

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
5599999	Subtotal - Bonds - Parent, Subsidiaries and Affiliates						3,968,550,854	3,968,648,956	3,968,550,856	3,968,550,856						(98,100)		(98,100)	13,740,642	
00438B-AA-5	Accruent, LLC 1L DDTL (May 20		06/11/2018	BANK LOANS BARINGS	09/06/2018	CA_CASH_CLOSE	5,987,719	5,987,719	5,987,719	5,987,719									65,635	
00449#-AL-9	Accruent, LLC 1L (May 2018)		05/31/2018	BANK LOANS BARINGS	09/06/2018	CA_CASH_CLOSE	8,451,981	8,325,202	8,451,981	8,451,981		126,780		126,780					301,290	
00517*-AA-4	ADA CARBON SOLUTIONS LLC 5 YEAR SENIOR S		06/27/2018	PIK NOTE BUY UP	12/07/2018	CALL 48.60771693	2,637,873	2,637,872	1,282,210	1,282,210		(36,727)	1,318,936	(1,355,663)						
01260H-AE-5	Albaugh, LLC Term Loan B		03/12/2018	BANK LOANS BARINGS	12/21/2018	VARIOUS	759,332	747,434	747,086	757,448		14		14			(10,363)	(10,363)	26,876	
04016Y-AB-5	Argon Medical Devices First Lien TL B		02/06/2018	BANK LOANS BARINGS	12/10/2018	VARIOUS	445,293	443,066	448,062	443,078		11		11			4,984	4,984	20,844	
04765B-AG-7	Atkore International Gro TL B		02/09/2018	BANK LOANS BARINGS	11/26/2018	VARIOUS	783,042	783,042	783,042	783,042									23,976	
06832E-AB-6	Barracuda Networks, Inc. 1st Lien TL		02/22/2018	BANK LOANS BARINGS	12/04/2018	VARIOUS	416,852	415,809	417,888	415,815		5		5			2,074	2,074	16,174	
08511L-AQ-1	Berlin Packaging LLC First Lien Term		05/23/2018	BANK LOANS BARINGS	11/09/2018	VARIOUS	2,550,000	2,543,625	2,550,763	2,543,641		16		16			7,122	7,122	60,079	
08579J-AZ-5	Berry Global Inc.		05/29/2018	BANK LOANS BARINGS	11/29/2018	VARIOUS	2,818,564	2,822,454	2,815,481	2,821,968		(486)		(486)			(6,486)	(6,486)	54,119	
09859#-AC-6	Boomerang Tube, LLC Exit TLB		10/31/2018	VARIOUS	11/01/2018	BANK LOANS BARINGS	54,233	37,550	44,840	54,233							(9,393)	(9,393)		
09859#-AD-4	Boomerang Tube LLC Subordinated No		10/31/2018	VARIOUS	11/01/2018	BANK LOANS BARINGS	37,206	32,934	7,989	8,013			29,192	(29,192)			(25)	(25)		
10801X-AG-2	Brickman Acquisition LLC New TL B		08/23/2018	BANK LOANS BARINGS	11/20/2018	VARIOUS	3,000,000	2,992,500	3,000,000	2,992,519		19		19			7,481	7,481	34,851	
12602#-AA-3	CFS FUNDING TRUST I Floating Rate V		06/25/2018	BANK LOANS BARINGS	06/25/2018	VARIOUS	30,002,587	29,421,337	29,421,337	29,421,336		4,827		4,827		(4,827)				
12684H-AD-2	CVS Holdings I, LP Second Lien TL		02/23/2018	BANK LOANS BARINGS	12/07/2018	BANK LOANS BARINGS	496,364	493,882	493,262	493,882							(620)	(620)	32,940	
12738V-AA-6	Cadence, Inc. First Lien Term		05/21/2018	BANK LOANS BARINGS	11/21/2018	BANK LOANS BARINGS	2,459,086	2,409,904	2,409,904	2,409,904							(9,836)	(9,836)	73,291	
14441J-AB-2	Carr Management Inc. - Revolver		12/06/2018	BANK LOANS BARINGS	12/28/2018	VARIOUS	1,771,200	1,771,200	1,771,200	1,771,200									9,958	
16411#-AA-5	CHENIERE CORPUS CHRISTI CONSTRUCTION FA		04/30/2018	DIRECT	05/23/2018	VARIOUS	1,018,478	1,018,478	1,018,478	1,018,478									10,258	
20589K-AD-4	Concentra Inc. Add-On First Li		02/14/2018	BANK LOANS BARINGS	11/06/2018	BANK LOANS BARINGS	1,711,121	1,708,982	1,713,260	1,708,982							4,278	4,278	59,774	
20676#-AB-3	CONDOR BORROWER LLC 1st Increrm Term Ln		07/26/2018	BANK LOANS BARINGS	10/15/2018	VARIOUS	1,030,000	1,019,700	1,018,362	1,019,726		26		26			(1,364)	(1,364)	15,885	
22818R-AW-6	Crown Americas LLC USD TL B (Jan'1		04/12/2018	BANK LOANS BARINGS	11/28/2018	VARIOUS	919,697	919,697	923,844	919,697							4,147	4,147	24,316	
24380#-AA-6	Deer District LLC Senior Secured		11/13/2018	VARIOUS	11/15/2018	CA_CASH_CLOSE	4,501,220	4,501,220	4,501,220	4,501,220									27,354	
25456K-AA-2	Diplomat Pharmacy, Inc. TL B due 2024		01/03/2018	BANK LOANS BARINGS	11/15/2018	VARIOUS	780,484	772,679	784,423	774,181		1,502		1,502			10,241	10,241	37,533	
28253P-AC-3	8th Avenue Food & Provis First Lien TL B		10/04/2018	BANK LOANS BARINGS	11/20/2018	BANK LOANS BARINGS	453,891	452,757	457,295	452,757							4,539	4,539	3,569	
29358#-AB-9	Ensono LP Fourth Amend Term Loan		03/22/2018	BANK LOANS BARINGS	06/22/2018	CA_CASH_CLOSE	820,250	812,048	820,250	820,250		8,203		8,203					18,038	
29404#-AB-3	ENVIRO WATER SOLUTIONS L REVOLVER		05/08/2018	BANK LOANS BARINGS	05/11/2018	CA_CASH_CLOSE	451,000	451,000	451,000	451,000									1,595	
31540#-AN-4	Ferro Corp. First Lien TLB-		05/31/2018	BANK LOANS BARINGS	11/29/2018	VARIOUS	438,036	438,036	438,036	438,036									6,035	
31540#-AN-2	Ferro Corp. First Lien TLB-		05/31/2018	BANK LOANS BARINGS	11/29/2018	VARIOUS	428,716	428,716	428,716	428,716									5,907	
33971#-AA-2	FLNG LIQUEFACTION 3, LLC CONSTRUCTION LO		04/25/2018	BANK LOANS BARINGS	05/15/2018	CA_CASH_CLOSE	1,815,811	1,815,811	1,815,811	1,815,811									8,257	
34416#-AR-9	Focus Finl Ptrs Term Loan B-1		01/17/2018	BANK LOANS BARINGS	07/30/2018	VARIOUS	578,664	581,922	578,664	578,664		(3,258)		(3,258)					14,925	
38268P-AB-7	Convergent Technologies First Lien TL		09/28/2018	BANK LOANS BARINGS	12/07/2018	VARIOUS	249,552	248,988	247,067	248,991		3		3			(1,924)	(1,924)	9,516	
421300-AG-9	Hayward Industries, Inc. First Lien TL		10/03/2018	BANK LOANS BARINGS	11/23/2018	BANK LOANS BARINGS	1,107,381	1,104,613	1,110,150	1,104,613							5,537	5,537	4,520	
43129#-AB-2	The Hilb Group, LLC DDTL - Last Out		06/06/2018	BANK LOANS BARINGS	06/22/2018	VARIOUS	407,143	403,885	407,143	407,143		3,258		3,258					11,930	
44988L-AC-1	IRB Holding Corp Term Loan B		02/14/2018	BANK LOANS BARINGS	11/28/2018	VARIOUS	1,486,695	1,482,978	1,482,997	1,482,997		19		19					62,108	
46184#-AB-1	Invictus First Lien Term		04/06/2018	BANK LOANS BARINGS	12/06/2018	VARIOUS	722,556	720,749	723,005	720,758		9		9			2,247	2,247	23,746	
501837-ZZ-4	8Point3 Solar CEI, LLC Senior Term Loa		06/19/2018	BANK LOANS BARINGS	06/22/2018	CA_CASH_CLOSE	95,700,000	95,508,600	95,700,000	95,700,000		191,400		191,400					24,411	
51187G-AD-4	Lakeland Tours, LLC Delayed Draw Te		06/15/2018	BANK LOANS BARINGS	06/18/2018	CA_CASH_CLOSE	49,871	49,871	49,871	49,871									251	
55357G-AF-4	MSHC Inc (HVAC Holdings/ 1L Term Loan		11/20/2018	BANK LOANS BARINGS	12/04/2018	BANK LOANS BARINGS	4,519,865	4,519,865	4,480,994	4,519,865							(38,871)	(38,871)		
55357G-AG-2	MSHC Inc (HVAC Holdings/ 1L DDTL		03/29/2018	BANK LOANS BARINGS	11/20/2018	CA_CASH_CLOSE	3,122,449	3,122,449	3,122,449	3,122,449									171,954	
59501N-AJ-8	Microchip Technology Inc Term Loan B		06/06/2018	BANK LOANS BARINGS	11/27/2018	VARIOUS	2,550,000	2,550,000	2,541,352	2,550,000								(8,648)	(8,648)	49,117
60749K-AB-1	Moda Midstream TLB		10/10/2018	BANK LOANS BARINGS	12/04/2018	BANK LOANS BARINGS	1,091,938	1,089,208	1,091,938	1,089,208								2,730	2,730	4,694
62704#-AQ-4	Murray Energy Term Loan B-2		06/29/2018	BANK LOANS BARINGS	12/12/2018	VARIOUS	4,127,402	3,881,739	3,863,392	3,881,820		81		81			(18,428)	(18,428)	4,842	
64755#-AA-7	New Mountain Learning, L Senior Term Loa		03/16/2018	BANK LOANS BARINGS	11/30/2018	BANK LOANS BARINGS	4,298,450	4,212,481	4,199,156	4,212,481								(13,325)	(13,325)	183,459
64863P-YY-6	SBARRO INC EXIT TERM LOAN		09/04/2018	PIK NOTE BUY UP	11/09/2018	BANK LOANS BARINGS	5,963	5,963	2,982	3,990			1,973	(1,973)				(1,009)	(1,009)	329
65684#-AB-2	North American Dental Gr Delayed Draw Te		10/22/2018	BANK LOANS BARINGS	10/26/2018	CA_CASH_CLOSE	357,236	357,236	357,236	357,236									11,240	
68285#-AC-3	OnCourse Learning Corp. Incremental TL		05/15/2018	BANK LOANS BARINGS	11/01/2018	CA_CASH_CLOSE	1,378,245	1,357,571	1,378,245	1,378,245		20,674		20,674					45,202	
69353F-AX-2	PQ Corporation USD First Lien		02/21/2018	BANK LOANS BARINGS	12/04/2018	VARIOUS	436,802	435,710	435,757	435,757		47		47					13,392	
69398#-AB-1	Professional Outcomes DDTL		01/08/2018	BANK LOANS BARINGS	04/11/2018	BANK LOANS BARINGS	2,289,286	2,289,286	2,255,201	2,289,286								(34,086)	(34,086)	61,885
69900F-ZZ-8	Paradigm Outcomes First Lien TL B		11/21/2018	BANK LOANS BARINGS	11/28/2018	BANK LOANS BARINGS	594,510	593,023	594,510	593,023								1,486	1,486	(65)

E15.7

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21		
											12	13	14	15	16							
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Value (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends		
73103#-AA-7	Polar US Borrower Initial Term Loan		10/26/2018	BANK LOANS BARINGS	12/20/2018	BANK LOANS BARINGS	2,548,982	2,447,023	2,440,651	2,447,023							(6,372)	(6,372)	4,372			
74113L-A*-3	Press Ganey Holdings, In 1st Lien Term L		04/27/2018	BANK LOANS BARINGS	12/14/2018	VARIOUS	443,349	443,349	443,349	443,349									12,914			
74349E-AQ-7	Prospect Medical Holdings Inc - 2018 Te		02/22/2018	BANK LOANS BARINGS	12/20/2018	VARIOUS	4,186,250	4,196,716	4,144,597	4,196,663		(52)		(52)			(52,066)	(52,066)	250,722			
81608#-AB-8	SEKO Worldwide, LLC Term Loan		07/13/2018	BANK LOANS BARINGS	11/21/2018	VARIOUS	6,907,676	6,821,330	6,807,765	6,821,546		216		216			(13,781)	(13,781)	146,346			
83547M-AB-3	SonicWALL, Inc. Term Loan B		06/19/2018	BANK LOANS BARINGS	11/28/2018	BANK LOANS BARINGS	650,678	647,424	649,051	647,424							1,627	1,627	16,141			
84130E-AG-1	Southcross Holdings Borrower LP-Exit Ter		10/31/2018	VARIOUS	11/15/2018	CA_CASH_CLOSE	10,352	10,352	10,352	10,352									324			
90187D-AP-2	24 Hour Fitness Worldwid TL B		06/07/2018	BANK LOANS BARINGS	11/26/2018	VARIOUS	2,454,375	2,442,103	2,448,254	2,442,134		31		31			6,121	6,121	55,728			
90932R-AE-4	United Airlines Inc.		05/16/2018	BANK LOANS BARINGS	11/28/2018	VARIOUS	645,588	647,844	642,347	647,832		(12)		(12)			(5,485)	(5,485)	13,504			
91820U-AL-4	VFH Parent LLC Term Loan B-1		09/01/2018	VARIOUS	09/19/2018	VARIOUS	317,793	320,176	318,854	319,207		(969)		(969)			(353)	(353)	11,073			
95810D-AR-2	Western Digital Term Loan B-4		05/15/2018	BANK LOANS BARINGS	11/30/2018	VARIOUS	2,782,567	2,793,502	2,754,880	2,793,448		(55)		(55)			(38,567)	(38,567)	53,115			
964700H-AD-2	I-Logic Technologies Bid USD TL B (Dec'1		01/22/2018	BANK LOANS BARINGS	10/15/2018	VARIOUS	3,400,000	3,383,000	3,400,000	3,387,857		4,857		4,857			12,143	12,143	149,240			
L72598-YY-2	Lendmark Funding Trust 2018 - A - Class		11/15/2018	BANK LOANS BARINGS	11/15/2018	BANK LOANS BARINGS	40,000,000	39,960,000	40,000,000	39,960,000							40,000	40,000				
L72598-ZZ-8	Lendmark Funding Trust 2018 - A - Class		11/15/2018	BANK LOANS BARINGS	11/15/2018	BANK LOANS BARINGS	20,000,000	19,980,000	20,000,000	19,980,000							20,000	20,000				
03978#-AD-2	Genesis Care Pty Limited Tranche E (Acco		08/13/2018	BANK LOANS BARINGS	10/31/2018	CA_CASH_CLOSE	2,012,194	2,038,373	2,012,194	2,012,194		20,122		20,122			(46,301)	(46,301)	26,621			
06154S-ZZ-7	Boomerang Tube, LLC Priming TL - ST		09/25/2018	BANK LOANS BARINGS	11/01/2018	BANK LOANS BARINGS	78,396	78,396	78,396	78,396									34			
686192-ZZ-1	The Original Cakerie, Lt Incremental Ter		01/08/2018	BANK LOANS BARINGS	02/23/2018	BANK LOANS BARINGS	1,240,124	1,223,072	1,240,124	1,223,072							17,052	17,052	10,402			
20676#-AA-5	CONDOR BORROWER LLC Term Loan	C	10/15/2018	BANK LOANS BARINGS	12/06/2018	BANK LOANS BARINGS	1,027,412	1,015,774	1,015,186	1,015,774							(588)	(588)	6,038			
479663-LF-1	MeteoGroup (Sunshine Pur SS Term Debt	B	07/20/2018	BANK LOANS BARINGS	10/04/2018	CA_CASH_CLOSE	2,297,179	2,338,115	2,297,179	2,297,180							(40,935)	(40,935)				
479664-MR-2	MeteoGroup (Sunshine Pur SS Term Debt 2	B	09/26/2018	BANK LOANS BARINGS	10/04/2018	CA_CASH_CLOSE	1,304,276	1,332,394	1,304,277	1,304,277							(28,117)	(28,117)				
60128#-AA-6	AGILITY TRAINS EAST LIMB GBP TERM LOAN		03/29/2018	PIK NOTE BUY UP	10/31/2018	VARIOUS	14,866	16,532	14,866	14,866							(1,666)	(1,666)				
66903D-AD-1	Paragon Offshore Finance Company	D	01/18/2018	PIK NOTE BUY UP	03/29/2018	CA_CASH_CLOSE	1,381	1,381	1,381	1,381									55			
L9339L-AG-8	TRINSEO MATLS OPERATING SCA Term Loan B	C	05/22/2018	BANK LOANS BARINGS	12/21/2018	VARIOUS	91,824	92,168	88,855	92,167		(2)		(2)			(3,312)	(3,312)	2,012			
N8232N-AB-3	Starfruit US Holdco LLC USD TLB (Sep'18	D	10/16/2018	BANK LOANS BARINGS	11/08/2018	BANK LOANS BARINGS	3,000,000	2,985,000	2,993,100	2,985,000							8,100	8,100	10,578			
V0000#-AA-0	BC INVT8 VIII LTD-USD TERM LOAN FACILITY	D	04/20/2018	PIK NOTE BUY UP	05/16/2018	CA_CASH_CLOSE	219,695	219,695	219,695	219,695									3,823			
8299999. Subtotal - Bonds - Bank Loans							297,748,971	296,164,510	294,941,085	295,054,077		340,559	1,350,101	(1,009,542)		(121,846)	(112,993)	(234,839)	2,409,052			
8399998. Total - Bonds							4,742,110,303	4,736,967,386	4,728,956,261	4,734,969,141		455,701	1,402,771	(947,070)		(1,505,237)	(6,012,880)	(7,518,117)	27,500,105	2,840,726		
8999998. Total - Preferred Stocks																						
013872-10-6	ALCOA CORP-Common Stock		06/04/2018	VARIOUS	11/12/2018	VARIOUS	14,281,000	667,066	579,318	667,066							(87,748)	(87,748)				
01973R-10-1	ALLISON TRANSMISSION HOL-COMMON STOCK		10/11/2018	WEEDEN & CO	11/26/2018	WEEDEN & CO	21,300,000	1,063,963	1,016,380	1,063,963							(47,583)	(47,583)	3,195			
023135-10-6	AMAZON.COM INC-COMMON STOCK		01/26/2018	JONES TRADING INST	12/13/2018	VARIOUS	5,840,000	8,133,777	9,737,892	8,133,777							1,604,115	1,604,115				
02665T-30-6	AMERICAN HOMES 4 RENT-COMMON STOCK REIT		06/18/2018	JONES TRADING INST	10/30/2018	VARIOUS	4,619,000	97,877	101,579	97,877							3,702	3,702	112			
031162-10-0	Amgen Inc-COMMON STOCK		08/22/2018	JONES TRADING INST	11/26/2018	WEEDEN & CO	47,800,000	9,409,762	9,277,544	9,409,762							(132,218)	(132,218)				
03168L-10-5	AMNEAL PHARMACEUTICALS I-COMMON STOCK		05/04/2018	EXCHANGE OFFER	05/09/2018	WEEDEN & CO	3,500,000	70,462	48,685	70,462							(21,777)	(21,777)				
03349M-10-5	Andeavor-COMMON STOCK		04/30/2018	JONES TRADING INST	10/01/2018	VARIOUS	10,000,000	1,363,618	1,365,127	1,363,618							1,509	1,509	9,488			
037833-10-0	APPLE INC-COMMON STOCK		10/22/2018	WEEDEN & CO	11/14/2018	WEEDEN & CO	5,210,000	1,147,123	987,141	1,147,123							(159,982)	(159,982)	3,803			
038222-10-5	APPLIED MATERIALS INC-COMMON STOCK		02/23/2018	WEEDEN & CO	12/11/2018	VARIOUS	52,070,000	2,969,954	1,784,346	2,969,954							(1,185,608)	(1,185,608)	28,552			
03957W-10-6	Archrock Inc-COMMON STOCK		04/27/2018	MERGER	12/14/2018	WEEDEN & CO	252,980,000	3,281,444	2,269,325	3,281,444							(1,012,119)	(1,012,119)	97,144			
05350V-10-6	Avanos Medical Inc-COMMON STOCK		08/27/2018	WEEDEN & CO	10/22/2018	JONES TRADING INST	21,100,000	1,521,861	1,260,137	1,521,861							(261,724)	(261,724)				
084670-70-2	Berkshire Hathaway Inc-COMMON STOCK		10/30/2018	WEEDEN & CO	12/11/2018	VARIOUS	37,710,000	7,485,539	7,859,963	7,485,539							374,424	374,424				
09739D-10-0	BOISE CASCADE CO-COMMON STOCK		03/09/2018	WEEDEN & CO	06/28/2018	JONES TRADING INST	12,800,000	502,994	573,458	502,994							70,464	70,464	896			
118230-1W-7	Buckeye Partners, L.P.		08/13/2018	VARIOUS	11/05/2018	CONVERSION	253,395,000	10,621,329	10,621,329	10,621,329												
12685J-10-5	CABLE ONE INC-COMMON STOCK		08/27/2018	WEEDEN & CO	11/20/2018	WEEDEN & CO	1,870,000	1,550,550	1,585,887	1,550,550							35,337	35,337	3,740			

E15.8

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21	
											12	13	14	15	16						
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends	
133131-10-2	CAMDEN PROPERTY TRUST-COMMON STOCK REIT		04/09/2018	VARIOUS	11/13/2018	WEEDEN & CO	495,000	41,162	45,737	41,162							4,575	4,575		1,044	
151020-10-4	CELGENE CORP-COMMON STOCK		08/13/2018	VARIOUS	12/03/2018	WEEDEN & CO	19,600,000	1,793,055	1,442,978	1,793,055							(350,077)	(350,077)			
151358-10-1	CENTENE CORP-COMMON STOCK		06/04/2018	CORPORATE ACTION	06/22/2018	WEEDEN & CO	1,000	118	125	118							8	8			
16411R-20-8	CHENIERE ENERGY INC-COMMON STOCK Chesapeake Lodging Trust-COMMON STOCK RE		05/01/2018	DTCYID	12/17/2018	DTCYID	7,796,000	456,665	469,988	456,665							13,324	13,324			
165240-10-2			02/15/2018	WEEDEN & CO	12/18/2018	WEEDEN & CO	231,000	6,045	6,292	6,045							246	246		277	
205887-10-2	CONAGRA FOODS INC-COMMON STOCK		10/30/2018	MERGER	11/20/2018	WEEDEN & CO	2,337,000	131,345	78,346	131,345							(52,999)	(52,999)			
20605P-10-1	CONCHO RESOURCES INC-COMMON STOCK		04/12/2018	JONES TRADING INST	10/30/2018	WEEDEN & CO	1,570,000	229,617	213,101	229,617							(16,516)	(16,516)			
25179M-10-3	DEVON ENERGY CORP-COMMON STOCK		06/29/2018	VARIOUS	12/04/2018	WEEDEN & CO	137,300,000	5,392,592	4,196,584	5,392,592							(1,196,007)	(1,196,007)		14,672	
258278-10-0	DORMAN PRODUCTS INC-COMMON STOCK		03/09/2018	WEEDEN & CO	06/22/2018	JONES TRADING INST	6,900,000	500,349	496,690	500,349							(3,659)	(3,659)			
290840-10-0	EMCOR Group Inc-COMMON STOCK		03/27/2018	JONES TRADING INST	06/12/2018	WEEDEN & CO	5,200,000	398,077	408,085	398,077							10,008	10,008		416	
29273V-10-0	ENERGY TRANSFER EQUITY L P LTD PARTNERSH Essex Property Trust Inc-COMMON STOCK RE		11/29/2018	DTCYID	12/17/2018	DTCYID	116,375,000	1,740,621	1,629,395	1,740,621							(111,226)	(111,226)		20,550	
297178-10-5			03/15/2018	VARIOUS	08/02/2018	WEEDEN & CO	126,000	29,894	30,178	29,894							283	283		469	
302196-10-8	EXPRESS SCRIPTS HOLDING -COMMON STOCK		01/30/2018	JONES TRADING INST	03/01/2018	JONES TRADING INST	40,200,000	2,970,712	2,970,764	2,970,712							52	52			
316773-10-0	Fifth Third Bancorp-COMMON STOCK FOREST CITY REALTY TRUST-COMMON STOCK RE		03/01/2018	JONES TRADING INST	08/22/2018	JONES TRADING INST	167,700,000	5,503,025	5,006,736	5,503,025							(496,289)	(496,289)		57,018	
345605-10-9			07/02/2018	JONES TRADING INST	08/07/2018	JONES TRADING INST	1,082,000	24,467	27,033	24,467							2,566	2,566			
349853-10-1	FORWARD AIR CORP-COMMON STOCK		03/21/2018	JONES TRADING INST	06/21/2018	JONES TRADING INST	9,000,000	501,885	565,816	501,885							63,931	63,931		1,350	
36164V-30-5	GCI LIBERTY INC-COMMON STOCK		04/04/2018	VARIOUS	10/31/2018	VARIOUS	28,780,000	1,395,952	1,430,119	1,395,952							34,166	34,166			
366505-10-5	GARRETT MOTION INC-COMMON STOCK		10/01/2018	SPIN OFF	12/18/2018	WEEDEN & CO	1,225,000	22,215	14,930	22,215							(7,286)	(7,286)			
375558-10-3	GILEAD SCIENCES INC-COMMON STOCK		06/27/2018	JONES TRADING INST	12/03/2018	WEEDEN & CO	5,500,000	386,036	397,611	386,036							11,575	11,575		3,135	
384313-50-8	GRAFTECH INTERNATIONAL L-COMMON STOCK		10/11/2018	WEEDEN & CO	11/28/2018	WEEDEN & CO	4,700,000	80,771	75,245	80,771							(5,527)	(5,527)			
389375-10-6	GRAY TELEVISION INC-COMMON STOCK		03/01/2018	WEEDEN & CO	06/13/2018	WEEDEN & CO	39,000,000	528,684	455,023	528,684							(73,661)	(73,661)			
40412C-10-1	HCA Holdings Inc-COMMON STOCK		10/30/2018	VARIOUS	12/11/2018	JONES TRADING INST	18,320,000	2,346,556	2,465,695	2,346,556							119,139	119,139		7,938	
40416M-10-5	HD SUPPLY HOLDINGS INC-COMMON STOCK		09/12/2018	JONES TRADING INST	11/26/2018	WEEDEN & CO	34,900,000	1,527,371	1,352,696	1,527,371							(174,675)	(174,675)			
406216-10-1	HALLIBURTON CO-COMMON STOCK		04/19/2018	JONES TRADING INST	11/14/2018	JONES TRADING INST	62,200,000	3,233,383	2,054,464	3,233,383							(1,178,919)	(1,178,919)		22,392	
40701T-10-4	HAMILTON BEACH BRANDS HO-COMMON STOCK		04/04/2018	EXCHANGE OFFER	03/28/2018	WEEDEN & CO	900,000	19,238	19,238	19,238							19,238	19,238		77	
42824C-10-9	HEWLETT PACKARD ENTERPRISE-COMMON STOCK HI-CRUSH PARTNERS LP-COMMON STOCK LTD PA		03/12/2018	WEEDEN & CO	11/13/2018	VARIOUS	369,500,000	6,917,496	5,941,055	6,917,496							(976,441)	(976,441)		98,756	
428337-10-9			04/19/2018	JONES TRADING INST	11/02/2018	WEEDEN & CO	79,800,000	966,416	546,902	966,416							(419,514)	(419,514)		95,760	
43300A-20-3	Hilton Inc.-COMMON STOCK		04/11/2018	VARIOUS	12/04/2018	VARIOUS	918,000	73,934	74,829	73,934							895	895		189	
438516-10-6	HONEYWELL INTERNATIONAL -COMMON STOCK HUDSON PACIFIC PROPRTIE-COMMON STOCK RE		09/06/2018	JONES TRADING INST	11/13/2018	VARIOUS	12,250,000	1,998,139	2,190,428	1,998,139							192,289	192,289			
444097-10-9			03/05/2018	WEEDEN & CO	12/20/2018	JONES TRADING INST	467,000	14,858	13,223	14,858							(1,635)	(1,635)		467	
447011-10-7	Huntsman Corp-COMMON STOCK		09/12/2018	JONES TRADING INST	10/12/2018	WEEDEN & CO	41,900,000	1,194,833	1,020,520	1,194,833							(174,313)	(174,313)		6,809	
45781M-10-1	INNOVIVA INC-COMMON STOCK		03/09/2018	WEEDEN & CO	06/13/2018	WEEDEN & CO	30,900,000	502,147	447,985	502,147							(54,161)	(54,161)			
46187W-10-7	INVITATION HOMES INC-COMMON STOCK REIT		06/18/2018	JONES TRADING INST	07/17/2018	JONES TRADING INST	1,088,000	24,483	25,279	24,483							797	797			
46590V-10-0	JBG SMITH PROPERTIES-COMMON STOCK REIT		04/30/2018	JONES TRADING INST	11/21/2018	WEEDEN & CO	517,000	19,152	20,693	19,152							1,540	1,540		349	
46609J-10-6	J Alexander's Holdings I-COMMON STOCK		03/15/2018	CANTOR	08/17/2018	JONES TRADING INST	64,500,000	740,211	755,248	740,211							15,036	15,036			
478160-10-4	Johnson & Johnson-COMMON STOCK		08/17/2018	WEEDEN & CO	10/31/2018	WEEDEN & CO	16,570,000	2,228,416	2,319,438	2,228,416							91,022	91,022		14,913	
48123V-10-2	J2 GLOBAL INC-COMMON STOCK		03/19/2018	WEEDEN & CO	06/28/2018	JONES TRADING INST	7,000,000	562,836	601,873	562,836							39,037	39,037		2,905	
48253L-10-6	KLX ENERGY SERVICES HOLD-COMMON STOCK		09/17/2018	SPIN OFF	12/06/2018	WEEDEN & CO	11,802,000	1,047,394	295,987	1,047,394							(751,408)	(751,408)			
488360-20-7	KEMET CORP-COMMON STOCK		04/12/2018	WEEDEN & CO	10/31/2018	WEEDEN & CO	54,000,000	1,007,278	1,176,056	1,007,278							168,778	168,778			
501242-10-1	Kulicke & Soffa Industri-COMMON STOCK		03/01/2018	WEEDEN & CO	06/21/2018	CANTOR	23,300,000	531,829	555,388	531,829							23,558	23,558			
50187A-10-7	LHC GROUP INC-COMMON STOCK		04/03/2018	MERGER	06/12/2018	WEEDEN & CO	1,464,000	40,339	116,834	40,339							76,495	76,495			
515098-10-1	LANDSTAR SYSTEM INC-COMMON STOCK		09/26/2018	CANTOR	11/26/2018	WEEDEN & CO	7,940,000	974,072	837,498	974,072							(136,574)	(136,574)		1,310	
521865-20-4	LEAR CORP-COMMON STOCK		02/23/2018	WEEDEN & CO	10/12/2018	WEEDEN & CO	17,200,000	3,253,208	2,347,909	3,253,208							(905,299)	(905,299)		36,120	
526057-10-4	Lennar Corp-COMMON STOCK CLASS A		01/25/2018	WEEDEN & CO	02/28/2018	JONES TRADING INST	20,000,000	1,377,136	1,131,524	1,377,136							(245,612)	(245,612)			
53071M-85-6	LIBERTY VENTURES-COMMON STOCK		03/12/2018	MERGER	04/04/2018	EXCHANGE OFFER	8,900,000	489,177	489,177	489,177											
546347-10-5	LOUISIANA-PACIFIC CORP-COMMON STOCK		03/27/2018	JONES TRADING INST	06/27/2018	JONES TRADING INST	10,900,000	314,406	296,018	314,406							(18,388)	(18,388)		1,417	
552074-70-0	WILLIAM LYON HOMES-COMMON STOCK		03/08/2018	JONES TRADING INST	06/13/2018	WEEDEN & CO	19,400,000	506,392	475,732	506,392							(30,660)	(30,660)			
55336V-10-0	MPLX LP COMMON UNIT		01/24/2018	DTCYID	12/17/2018	DTCYID	21,696,000	836,628	713,904	836,628							(122,724)	(122,724)		40,843	
554382-10-1	MACERICH CO/THE-COMMON STOCK REIT		04/30/2018	JONES TRADING INST	12/20/2018	JONES TRADING INST	430,000	24,927	18,143	24,927							(6,784)	(6,784)		959	
556289-10-8	STEVEN MADDEN LTD-COMMON STOCK		03/08/2018	JONES TRADING INST	06/21/2018	JONES TRADING INST	11,300,000	500,520	612,193	500,520							111,673	111,673		4,520	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
559080-10-6	MAGELLAN MIDSTREAM PARTNERS LP COMMON UN		08/30/2018	DTCYID	12/18/2018	DTCYID	31,138.000	1,950,394	1,791,034	1,950,394							(159,360)	(159,360)		64,555
56585A-10-2	MARATHON PETROLEUM CORP-COMMON STOCK		10/01/2018	MERGER	11/14/2018	JONES TRADING INST	12,361.000	1,005,913	804,306	1,005,913								(201,607)	(201,607)	
594918-10-4	Microsoft Corp-COMMON STOCK		06/05/2018	WEEDEN & CO	12/11/2018	JONES TRADING INST	17,330.000	1,771,213	1,895,169	1,771,213								123,956	123,956	15,250
595112-10-3	Micron Technology Inc-Common Stock		04/12/2018	VARIOUS	12/04/2018	VARIOUS	104,300.000	5,203,432	4,459,954	5,203,432								(743,477)	(743,477)	
609839-10-5	MONOLITHIC POWER SYSTEMS-COMMON STOCK		04/24/2018	WEEDEN & CO	07/26/2018	WEEDEN & CO	30,110.000	3,615,823	4,015,273	3,615,823								399,450	399,450	9,033
617446-44-8	Morgan Stanley-COMMON STOCK		02/07/2018	JONES TRADING INST	12/13/2018	JONES TRADING INST	17,000.000	934,143	691,558	934,143								(242,585)	(242,585)	14,450
64125C-10-9	NEUROCRINE BIOSCIENCES I-COMMON STOCK		08/22/2018	JONES TRADING INST	10/09/2018	JONES TRADING INST	22,670.000	2,604,358	2,521,551	2,604,358								(82,807)	(82,807)	
65336K-10-3	NEXSTAR MEDIA GROUP INC-COMMON STOCK		03/01/2018	WEEDEN & CO	06/27/2018	JONES TRADING INST	7,600.000	528,854	579,335	528,854								50,481	50,481	2,850
65506L-10-5	NOBLE MIDSTREAM PARTNERS-COMMON STOCK		09/17/2018	VARIOUS	12/17/2018	VARIOUS	190,290.000	7,684,509	7,752,677	7,684,509								68,167	68,167	285,146
655844-10-8	NORFOLK SOUTHERN CORP-COMMON STOCK		08/13/2018	WEEDEN & CO	12/03/2018	WEEDEN & CO	4,220.000	726,135	732,765	726,135								6,630	6,630	3,376
679295-10-5	OKTA INC-COMMON STOCK		06/05/2018	VARIOUS	11/02/2018	JONES TRADING INST	16,500.000	717,781	952,945	717,781								235,164	235,164	
682680-10-3	ONEOK INC-COMMON STK		10/03/2018	DTCYID	12/14/2018	DTCYID	11,192.000	764,701	673,820	764,701								(90,881)	(90,881)	9,569
697435-10-5	PALO ALTO NETWORKS INC-COMMON STOCK		05/03/2018	JONES TRADING INST	08/01/2018	JONES TRADING INST	14,430.000	2,785,456	2,876,417	2,785,456								90,961	90,961	
70450Y-10-3	PayPal Holdings Inc-COMMON STOCK		07/25/2018	WEEDEN & CO	09/28/2018	VARIOUS	38,000.000	3,478,410	3,381,513	3,478,410								(96,896)	(96,896)	
715347-10-0	PERSPECTA INC-COMMON STOCK		06/01/2018	SPIN OFF	12/18/2018	WEEDEN & CO	9,853.000	903,883	186,945	903,883								(716,938)	(716,938)	
717081-10-3	Pfizer Inc-COMMON STOCK		08/17/2018	VARIOUS	12/03/2018	WEEDEN & CO	214,200.000	8,710,163	9,879,697	8,710,163								1,169,534	1,169,534	102,986
72201P-61-3	PIMCO FDS SHORT TERM FLTG NAV PORT II PLAINS ALL AMERICAN PIPELINE L.P. LTD PA		11/09/2018	DIRECT	11/30/2018	DIRECT	2,590,569.000	25,926,134	25,925,513	25,926,134								(621)	(621)	
726503-10-5			09/17/2018	DTCYID	12/17/2018	DTCYID	83,698.000	2,193,152	1,893,592	2,193,152								(299,560)	(299,560)	25,109
73179P-10-6	POLYONE CORP-COMMON STOCK		03/19/2018	WEEDEN & CO	06/13/2018	WEEDEN & CO	6,500.000	279,216	278,917	279,216								(299)	(299)	
74164F-10-3	PRIMORIS SERVICES CORP-COMMON STOCK		03/09/2018	WEEDEN & CO	06/25/2018	JONES TRADING INST	19,200.000	500,139	534,807	500,139								34,668	34,668	1,152
74164M-10-8	Primerica Inc-COMMON STOCK		03/01/2018	WEEDEN & CO	06/22/2018	VARIOUS	5,600.000	526,989	572,765	526,989								45,776	45,776	175
743315-10-3	Progressive Corp/The-COMMON STOCK		10/22/2018	WEEDEN & CO	12/03/2018	WEEDEN & CO	18,700.000	1,319,048	1,249,432	1,319,048								(69,616)	(69,616)	
74624M-10-2	PURE STORAGE INC-COMMON STOCK		03/29/2018	JONES TRADING INST	08/13/2018	WEEDEN & CO	34,900.000	696,824	781,994	696,824								85,170	85,170	
74736L-10-9	Q2 HOLDINGS INC-COMMON STOCK		06/05/2018	WEEDEN & CO	11/28/2018	WEEDEN & CO	6,200.000	359,693	324,237	359,693								(35,456)	(35,456)	
76118Y-10-4	RESIDED TECHNOLOGIES INC-COMMON STOCK		10/29/2018	SPIN OFF	11/28/2018	WEEDEN & CO	2,041.000	329,321	40,789	329,321								(288,532)	(288,532)	.17
78486Q-10-1	SVB FINANCIAL GROUP-COMMON STOCK		10/22/2018	WEEDEN & CO	10/30/2018	WEEDEN & CO	2,790.000	782,373	637,074	782,373								(145,298)	(145,298)	
78573L-10-6			09/20/2018	VARIOUS	11/20/2018	VARIOUS	4,959.000	108,615	100,597	108,615								(8,018)	(8,018)	3,412
81762P-10-2	SERVICENOW INC-COMMON STOCK		04/27/2018	JONES TRADING INST	11/12/2018	WEEDEN & CO	3,450.000	556,135	597,790	556,135								41,655	41,655	
852234-10-3	SQUARE INC-COMMON STOCK		09/27/2018	WEEDEN & CO	11/20/2018	WEEDEN & CO	8,500.000	831,641	502,226	831,641								(329,415)	(329,415)	
866674-10-4	SUN COMMUNITIES INC COMMON STK		03/15/2018	VARIOUS	10/04/2018	VARIOUS	408.000	36,147	40,534	36,147								4,387	4,387	.777
867892-10-1	SUNSTONE HOTEL INVESTORS-COMMON STOCK RE		02/15/2018	WEEDEN & CO	05/14/2018	JONES TRADING INST	164.000	2,566	2,697	2,566								131	131	.8
872275-10-2	TCF FINL CORP COMMON STK		03/29/2018	WEEDEN & CO	09/28/2018	VARIOUS	131,200.000	3,005,031	3,153,744	3,005,031								148,713	148,713	35,385
874696-10-7	TALLGRASS ENERGY GP LP-COMMON STOCK		07/03/2018	VARIOUS	12/17/2018	VARIOUS	163,366.000	3,623,735	3,526,485	3,623,735								(97,250)	(97,250)	120,612
874697-10-5	TALLGRASS ENERGY PARTNER-COMMON STOCK		02/16/2018	DTCYID	07/02/2018	DTCYID	14,936.000	611,284	661,964	611,284								50,679	50,679	14,563
878237-10-6	Tech Data Corp-COMMON STOCK		03/08/2018	JONES TRADING INST	06/22/2018	WEEDEN & CO	5,800.000	510,123	493,813	510,123								(16,310)	(16,310)	
89055F-10-3	TOPBUILD CORP-COMMON STOCK		03/20/2018	VARIOUS	09/27/2018	WEEDEN & CO	62,700.000	5,065,470	4,436,495	5,065,470								(628,975)	(628,975)	
90328M-10-7	USANA HEALTH SCIENCES INC-COMMON STOCK		03/09/2018	WEEDEN & CO	06/26/2018	JONES TRADING INST	6,200.000	502,873	729,008	502,873								226,134	226,134	
912008-10-9	US FOODS HOLDING CORP-COMMON STOCK		10/11/2018	VARIOUS	12/03/2018	WEEDEN & CO	148,100.000	4,436,172	4,893,512	4,436,172								457,340	457,340	
912909-10-8	UNITED STATES STEEL CORP-COMMON STOCK		01/25/2018	WEEDEN & CO	06/27/2018	JONES TRADING INST	20,800.000	842,227	728,253	842,227								(113,975)	(113,975)	2,080
91307C-10-2	UNITED THERAPEUTICS CORP-COMMON STOCK		10/11/2018	WEEDEN & CO	11/26/2018	WEEDEN & CO	12,280.000	1,530,142	1,414,699	1,530,142								(115,443)	(115,443)	
922280-10-2	VARONIS SYSTEMS INC-COMMON STOCK		06/05/2018	WEEDEN & CO	06/27/2018	JONES TRADING INST	3,400.000	275,111	256,480	275,111								(18,631)	(18,631)	
922475-10-8	VEEVA SYSTEMS INC-COMMON STOCK		09/28/2018	VARIOUS	10/08/2018	JONES TRADING INST	15,130.000	1,613,004	1,469,729	1,613,004								(143,275)	(143,275)	
92343V-10-4	Verizon Communications I-COMMON STOCK		06/27/2018	JONES TRADING INST	11/20/2018	WEEDEN & CO	10,000.000	496,579	609,818	496,579								113,239	113,239	11,925
929042-10-9	Vornado Realty Trust-COMMON STOCK REIT		04/30/2018	JONES TRADING INST	11/21/2018	WEEDEN & CO	529.000	35,872	37,164	35,872								1,293	1,293	1,000
94946T-10-6	WELLCARE HEALTH PLANS INC-COMMON STOCK		09/12/2018	JONES TRADING INST	10/30/2018	WEEDEN & CO	4,890.000	1,484,613	1,379,476	1,484,613								(105,137)	(105,137)	
955306-10-5	WEST PHARMACEUTICAL SVCS INC COMMON STK		08/27/2018	WEEDEN & CO	12/10/2018	WEEDEN & CO	13,050.000	1,532,026	1,410,264	1,532,026								(121,762)	(121,762)	1,958
95825R-10-3	WESTERN GAS EQUITY PARTNERS LP COMMON UN		10/10/2018	VARIOUS	12/27/2018	VARIOUS	232,715.000	8,316,937	7,829,623	8,316,937								(487,314)	(487,314)	123,183
960413-10-2	WESTLAKE CHEMICAL CORP-COMMON STOCK		02/23/2018	WEEDEN & CO	12/24/2018	JONES TRADING INST	15,480.000	1,721,376	1,653,306	1,721,376								(68,070)	(68,070)	3,251
969457-10-0	WILLIAMS COS INC COMMON STK		08/13/2018	VARIOUS	12/14/2018	VARIOUS	529,026.000	15,093,470	13,411,777	15,093,470								(1,681,693)	(1,681,693)	97,872
96949L-10-5	WILLIAMS PARTNERS L P COMMON STK		04/24/2018	DTCYID	08/13/2018	DTCYID	101,618.000	3,826,028	4,826,272	3,826,028								1,000,244	1,000,244	148,266
98138H-10-1	WORKDAY INC-COMMON STOCK		03/29/2018	JONES TRADING INST	11/20/2018	WEEDEN & CO	9,860.000	1,249,951	1,205,520	1,249,951								(44,431)	(44,431)	
981558-10-9	WORLDPAY INC-COMMON STOCK		05/08/2018	WEEDEN & CO	11/12/2018	WEEDEN & CO	19,100.000	1,600,007	1,688,970	1,600,007								88,963	88,963	

EX-10

</

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/ Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amortization)/ Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
988498-10-1	YUM! BRANDS INC-COMMON STOCK		10/22/2018	WEEDEN & CO	12/06/2018	WEEDEN & CO	16,100.000	1,444,023	1,464,857	1,444,023							20,834	20,834	5,796	
989207-10-5	ZEBRA TECHNOLOGIES CORP-COMMON STOCK		09/27/2018	VARIOUS	10/09/2018	JONES TRADING INST	16,320.000	2,896,082	2,582,179	2,896,082							(313,903)	(313,903)		
98954M-20-0	ZILLOW GROUP INC-COMMON STOCK		03/13/2018	CANTOR	08/13/2018	WEEDEN & CO	39,000.000	2,250,284	1,869,335	2,250,284							(380,949)	(380,949)		
989701-10-7	ZIONS BANCORPORATION-COMMON STOCK		02/07/2018	WEEDEN & CO	08/16/2018	JONES TRADING INST	52,300.000	2,799,860	2,813,322	2,799,860							13,462	13,462	38,702	
67077M-10-8	NUTRIEN LTD-COMMON STOCK		01/03/2018	EXCHANGE OFFER	12/21/2018	WEEDEN & CO	34,531.000	1,470,551	1,547,552	1,470,551							77,001	77,001	35,289	
03938L-20-3	ArcelorMittal-ADR	C	06/04/2018	VARIOUS	12/13/2018	WEEDEN & CO	1.000	33	22	33							(11)	(11)		
881624-20-9	TEVA PHARMACEUTICAL INDU-ADR	C	10/12/2018	WEEDEN & CO	12/12/2018	JONES TRADING INST	172,000.000	3,727,151	3,256,640	3,727,151							(470,511)	(470,511)		
60177J-10-8	Allegan plc-COMMON STOCK	C	06/04/2018	VARIOUS	06/28/2018	CANTOR	51,228.000	8,513,468	8,733,983	8,513,468							220,516	220,516		
63198U-10-2	ESSENT GROUP LTD-COMMON STOCK	C	03/19/2018	WEEDEN & CO	06/13/2018	WEEDEN & CO	13,500.000	557,568	499,562	557,568							(58,005)	(58,005)		
64412G-10-1	HERBALIFE NUTRITION LTD-COMMON STOCK	C	10/11/2018	WEEDEN & CO	11/05/2018	JONES TRADING INST	66,000.000	3,423,512	3,540,306	3,423,512							116,794	116,794		
64617B-10-5	HORIZON PHARMA PLC-COMMON STOCK	C	08/22/2018	JONES TRADING INST	11/02/2018	JONES TRADING INST	150,800.000	3,099,264	2,910,643	3,099,264							(188,620)	(188,620)		
69001E-10-2	LIBERTY LATIN AMERICA LT-COMMON STOCK	C	01/26/2018	WEEDEN & CO	12/18/2018	JONES TRADING INST	190,000.000	4,382,575	3,097,075	4,382,575							(1,285,499)	(1,285,499)		
000000-00-0	SAVANNAH PETROLEUM PLC-COMMON STOCK	C	02/09/2018	EXCHANGE OFFER	06/26/2018	DIRECT	1,444,010.000	660,835	431,037	660,836							(229,799)	(229,799)		
L9340P-10-1	TRINSEOP SA-COMMON STOCK	C	03/27/2018	JONES TRADING INST	06/28/2018	JONES TRADING INST	9,900.000	773,190	702,896	773,190							(70,294)	(70,294)	3,564	
9099999	Subtotal - Common Stocks - Industrial and Miscellaneous (Unaffiliated)							276,477,731	263,888,520	276,477,732							(12,589,212)	(12,589,212)	1,762,896	
464287-63-0	ISHARES RUSSELL 2000 VAL-EXCHANGE TRADED		03/26/2018	VARIOUS	06/13/2018	WEEDEN & CO	28,500.000	3,493,155	3,820,304	3,493,155							327,149	327,149	5,186	
57630G-11-0	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	08/01/2018	DIRECT	6,667.000	100,000	100,667	100,000							667	667		
57630G-12-8	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-13-6	MASSMUTUAL SELECT T ROWE-MM TRP R2060		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-14-4	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667.000	100,000	100,733	100,000										
57630G-15-1	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	99,933	100,000							(67)	(67)		
57630G-16-9	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-17-7	MASSMUTUAL SELECT T ROWE-MM TRP R2055		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-18-5	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667.000	100,000	100,733	100,000										
57630G-19-3	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	99,933	100,000							(67)	(67)		
57630G-21-9	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-22-7	MASSMUTUAL SELECT T ROWE-MM TRP R2050		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-23-5	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667.000	100,000	100,733	100,000										
57630G-24-3	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	99,933	100,000							(67)	(67)		
57630G-25-0	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-26-8	MASSMUTUAL SELECT T ROWE-MM TRP R2045		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-27-6	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667.000	100,000	100,733	100,000										
57630G-28-4	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	99,933	100,000							(67)	(67)		
57630G-29-2	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	99,933	100,000							(67)	(67)		
57630G-31-8	MASSMUTUAL SELECT T ROWE-MM-TRP R2040-I		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	100,000	100,000										
57630G-32-6	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667.000	100,000	100,667	100,000										
57630G-33-4	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	99,933	100,000							(67)	(67)		
57630G-34-2	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667.000	100,000	99,933	100,000							(67)	(67)		

E15.11

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1	2	3	4	5	6	7	8	9	10	11	Change in Book/Adjusted Carrying Value					17	18	19	20	21
											12	13	14	15	16					
CUSIP Identification	Description	Foreign	Date Acquired	Name of Vendor	Disposal Date	Name of Purchaser	Par Value (Bonds) or Number of Shares (Stock)	Actual Cost	Consideration	Book/Adjusted Carrying Value at Disposal	Unrealized Valuation Increase/(Decrease)	Current Year's (Amortization)/Accretion	Current Year's Other-Than-Temporary Impairment Recognized	Total Change in Book/Adjusted Carrying Value (12 + 13 - 14)	Total Foreign Exchange Change in Book/Adjusted Carrying Value	Foreign Exchange Gain (Loss) on Disposal	Realized Gain (Loss) on Disposal	Total Gain (Loss) on Disposal	Interest and Dividends Received During Year	Paid for Accrued Interest and Dividends
57630G-35-9	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,933	100,000							(67)	(67)		
57630G-36-7	MASSMUTUAL SELECT T ROWE-MM TRP R2035		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667,000	100,000	100,600	100,000							600	600		
57630G-37-5	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,867	100,000							(133)	(133)		
57630G-38-3	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,867	100,000							(133)	(133)		
57630G-39-1	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,933	100,000							(67)	(67)		
57630G-41-7	MASSMUTUAL SELECT T ROWE-MM TRP R2030		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667,000	100,000	100,467	100,000							467	467		
57630G-42-5	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,867	100,000							(133)	(133)		
57630G-43-3	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,867	100,000							(133)	(133)		
57630G-44-1	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,867	100,000							(133)	(133)		
57630G-45-8	MASSMUTUAL SELECT T ROWE-MM TRP R2025		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667,000	100,000	100,400	100,000							400	400		
57630G-46-6	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-47-4	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-48-2	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,867	100,000							(133)	(133)		
57630G-49-0	MASSMUTUAL SELECT T ROWE-MM TRP R2020		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667,000	100,000	100,267	100,000							267	267		
57630G-51-6	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-52-4	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-53-2	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-54-0	MASSMUTUAL SELECT T ROWE-MM TRP R2015		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667,000	100,000	100,133	100,000							133	133		
57630G-55-7	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,733	100,000							(267)	(267)		
57630G-56-5	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,733	100,000							(267)	(267)		
57630G-57-3	MASSMUTUAL SELECT T. ROWE PRICE RETIREME		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-58-1	MASSMUTUAL SELECT T ROWE-MM TRP R2010		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667,000	100,000	100,000	100,000							200	200		
57630G-61-5	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-62-3	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-63-1	MASSMUTUAL SELECT T ROWE-MM TRP R2005		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667,000	100,000	100,000	100,000							200	200		
57630G-64-9	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-65-6	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-66-4	MASSMUTUAL SELECT T ROWE-MASSMUTUAL SELE		02/15/2018	DIRECT	03/21/2018	DIRECT	6,667,000	100,000	99,800	100,000							(200)	(200)		
57630G-67-2	MASSMUTUAL SELECT T ROWE-MM TRP R BAL		02/15/2018	DIRECT	06/20/2018	DIRECT	6,667,000	100,000	100,200	100,000							200	200		
57630G-68-0	MASSMUTUAL SELECT T ROWE-MM-TRP US TR-I		02/08/2018	DIRECT	03/21/2018	DIRECT	100,000,000	1,000,000	1,006,000	1,000,000							6,000	6,000		
57630G-69-8	MASSMUTUAL SELECT T ROWE-MM-TRP L/D I-I		02/08/2018	DIRECT	03/21/2018	DIRECT	100,000,000	1,000,000	1,001,000	1,000,000							1,000	1,000		
57630G-71-4	MASSMUTUAL SELECT T ROWE-MMS-TRP S/M-I		02/08/2018	DIRECT	03/21/2018	DIRECT	50,000,000	500,000	532,000	500,000							32,000	32,000		
57630G-72-2	MASSMUTUAL SELECT T ROWE-MM-TRP L/C B-I		02/08/2018	DIRECT	03/21/2018	DIRECT	50,000,000	500,000	524,500	500,000							24,500	24,500		
57630G-73-0	MASSMUTUAL SELECT T ROWE-MM-TRP R/A-I		02/08/2018	DIRECT	03/21/2018	DIRECT	50,000,000	500,000	511,000	500,000							11,000	11,000		

E15.12

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 5

Showing All Long-Term Bonds and Stocks ACQUIRED During Year and Fully DISPOSED OF During Current Year

1 CUSIP Identi- fication	2 Description	3 For- eign	4 Date Acquired	5 Name of Vendor	6 Disposal Date	7 Name of Purchaser	8 Par Value (Bonds) or Number of Shares (Stock)	9 Actual Cost	10 Consid- eration	11 Book/ Adjusted Carrying Value at Disposal	Change in Book/Adjusted Carrying Value					17 Foreign Exchange Gain (Loss) on Disposal	18 Realized Gain (Loss) on Disposal	19 Total Gain (Loss) on Disposal	20 Interest and Dividends Received During Year	21 Paid for Accrued Interest and Dividends
											12 Unrealized Valuation Increase/ (Decrease)	13 Current Year's (Amort- ization)/ Accretion	14 Current Year's Other- Than- Temporary Impairment Recognized	15 Total Change in Book/ Adjusted Carrying Valu (12 + 13 - 14)	16 Total Foreign Exchange Change in Book/ Adjusted Carrying Value					
576306-74-8	MASSMUTUAL SELECT T ROWE-MM-TRP 1N EQ-I		02/08/2018	DIRECT	03/21/2018	DIRECT	500,000.000	5,000,000	5,100,000	5,000,000						100,000	100,000			
	MASSMUTUAL SELECT T ROWE-MM-TRP B/A-INS																			
576306-75-5			02/08/2018	DIRECT	03/21/2018	DIRECT	100,000.000	1,000,000	991,000	1,000,000						(9,000)	(9,000)			
57631R-10-7	MASSMUTUAL SELECT T ROWE-MM-TRP E/M-I		02/08/2018	DIRECT	03/21/2018	DIRECT	500,000.000	5,000,000	5,005,000	5,000,000						5,000	5,000			
68385C-50-1	OPPENHEIMER GLOBAL REAL -CLASS L		08/24/2018	REINVEST	08/24/2018	DIRECT	348,488.000	3,199,797	3,184,211	3,199,797						(15,586)	(15,586)			
667585-68-0	OPPENHEIMERFUNDS ICAV - MUTUAL FUND	D	05/29/2018	REINVEST	06/05/2018	DIRECT	1,380.000	189,796	191,291	189,796						1,495	1,495			
9299999. Subtotal - Common Stocks - Mutual Funds								26,482,748	26,967,771	26,482,748						485,023	485,023	5,186		
9799998. Total - Common Stocks								302,960,479	290,856,291	302,960,480							(12,104,189)	(12,104,189)	1,768,082	
9899999. Total - Preferred and Common Stocks								302,960,479	290,856,291	302,960,480							(12,104,189)	(12,104,189)	1,768,082	
9999999 - Totals								5,039,927,865	5,019,812,552	5,037,929,621		455,701	1,402,771	(947,070)		(1,505,237)	(18,117,069)	(19,622,306)	29,268,187	2,840,726

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - PART 6 - SECTION 1

Valuation of Shares of Subsidiary, Controlled or Affiliated Companies

1 CUSIP Identification	2 Description, Name of Subsidiary, Controlled or Affiliated Company	3 Foreign	4 NAIC Company Code	5 ID Number	6 NAIC Valuation Method	7 Do Insurer's Assets Include Intangible Assets Connected with Holding of Such Company's Stock?	8 Total Amount of Such Intangible Assets	9 Book/ Adjusted Carrying Value	10 Nonadmitted Amount	Stock of Such Company Owned by Insurer on Statement Date		
										11 Number of Shares	12 % of Outstanding	
0999999. Total Preferred Stocks											XXX	XXX
12583*-10-0	C M LIFE INSURANCE COMPANY COMMON STOCK		93432	06-1041383	8B1	NO		1,637,317,539			12,500.000	100.0
1299999. Subtotal - Common Stock - U.S. Life Insurer											XXX	XXX
219268-10-5	CORNERSTONE GLOBAL REIT CORP COMMON STOC			20-8730751	8B11	NO		188,515			1,000.000	92.3
553308-10-5	MML MANAGEMENT CORPORATION COMMON STOCK			04-2443240	8B111	NO		1,012,033,389			2,000.000	100.0
57543#-11-8	MASSMUTUAL HOLDING LLC COMMON STOCK CLAS			04-2854319	8B11	YES	865,766,812	9,337,733,346			8,000.000	100.0
576318-10-5	MASSMUTUAL TRUST COMPANY COMMON STOCK			06-1563535	8B111	NO		26,658,638			5,500,000.000	100.0
1799999. Subtotal - Common Stock - Other Affiliates											XXX	XXX
1899999. Total Common Stocks											XXX	XXX
1999999 - Totals											XXX	XXX

1. Amount of insurer's capital and surplus from the prior period's statutory statement reduced by any admitted EDP, goodwill and net deferred tax assets included therein: \$1,547,480,050

2. Total amount of intangible assets nonadmitted \$

SCHEDULE D - PART 6 - SECTION 2

1 CUSIP Identification	2 Name of Lower-Tier Company	3 Name of Company Listed in Section 1 Which Controls Lower-Tier Company	4 Total Amount of Intangible Assets Included in Amount Shown in Column 8, Section 1	Stock in Lower-Tier Company Owned Indirectly by Insurer on Statement Date		
				5 Number of Shares	6 % of Outstanding	
05615*-MM-5	Barings LLC	MM Holding LLc Common Class	162,637,130	1,000	100.0	
68379*-MM-9	Oppenheimer Acquisition LLC	MM Holding LLc Common Class	703,129,682	57,752,188.000	99.0	
0299999. Subtotal - Common Stock				865,766,812	XXX	XXX
0399999 - Total				865,766,812	XXX	XXX

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DA - PART 1

Showing All SHORT-TERM INVESTMENTS Owned December 31 of Current Year

1	Codes		4	5	6	7	Change in Book/Adjusted Carrying Value				12	13	Interest					20	
	2	3					8	9	10	11			14	15	16	17	18		19
Description	Code	For- eign	Date Acquired	Name of Vendor	Maturity Date	Book/ Adjusted Carrying Value	Unrealized Valuation Increase/ (Decrease)	Current Year's (Amor- tization)/ Accretion	Current Year's Other- Than- Temporary Impairment Recognized	Total Foreign Exchange Change in Book/ Adjusted Carrying Value	Par Value	Actual Cost	Amount Due and Accrued Dec. 31 of Current Year on Bond Not in Default	Non- Admitted Due and Accrued	Rate of	Effective Rate of	When Paid	Amount Received During Year	Paid for Accrued Interest
0599999. Total - U.S. Government Bonds																			
1099999. Total - All Other Government Bonds																			
1799999. Total - U.S. States, Territories and Possessions Bonds																			
2499999. Total - U.S. Political Subdivisions Bonds																			
3199999. Total - U.S. Special Revenues Bonds																			
AT&T INC. COMMERCIAL PAPER	@		12/28/2018	JP MORGAN SECURITIES	05/28/2019	5,969,214		522			6,047,000	5,968,691			0.000	3.191	N/A		
AMERICAN HONDA FINANCE CORP. COMMERCIAL	@		12/17/2018	BANK OF AMERICA CORP	03/19/2019	6,712,422		7,272			6,750,000	6,705,150			0.000	2.617	N/A		
APPLE INC. COMMERCIAL PAPER	@		12/26/2018	BANK OF AMERICA CORP	03/29/2019	2,739,936		1,169			2,757,000	2,738,767			0.000	2.577	N/A		
APPLE INC. COMMERCIAL PAPER	@		12/19/2018	BANK OF AMERICA CORP	04/15/2019	4,466,559		4,145			4,500,000	4,462,414			0.000	2.592	N/A		
COCA-COLA CO., THE COMMERCIAL PAPER	@		12/17/2018	GOLDMAN	03/18/2019	17,950,062		18,289			18,050,000	17,931,773			0.000	2.637	N/A		
DUKE ENERGY CORP. COMMERCIAL PAPER	@		12/13/2018	WELLS FARGO	03/20/2019	9,934,685		14,952			10,000,000	9,919,733			0.000	3.034	N/A		
ENTERGY CORP COMMERCIAL PAPER	@		12/06/2018	MITSUBISHI UFJ SEC I	04/05/2019	9,917,562		22,562			10,000,000	9,895,000			0.000	3.183	N/A		
HARLEY-DAVIDSON FINANCIAL SERVICES, INC.	@		12/12/2018	WELLS FARGO	03/25/2019	9,929,567		15,984			10,000,000	9,913,583			0.000	3.077	N/A		
NATIONAL GRID USA COMMERCIAL PAPER	@		11/21/2018	CITIGROUP GLOBAL MAR	02/21/2019	27,681,445		94,578			27,800,000	27,586,867			0.000	3.023	N/A		
TOYOTA MOTOR CREDIT CORP. COMMERCIAL PAPER	@		12/18/2018	CITIGROUP GLOBAL MAR	03/21/2019	23,955,467		25,433			24,100,000	23,930,035			0.000	2.749	N/A		
WALGREENS BOOTS ALLIANCE, INC. COMMERCIA	@		12/20/2018	JP MORGAN SECURITIES	04/16/2019	2,317,078		2,479			2,339,000	2,314,598			0.000	3.244	N/A		
WALGREENS BOOTS ALLIANCE, INC. COMMERCIA	@		11/27/2018	MIZUHO SECURITIES	05/28/2019	14,800,325		45,429			15,000,000	14,754,896			0.000	3.304	N/A		
WALGREENS BOOTS ALLIANCE, INC. COMMERCIA	@		11/29/2018	MITSUBISHI UFJ SEC I	05/31/2019	14,796,342		38,738			15,000,000	14,757,604			0.000	3.303	N/A		
Bank of Montreal/Chicago-SR UNSECURED	A		11/07/2018	JP MORGAN SECURITIES	05/08/2019	10,000,000					10,000,000	10,000,000	40,819		2.721	2.737	FMAN		
BANK OF NOVA SCOTIA COMMERCIAL PAPER	@		04/11/2018	CITIGROUP GLOBAL MAR	04/12/2019	25,000,000					25,000,000	25,000,000			0.000	0.000	N/A		
BELL CANADA INC. COMMERCIAL PAPER	@		12/12/2018	CITIGROUP GLOBAL MAR	03/14/2019	19,877,402		32,102			20,000,000	19,845,300			0.000	3.084	N/A		
SUNCOR ENERGY INC. COMMERCIAL PAPER	@		11/30/2018	CITIGROUP GLOBAL MAR	03/04/2019	6,764,782		16,348			6,800,000	6,748,433			0.000	3.023	N/A		
SUNCOR ENERGY INC. COMMERCIAL PAPER	@		12/18/2018	VARIOUS	03/19/2019	17,035,046		20,735			17,150,000	17,014,310			0.000	3.155	N/A		
SUNCOR ENERGY INC. COMMERCIAL PAPER	@		12/06/2018	CITIGROUP GLOBAL MAR	03/28/2019	27,794,867		61,427			28,000,000	27,733,440			0.000	3.089	N/A		
TELUS CORPORATION COMMERCIAL PAPER	@		09/27/2018	WELLS FARGO	01/09/2019	4,997,035		33,841			5,000,000	4,963,194			0.000	2.670	N/A		
TELUS CORPORATION COMMERCIAL PAPER	@		12/20/2018	VARIOUS	03/19/2019	27,815,743		31,020			28,000,000	27,784,724			0.000	3.097	N/A		
TELUS CORPORATION COMMERCIAL PAPER	@		12/13/2018	WELLS FARGO	03/20/2019	4,966,922		5,471			5,000,000	4,961,451			0.000	3.074	N/A		
TELUS CORPORATION COMMERCIAL PAPER	@		12/20/2018	WELLS FARGO	06/18/2019	16,741,910		16,626			17,000,000	16,725,285			0.000	3.303	N/A		
Toronto-Dominion Bank/Th-INT BEAR SHORT	A		05/02/2018	CITIGROUP GLOBAL MAR	05/02/2019	25,000,000					25,000,000	25,000,000	112,438		2.699	2.714	FMAN	318,901	1,738
AUSTRALIA AND NEW ZEALAND BANKING GROUP	@		12/07/2018	JP MORGAN SECURITIES	10/10/2019	10,000,000					10,000,000	10,000,000			0.000	0.000	N/A		
BNP Paribas SA/New York -SR UNSECURED	D		11/07/2018	JP MORGAN SECURITIES	05/07/2019	27,100,000					27,100,000	27,100,000	50,309		2.673	2.691	MON	58,852	
COMMONWEALTH BANK OF AUSTRALIA COMMERCIA	@		10/18/2018	BARCLAYS CAPITAL INC	10/17/2019	8,000,000					8,000,000	8,000,000			0.000	0.000	N/A		
DNB BANK ASA COMMERCIAL PAPER	@		09/06/2018	CITIGROUP GLOBAL MAR	03/14/2019	18,000,000					18,000,000	18,000,000			0.000	0.000	N/A		
SKANDINAVISKA ENSKILDA BANKEN AB COMMERC	@		12/27/2018	BANK OF AMERICA CORP	03/29/2019	4,470,082		1,707			4,500,000	4,468,375			0.000	2.769	N/A		
TORONTO-DOMINION BANK (THE) COMMERCIAL P	@		09/04/2018	CITIGROUP GLOBAL MAR	05/24/2019	18,000,000					18,000,000	18,000,000			0.000	0.000	N/A		
Westpac Banking Corp-COMMERCIAL PAPER	D		06/01/2018	CITIGROUP GLOBAL MAR	05/24/2019	25,000,000					25,000,000	25,000,000	69,731		2.789	2.774	FMAN	301,850	3,359
3299999. Subtotal - Bonds - Industrial and Miscellaneous (Unaffiliated) - Issuer Obligations						447,734,453		510,829			449,893,000	447,223,623	273,297		XXX	XXX	XXX	679,603	5,097
3899999. Total - Industrial and Miscellaneous (Unaffiliated) Bonds						447,734,453		510,829			449,893,000	447,223,623	273,297		XXX	XXX	XXX	679,603	5,097
4899999. Total - Hybrid Securities																			
5599999. Total - Parent, Subsidiaries and Affiliates Bonds																			
6099999. Subtotal - SVO Identified Funds																			
6599999. Subtotal - Bank Loans																			
7799999. Total - Issuer Obligations						447,734,453		510,829			449,893,000	447,223,623	273,297		XXX	XXX	XXX	679,603	5,097
7899999. Total - Residential Mortgage-Backed Securities																			
7999999. Total - Commercial Mortgage-Backed Securities																			
8099999. Total - Other Loan-Backed and Structured Securities																			
8199999. Total - SVO Identified Funds																			
8299999. Total - Bank Loans																			
8399999. Total Bonds						447,734,453		510,829			449,893,000	447,223,623	273,297		XXX	XXX	XXX	679,603	5,097
8699999. Total - Parent, Subsidiaries and Affiliates																			
9199999 - Totals						447,734,453		510,829			XXX	447,223,623	273,297		XXX	XXX	XXX	679,603	5,097

E17

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23												
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)												
007999999. Subtotal - Purchased Options - Hedging Effective														XXX																			XXX	XXX
10896 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSSE INTERNATIONAL E58DKJMLYYYJLN8C3868	03/24/2009	03/25/2019		150,000,000	3.44250000	6,120,000			9,619,892		9,619,892	(3,410,067)							0001											
71967 Call Options - 10 YEAR SWAP	Portfolio Hedge	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUISFPUBMPRO8K5P83	01/23/2014	01/23/2019		19,350,000	4.18000000	1,000,395			2,469,524		2,469,524	(430,947)							0001											
72852 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSSE INTERNATIONAL E58DKJMLYYYJLN8C3868	03/04/2014	03/04/2024		50,000,000	4.46000000	3,114,100			6,544,805		6,544,805	(996,723)							0001											
72859 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIWZ7F32TWEFA76	03/04/2014	03/04/2024		50,000,000	4.46000000	3,000,000			6,577,232		6,577,232	(1,058,118)							0001											
72899 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	03/05/2014	03/05/2024		80,000,000	3.96000000	3,796,800			8,092,954		8,092,954	(1,511,790)							0001											
72907 Call Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUISFPUBMPRO8K5P83	03/05/2014	03/05/2021		60,000,000	3.73500000	4,716,000			11,320,484		11,320,484	(3,934,822)							0001											
75312 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1CNSX8D621K86	06/19/2014	06/19/2029		27,000,000	3.95000000	1,788,750			3,569,298		3,569,298	(650,360)							0001											
75325 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1CNSX8D621K86	06/20/2014	06/20/2029		27,000,000	3.97000000	1,782,000			3,606,562		3,606,562	(655,446)							0001											
75327 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	06/20/2014	06/20/2029		27,000,000	3.97000000	1,781,000			3,646,055		3,646,055	(551,059)							0001											
75345 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	06/24/2014	06/25/2029		37,500,000	3.89000000	2,490,938			4,876,025		4,876,025	(897,201)							0001											
75350 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	06/24/2014	06/25/2029		37,500,000	3.89250000	2,490,000			4,949,527		4,949,527	(535,937)							0001											
75719 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	07/17/2014	07/17/2029		50,000,000	3.76500000	3,377,500			6,168,482		6,168,482	(691,548)							0001											
76272 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1CNSX8D621K86	08/20/2014	08/20/2029		60,000,000	3.66750000	4,350,000			6,812,402		6,812,402	(1,273,449)							0001											
76596 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	09/08/2014	09/10/2029		50,000,000	3.62000000	3,602,500			5,649,093		5,649,093	(1,044,581)							0001											
76721 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB66KMZ0031MB27	09/10/2014	09/10/2029		70,000,000	3.73200000	3,878,000			5,939,335		5,939,335	(1,125,723)							0001											
76736 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1CNSX8D621K86	09/11/2014	09/11/2029		70,000,000	3.72500000	3,850,000			5,953,747		5,953,747	(1,023,397)							0001											
96761 Call Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUISFPUBMPRO8K5P83	03/24/2017	03/25/2024		6,000,000	1.77500000	370,800			237,034		237,034	(77,311)							0001											
96763 Call Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LCZKQKX5T7XV54	03/24/2017	03/24/2022		7,900,000	2.77500000	964,590			647,605		647,605	(270,315)							0001											

E 18

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
96782 Call Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	03/27/2017	03/30/2027	22,500,000	1.70000000	1,639,260			1,118,631		1,118,631	(260,910)						0001	
96832 Call Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	1VUV7VQFKU00SJ21A208	03/29/2017	03/30/2032	29,500,000	2.64750000	3,942,675			3,235,697		3,235,697	(585,788)						0001	
96835 Call Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	03/30/2017	03/30/2032	35,000,000	1.67000000	2,593,500			2,106,484		2,106,484	(339,228)						0001	
98999 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	07/12/2017	07/12/2032	70,000,000	2.25000000	3,318,000			2,713,983		2,713,983	(344,292)						0001	
99001 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	07/12/2017	07/12/2032	90,000,000	1.75000000	3,258,000			2,632,124		2,632,124	(306,204)						0001	
99145 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	1VUV7VQFKU00SJ21A208	07/14/2017	07/14/2032	34,000,000	2.28500000	1,608,200			1,321,522		1,321,522	(178,247)						0001	
100416 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC.	OZ3V05H2G7GRS05BHJ91	09/26/2017	09/27/2032	200,000,000	2.13600000	9,540,000			7,299,474		7,299,474	(952,683)						0001	
100716 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	ROMUJISFPUBMPRO8K5P83	10/11/2017	10/12/2032	70,000,000	2.23000000	3,295,600			2,669,919		2,669,919	(353,828)						0001	
100721 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14HNAYLU02	10/12/2017	10/12/2032	70,000,000	2.21200000	3,286,500			2,633,070		2,633,070	(371,073)						0001	
101228 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14HNAYLU02	11/10/2017	11/10/2032	90,000,000	2.29000000	4,077,000			3,535,418		3,535,418	(507,416)						0001	
101237 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	11/10/2017	11/10/2032	88,000,000	2.29500000	3,964,400			3,510,688		3,510,688	(436,385)						0001	
101863 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC.	OZ3V05H2G7GRS05BHJ91	12/04/2017	12/06/2032	90,000,000	2.21000000	3,991,500			3,421,351		3,421,351	(451,019)						0001	
101872 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	ROMUJISFPUBMPRO8K5P83	12/05/2017	12/06/2032	92,000,000	2.22250000	4,045,700			3,497,037		3,497,037	(459,594)						0001	
102365 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC.	OZ3V05H2G7GRS05BHJ91	12/19/2017	12/20/2032	173,000,000	2.50000000	8,299,675			7,712,063		7,712,063	(1,086,992)						0001	
102649 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	1VUV7VQFKU00SJ21A208	01/10/2018	01/10/2033	75,000,000	2.25000000		3,926,250		3,825,119		3,825,119	(101,131)						0001	
102652 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14HNAYLU02	01/11/2018	01/11/2033	85,000,000	2.26500000		4,437,000		4,422,175		4,422,175	(14,825)						0001	
102749 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	ROMUJISFPUBMPRO8K5P83	01/18/2018	01/18/2033	79,000,000	2.39500000		4,384,500		4,413,879		4,413,879	29,379						0001	
105600 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	1VUV7VQFKU00SJ21A208	04/19/2018	04/19/2033	116,000,000	1.96500000		4,324,500		5,045,924		5,045,924	721,424						0001	
109212 Call Options - 27 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	08/30/2018	08/30/2030	203,600,000	1.98500000		8,446,000		8,923,822		8,923,822	477,822						0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
109219 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	08/30/2018	08/31/2032		240,000,000	1.98000000		7,728,000		8,014,960		8,014,960	286,960						0001	
109220 Call Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	08/30/2018	08/31/2032		46,000,000	1.83250000		3,100,400		3,085,524		3,085,524	(14,876)						0001	
109328 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAVLU02	09/06/2018	09/06/2033		140,500,000	2.00000000		4,632,988		4,733,420		4,733,420	100,433						0001	
109401 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	09/11/2018	09/13/2032		118,000,000	2.57900000		4,885,200		5,502,046		5,502,046	616,846						0001	
109468 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	09/13/2018	09/13/2032		107,400,000	2.27000000		5,042,430		5,768,417		5,768,417	725,987						0001	
109616 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE ... 1VUV7VQFKU00S214A208	09/17/2018	09/17/2032		104,200,000	2.29250000		4,808,830		5,435,425		5,435,425	626,595						0001	
109697 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAVLU02	09/18/2018	09/19/2033		47,500,000	2.33800000		2,210,000		2,584,517		2,584,517	374,517						0001	
109704 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	09/19/2018	09/19/2033		72,700,000	2.34200000		3,249,690		3,929,886		3,929,886	680,196						0001	
109753 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMU/ISFPUMPR08K5P83	09/20/2018	09/20/2030		187,000,000	2.43900000		6,573,050		7,899,740		7,899,740	1,326,690						0001	
109970 Call Options - MXEA Index	Portfolio Hedge	VA Secondary Guarantees Clearly Defined Hedging Strategy	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK ... MBNUM2BPD07JBLYG310	09/26/2018	03/15/2019	18	18,000	2000.00000000		1,261,800		7,200		7,200	(1,254,600)						0003	
110195 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	10/04/2018	10/04/2030		96,500,000	2.56000000		3,334,075		4,376,434		4,376,434	1,042,359						0001	
110963 Call Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	10/29/2018	10/29/2029		91,000,000	2.29400000		3,587,675		4,739,449		4,739,449	1,151,774						0001	
111182 Call Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAVLU02	11/09/2018	11/10/2031		117,750,000	2.38000000		3,532,500		4,829,044		4,829,044	1,296,544						0001	
111861 Call Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. /CLEARED THROUGH CITI GLOBAL MARK ... MBNUM2BPD07JBLYG310	12/04/2018	01/18/2019	70	70,000	63.00000000		53,900		2,800		2,800	(51,100)						0003	
111862 Call Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC /CLEARED THROUGH CITI GLOBAL MARK ... MBNUM2BPD07JBLYG310	12/04/2018	01/18/2019	100	100,000	42.00000000		67,000		5,000		5,000	(62,000)						0003	
112538 Call Options - S&P 500 Index Listed	Portfolio Hedge	VA Secondary Guarantees Clearly Defined Hedging Strategy	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK ... MBNUM2BPD07JBLYG310	12/27/2018	12/20/2019	15	15,000	2650.00000000		1,476,500		1,794,000		1,794,000	317,501						0003	
112553 Call Options - S&P 500	Portfolio Hedge	VA Secondary Guarantees Clearly Defined Hedging Strategy	Equity/Index	CREDIT SUISSE INTERNATIONAL ... E58DK/GMJYYJLN8C3868	12/27/2018	12/28/2022		59,000,000	2950.00000000		3,463,400		3,720,613		3,720,613	257,213						0003	
0089999999. Subtotal - Purchased Options - Hedging Other - Call Options and Warrants										109,333,383	84,525,687		237,146,912	XXX	237,146,912	(18,238,747)				XXX	XXX		

E18.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
72849 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLNC3868	03/04/2014	03/04/2024		72,000,000	4.46000000	4,484,300			1,178,334		1,178,334	320,146						0001	
72862 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/04/2014	03/04/2024		72,000,000	4.46000000	4,600,000			1,176,617		1,176,617	300,496						0001	
75311 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFZY1ONSX8D621K86	06/19/2014	06/19/2029		49,000,000	3.95000000	3,246,250			2,099,724		2,099,724	545,969						0001	
75324 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFZY1ONSX8D621K86	06/20/2014	06/20/2029		49,000,000	3.97000000	3,234,000			2,074,659		2,074,659	541,025						0001	
75326 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	06/20/2014	06/20/2029		49,000,000	3.97000000	3,229,000			2,015,393		2,015,393	566,637						0001	
75346 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	06/24/2014	06/25/2029		37,500,000	3.89000000	2,490,938			1,660,881		1,660,881	396,994						0001	
75348 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	06/24/2014	06/25/2029		37,500,000	3.89250000	2,490,000			1,601,202		1,601,202	315,067						0001	
75741 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	07/17/2014	07/17/2029		50,000,000	3.76500000	3,377,500			2,309,789		2,309,789	453,659						0001	
76270 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFZY1ONSX8D621K86	08/20/2014	08/20/2029		60,000,000	3.66750000	4,350,000			3,061,356		3,061,356	757,783						0001	
76595 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	09/08/2014	09/10/2029		50,000,000	3.62000000	3,602,500			2,551,741		2,551,741	649,026						0001	
76720 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6KMZ0031MB27	09/10/2014	09/10/2029		70,000,000	3.73200000	3,878,000			2,710,095		2,710,095	584,766						0001	
76735 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFZY1ONSX8D621K86	09/11/2014	09/11/2029		70,000,000	3.72500000	3,850,000			2,725,088		2,725,088	614,130						0001	
86548 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	01/13/2016	12/18/2020		9,625,000	1925.00000000	1,938,750			389,826		389,826	(15,014)						0003	
88434 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H2G7GRS05BHJ91	04/19/2016	04/20/2026		125,000,000	3.40000000	10,150,000			10,105,705		10,105,705	2,590,877						0001	
88463 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	04/20/2016	04/20/2026		50,000,000	3.38750000	4,015,000			4,096,200		4,096,200	1,086,066						0001	
88473 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	04/21/2016	04/21/2026		75,000,000	3.50000000	5,910,000			5,630,256		5,630,256	1,527,798						0001	
89511 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	05/27/2016	05/27/2026		80,000,000	3.41500000	6,288,000			6,436,247		6,436,247	1,715,660						0001	
89519 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUISFPUMPR08K5P83	05/31/2016	05/28/2021		50,000,000	3.41250000	2,785,000			1,955,496		1,955,496	384,785						0001	
89521 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H2G7GRS05BHJ91	05/31/2016	05/29/2026		30,000,000	3.45000000	2,325,000			2,343,261		2,343,261	606,019						0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
90448 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	06/30/2016	06/30/2026		60,000,000	3.07000000	5,370,000			6,226,818		6,226,818	1,359,179						0001	
90458 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	07/01/2016	07/01/2026		50,000,000	3.01000000	4,572,500			5,427,092		5,427,092	1,159,649						0001	
90957 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	08/05/2016	08/05/2026		75,000,000	3.01000000	6,667,500			8,156,492		8,156,492	1,737,707						0001	
90987 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	08/08/2016	08/10/2026		38,000,000	3.01000000	3,366,800			4,190,810		4,190,810	986,943						0001	
91764 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	09/14/2016	09/14/2026		55,000,000	3.08000000	4,859,250			5,752,679		5,752,679	1,396,916						0001	
91778 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	09/15/2016	09/15/2026		58,000,000	3.10000000	5,109,800			5,964,781		5,964,781	1,391,524						0001	
92217 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	09/28/2016	09/28/2026		108,000,000	2.88750000	9,990,000			13,012,411		13,012,411	2,955,483						0001	
93271 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	11/22/2016	11/24/2031		150,000,000	3.52500000	11,925,000			11,980,371		11,980,371	2,975,166						0001	
93272 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	11/22/2016	11/24/2031		75,000,000	3.52750000	5,977,500			5,895,416		5,895,416	1,275,531						0001	
93273 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	11/22/2016	11/24/2031		87,500,000	3.52500000	6,991,250			6,877,391		6,877,391	1,649,829						0001	
93829 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	12/07/2016	05/29/2026		15,000,000	3.35750000	1,390,000			1,258,208		1,258,208	318,148						0001	
94947 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	01/09/2017	05/28/2021		25,000,000	3.35000000	1,700,000			1,069,315		1,069,315	196,653						0001	
95723 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	02/10/2017	05/27/2026		40,000,000	3.56000000	3,300,000			2,888,047		2,888,047	806,909						0001	
96760 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPUB8MPR08K5P83	03/24/2017	03/25/2024		10,100,000	3.77500000	623,170			513,195		513,195	144,116						0001	
96762 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	03/24/2017	03/24/2022		12,600,000	2.77500000	1,538,460			1,298,309		1,298,309	289,025						0001	
96783 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	03/27/2017	03/30/2027		46,000,000	3.70000000	3,300,730			3,069,235		3,069,235	848,358						0001	
96836 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	03/30/2017	03/30/2032		98,000,000	3.67000000	7,350,000			7,033,160		7,033,160	1,712,545						0001	
99000 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	07/12/2017	07/12/2032		180,000,000	3.75000000	6,606,000			6,734,839		6,734,839	1,562,629						0001	
99146 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	07/14/2017	07/14/2032		72,000,000	3.28500000	3,394,800			3,415,941		3,415,941	646,049						0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
102656 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	01/11/2018	01/11/2021	50,000,000	2.71500000		4,147,500		4,542,909		4,542,909	395,409						0001	
102659 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	01/11/2018	01/13/2025	80,000,000	3.22500000		5,700,000		7,036,970		7,036,970	1,336,970						0001	
104273 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	1VU7V0FKU0QSJ21A208	02/28/2018	02/26/2021	514,000,000	3.49500000		24,980,400		16,813,486		16,813,486	(8,166,914)						0001	
105076 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	ROMUJSPU8MPR08K5P83	03/28/2018	03/28/2023	375,000,000	3.35000000		25,050,000		24,655,392		24,655,392	(394,608)						0001	
105601 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	1VU7V0FKU0QSJ21A208	04/19/2018	04/19/2033	230,000,000	3.96500000		8,475,500		9,616,690		9,616,690	1,141,190						0001	
107691 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL	E58DKGMJYYJLN8C3868	06/29/2018	06/17/2022	62,150,000	2750.00000000		7,442,406		9,516,000		9,516,000	2,073,594						0003	
108647 Put Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	/CLEARED THROUGH CITI GLOBAL MARK	MBNUN2BPBD07JBLYG310	08/08/2018	12/18/2020	1,500	7300.00000000		975,000		1,767,750		1,767,750	792,750						0003	
108649 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC	4PQUH3JPF6FNF3BB653	08/08/2018	07/15/2022	35,000,000	2800.00000000		3,710,781		5,660,572		5,660,572	1,949,790						0003	
108917 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON	ROMUJSPU8MPR08K5P83	08/21/2018	08/19/2022	35,625,000	2850.00000000		3,927,750		6,114,221		6,114,221	2,186,471						0003	
109211 Put Options - 27 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	08/30/2018	08/30/2030	822,500,000	4.98500000		18,823,000		20,711,063		20,711,063	1,888,063						0001	
109218 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	08/30/2018	08/31/2032	901,000,000	4.98000000		17,299,200		18,655,613		18,655,613	1,356,413						0001	
109221 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	08/30/2018	08/31/2032	200,000,000	4.83250000		7,440,000		7,681,518		7,681,518	241,518						0001	
109319 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14#NAYLU02	09/06/2018	09/06/2033	667,000,000	5.50000000		10,455,225		11,036,824		11,036,824	581,599						0001	
109400 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	09/11/2018	09/13/2032	463,700,000	4.57900000		11,036,060		11,478,353		11,478,353	442,293						0001	
109469 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX5T7XV54	09/13/2018	09/13/2032	435,200,000	4.77000000		11,424,000		12,717,535		12,717,535	1,293,535						0001	
109615 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	1VU7V0FKU0QSJ21A208	09/17/2018	09/17/2032	422,010,000	4.79250000		11,068,670		11,787,754		11,787,754	719,084						0001	
109696 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14#NAYLU02	09/18/2018	09/19/2033	193,000,000	4.83800000		4,800,000		5,203,494		5,203,494	403,494						0001	
109703 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	09/19/2018	09/19/2033	295,000,000	4.84200000		7,463,500		7,946,291		7,946,291	482,791						0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
109754 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUSFPUBMPRO8K5P83	09/20/2018	09/20/2030		648,000,000	4.68900000		14,547,600		14,692,641		14,692,641	145,041						0001	
109808 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	09/21/2018	09/21/2033		578,000,000	4.99600000		19,595,000		21,956,617		21,956,617	2,361,617						0001	
109878 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	09/25/2018	09/25/2031		990,000,000	4.70000000		22,525,000		22,930,762		22,930,762	405,762						0001	
109879 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC 4PQUHNSJPF6FN3B8653	09/25/2018	09/26/2022		29,000,000	2900.00000000		3,079,600		5,161,343		5,161,343	2,081,743						0003	
109941 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUSFPUBMPRO8K5P83	09/25/2018	09/26/2033		427,500,000	4.87200000		11,068,497		11,609,592		11,609,592	541,095						0001	
110050 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H267GRS05BHJ91	09/28/2018	09/28/2032		458,000,000	4.88400000		9,285,950		9,844,811		9,844,811	558,861						0001	
110071 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	10/01/2018	10/03/2033		243,500,000	4.50600000		10,900,000		11,407,707		11,407,707	507,707						0001	
110091 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE 1VUV7VQFKU00S.J21A208	10/02/2018	10/04/2032		570,000,000	4.90125000		11,688,000		12,146,069		12,146,069	458,069						0001	
110194 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/04/2018	10/04/2030		393,500,000	5.06000000		7,791,300		7,547,835		7,547,835	(243,465)						0001	
110197 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/04/2018	10/04/2033		413,000,000	4.76700000		9,332,000		9,466,049		9,466,049	134,049						0001	
110239 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/05/2018	10/05/2033		478,500,000	5.03700000		9,770,750		9,807,954		9,807,954	37,204						0001	
110391 Put Options - MXEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	SOCIETE GENERAL 02RNE81BXP4R0TD8PU41	10/11/2018	05/20/2022		37,400,000	1870.00000000		5,810,000		5,837,643		5,837,643	27,643						0003	
110571 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	10/18/2018	10/18/2033		348,500,000	4.79000000		7,980,650		7,551,182		7,551,182	(429,468)						0001	
110573 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUSFPUBMPRO8K5P83	10/18/2018	10/18/2033		344,000,000	4.80000000		8,060,780		7,639,627		7,639,627	(421,153)						0001	
110642 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUSFPUBMPRO8K5P83	10/19/2018	10/20/2031		357,500,000	4.80500000		10,518,365		9,709,562		9,709,562	(808,803)						0001	
110643 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE 1VUV7VQFKU00S.J21A208	10/19/2018	10/20/2031		360,000,000	4.80600000		10,500,000		9,871,968		9,871,968	(628,032)						0001	
110838 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNJM2BPBD07JBLYG310	10/25/2018	03/15/2019	180	180,000	37.00000000		265,800		147,600		147,600	(118,200)						0003	
110840 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/25/2018	10/27/2031		260,000,000	4.78000000		7,531,940		7,447,175		7,447,175	(84,765)						0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)		
110861 Put Options - Russell 2000	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	SOCIETE GENERAL 02PNE81BXP4R0TD8PU41	10/26/2018	10/28/2022		26,000,000	1300.00000000		2,581,960		3,137,518		3,137,518	555,558							0003	
110864 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5 Schedule B, D, Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPD07JBLYG310	10/26/2018	03/15/2019	250	250,000	37.00000000		433,862		205,000		205,000	(228,862)								0003
110962 Put Options - 15 YEAR SWAP	Portfolio Hedge		Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQX5T7XV54	10/29/2018	10/29/2029		123,000,000	4.79400000		3,579,300		3,309,794		3,309,794	(269,506)								0001
111070 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5 Schedule B, D, Exhibit 5	Equity/Index	WELLS FARGO SECURITIES /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPD07JBLYG310	11/01/2018	03/15/2019	250	250,000	37.00000000		320,000		205,000		205,000	(115,000)								0003
111183 Put Options - 10 YEAR SWAP	Portfolio Hedge		Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAU02	11/09/2018	11/10/2031		133,300,000	4.63000000		3,532,450		3,176,056		3,176,056	(356,394)								0001
111258 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPD07JBLYG310	11/14/2018	03/15/2019	500	500,000	35.00000000		350,000		210,000		210,000	(140,000)								0003
111404 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPD07JBLYG310	11/20/2018	03/15/2019	300	300,000	37.00000000		390,000		246,000		246,000	(144,000)								0003
111572 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	SOCIETE GENERAL 02PNE81BXP4R0TD8PU41	11/26/2018	12/28/2022		26,500,000	2650.00000000		3,184,450		3,939,805		3,939,805	755,355								0003
111590 Put Options - NASDAQ 100 Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	11/27/2018	11/28/2022		16,250,000	6500.00000000		2,098,800		2,462,757		2,462,757	363,957								0003
111644 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPD07JBLYG310	11/27/2018	12/18/2020	10	10,000	2600.00000000		2,105,000		2,831,000		2,831,000	726,000								0003
111841 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPD07JBLYG310	12/04/2018	12/18/2020	10	10,000	2800.00000000		2,445,000		3,891,000		3,891,000	1,446,000								0003
111864 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPD07JBLYG310	12/04/2018	12/18/2020	15	15,000	2600.00000000		3,000,000		4,246,500		4,246,500	1,246,500								0003
111911 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPD07JBLYG310	12/06/2018	03/15/2019	300	300,000	37.00000000		324,575		246,000		246,000	(78,575)								0003
111915 Put Options - NASDAQ 100 Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	12/06/2018	11/28/2022		16,250,000	6500.00000000		2,050,525		2,462,722		2,462,722	412,197								0003
111984 Put Options - Russell 2000	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV1H4R804	12/07/2018	12/07/2022		15,500,000	1550.00000000		2,189,100		2,730,426		2,730,426	541,326								0003
111986 Put Options - MEXA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	GOLDMAN SACHS INTERNATIONAL W2LR0IP21HZNB6K528	12/07/2018	12/07/2022		34,000,000	1700.00000000		3,982,800		4,409,235		4,409,235	426,435								0003

E18.7

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Undiscounted Premium (Received) Paid	Current Year Initial Cost of Undiscounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
112011 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/10/2018	03/15/2019	200	200,000	37.00000000		227,960		164,000		164,000	(63,960)						0003	
112080 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/11/2018	09/18/2020	100	100,000	230.00000000		1,370,156		1,500,000		1,500,000	129,844						0003	
112228 Put Options - Russell 2000 Index Listed	Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/14/2018	12/18/2020	10	10,000	1400.00000000		1,343,900		1,518,000		1,518,000	174,100						0003	
112360 Put Options - EM-MXEF Index Listed	Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/18/2018	09/20/2019	20	20,000	965.00000000		1,620,000		1,560,000		1,560,000	(60,000)						0003	
112365 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/18/2018	12/18/2020	100	100,000	230.00000000		1,677,514		1,591,000		1,591,000	(86,514)						0003	
112377 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/19/2018	09/20/2019	230	230,000	37.00000000		491,862		462,300		462,300	(29,562)						0003	
112379 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/19/2018	12/18/2020	350	350,000	230.00000000		5,690,190		5,568,500		5,568,500	(121,690)						0003	
112381 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/19/2018	09/20/2019	500	500,000	37.00000000		1,045,000		1,005,000		1,005,000	(40,000)						0003	
112385 Put Options - S&P 500	Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC 4PQUH3JPF6GFNF3B8653	12/19/2018	12/21/2022		20,750,000	2500.00000000		2,909,150		2,697,498		2,697,498	(211,652)						0003	
112386 Put Options - S&P 500	Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC 4PQUH3JPF6GFNF3B8653	12/19/2018	12/21/2022		27,250,000	2500.00000000		3,825,900		3,542,497		3,542,497	(283,403)						0003	
112387 Put Options - EM MXEF	Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC 4PQUH3JPF6GFNF3B8653	12/19/2018	12/17/2021		18,000,000	900.00000000		2,217,820		2,280,505		2,280,505	62,685						0003	
112389 Put Options - MXEA Index	Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/19/2018	12/21/2022		52,500,000	1750.00000000		7,014,231		7,549,961		7,549,961	535,730						0003	
112408 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	03/15/2019	854	854,000	35.00000000		545,100		358,680		358,680	(186,420)						0003	
112410 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	06/19/2020	620	620,000	225.00000000		9,337,200		7,923,600		7,923,600	(1,413,600)						0003	
112411 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	03/15/2019	600	600,000	52.00000000		348,000		186,000		186,000	(162,000)						0003	
112412 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	03/20/2020	755	755,000	225.00000000		10,650,408		8,584,350		8,584,350	(2,066,058)						0003	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)		
112413 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	12/18/2020	30	30,000	1400.00000000		5,578,200		4,554,000		4,554,000	(1,024,200)							0003	
112414 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	06/19/2020	100	100,000	225.00000000		1,534,379		1,278,000		1,278,000	(256,379)								0003
112417 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	09/18/2020	100	100,000	225.00000000		1,630,852		1,358,000		1,358,000	(272,852)								0003
112418 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	06/19/2020	75	75,000	225.00000000		1,126,112		958,500		958,500	(167,612)								0003
112420 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	09/18/2020	350	350,000	225.00000000		5,849,677		4,753,000		4,753,000	(1,096,677)								0003
112421 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	09/20/2019	750	750,000	37.00000000		1,762,500		1,507,500		1,507,500	(255,000)								0003
112422 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	06/21/2019	1,750	1,750,000	35.00000000		2,310,000		1,837,500		1,837,500	(472,500)								0003
112423 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	03/15/2019	1,396	1,395,600	55.00000000		1,409,556		976,920		976,920	(432,636)								0003
112424 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	06/21/2019	500	500,000	53.00000000		778,056		640,000		640,000	(138,056)								0003
112426 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	06/21/2019	2,500	2,500,000	35.00000000		3,175,000		2,625,000		2,625,000	(550,000)								0003
112428 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	09/20/2019	1,000	1,000,000	53.00000000		1,940,000		1,740,000		1,740,000	(200,000)								0003
112434 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	12/20/2018	12/21/2022		24,000,000	2400.00000000		3,080,900		2,856,479		2,856,479	(224,421)								0003
112436 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/21/2018	06/21/2019	1,000	1,000,000	53.00000000		1,630,000		1,280,000		1,280,000	(350,000)								0003
112437 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/21/2018	09/20/2019	1,000	1,000,000	53.00000000		2,070,000		1,740,000		1,740,000	(330,000)								0003
112441 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/21/2018	09/20/2019	1,650	1,650,000	33.00000000		1,996,500		1,732,500		1,732,500	(264,000)								0003
112446 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/21/2018	12/18/2020	10	10,000	2500.00000000		2,560,000		2,391,000		2,391,000	(169,000)								0003
112447 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/21/2018	06/21/2019	400	400,000	53.00000000		660,000		512,000		512,000	(148,000)								0003

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
112448 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/18/2020	10	10,000	2500.00000000		2,520,000		2,391,000		2,391,000	(129,000)						0003	
112461 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC /CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	09/20/2019	750	750,000	53.00000000		1,500,000		1,305,000		1,305,000	(195,000)						0003	
112464 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	09/18/2020	100	100,000	225.00000000		1,632,301		1,358,000		1,358,000	(274,301)						0003	
112496 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/18/2020	300	300,000	225.00000000		5,263,656		4,335,000		4,335,000	(928,656)						0003	
112536 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC /CLEARED THROUGH CITI GLOBAL MARK	12/27/2018	09/20/2019	500	500,000	33.00000000		640,000		525,000		525,000	(115,000)						0003	
112537 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK	12/27/2018	12/20/2019	10	10,000	2300.00000000		1,430,000		1,133,000		1,133,000	(297,000)						0003	
112539 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES /CLEARED THROUGH CITI GLOBAL MARK	12/27/2018	06/21/2019	500	500,000	50.00000000		595,000		405,000		405,000	(190,000)						0003	
112541 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK	12/27/2018	12/18/2020	100	100,000	225.00000000		1,846,793		1,445,000		1,445,000	(401,793)						0003	
112547 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL	12/27/2018	12/28/2022		23,500,000	2350.00000000		3,052,100		2,676,885		2,676,885	(375,215)						0003	
112563 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK	12/27/2018	12/18/2020	50	50,000	225.00000000		856,469		722,500		722,500	(133,969)						0003	
112565 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK	12/27/2018	12/18/2020	50	50,000	225.00000000		850,388		722,500		722,500	(127,888)						0003	
112566 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK	12/27/2018	03/15/2019	50	50,000	205.00000000		81,250		52,500		52,500	(28,750)						0003	
112619 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK	12/28/2018	12/17/2021	8	7,500	1300.00000000		1,165,960		1,031,250		1,031,250	(134,710)						0003	
112620 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. /CLEARED THROUGH CITI GLOBAL MARK	12/28/2018	12/17/2021	8	7,500	1400.00000000		1,457,090		1,341,000		1,341,000	(116,090)						0003	
112624 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC /CLEARED THROUGH CITI GLOBAL MARK	12/31/2018	09/20/2019	500	500,000	33.00000000		540,000		525,000		525,000	(15,000)						0003	
112625 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK	12/31/2018	06/19/2020	173	173,300	225.00000000		2,338,405		2,214,774		2,214,774	(123,631)						0003	
0099999999. Subtotal - Purchased Options - Hedging Other - Put Options										170,276,998	512,213,580		673,729,462	XXX	673,729,462	41,983,751				XXX	XXX		

E18.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)							
109224 Caps - 10-20MS CUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL02	08/31/2018	08/30/2019		4,500,000,000	02500000		6,367,500		9,257,876		9,257,876	2,890,376						0001							
109225 Caps - 10-20MS CUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	08/31/2018	09/04/2019		1,500,000,000	02400000		2,095,000		3,183,046		3,183,046	1,088,046						0001							
109226 Caps - 10-20MS CUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	08/31/2018	09/02/2021		964,864,000	40850000		1,785,000		2,422,634		2,422,634	637,634						0001							
109227 Caps - 10-20MS CUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES I7331LVC2KQKX57XV54	08/31/2018	09/04/2019		1,500,000,000	02250000		2,081,250		3,278,731		3,278,731	1,197,481						0001							
0109999999. Subtotal - Purchased Options - Hedging Other - Caps											12,328,750		18,142,286		18,142,286	5,813,536									XXX	XXX			
0149999999. Subtotal - Purchased Options - Hedging Other										279,610,380	609,068,017		929,018,660	XXX	929,018,660	29,558,540										XXX	XXX		
0219999999. Subtotal - Purchased Options - Replications														XXX											XXX	XXX			
0289999999. Subtotal - Purchased Options - Income Generation														XXX											XXX	XXX			
0359999999. Subtotal - Purchased Options - Other														XXX												XXX	XXX		
0369999999. Total Purchased Options - Call Options and Warrants										109,333,383	84,525,687		237,146,912	XXX	237,146,912	(18,238,747)												XXX	XXX
0379999999. Total Purchased Options - Put Options										170,276,998	512,213,580		673,729,462	XXX	673,729,462	41,983,751												XXX	XXX
0389999999. Total Purchased Options - Caps														XXX	18,142,286	5,813,536												XXX	XXX
0399999999. Total Purchased Options - Floors														XXX													XXX	XXX	
0409999999. Total Purchased Options - Collars														XXX														XXX	XXX
0419999999. Total Purchased Options - Other														XXX														XXX	XXX
0429999999. Total Purchased Options										279,610,380	609,068,017		929,018,660	XXX	929,018,660	29,558,540												XXX	XXX
0499999999. Subtotal - Written Options - Hedging Effective														XXX														XXX	XXX
104794 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	03/20/2018	03/20/2020	125	125,000	135.00000000		(162,180)		(127,500)		(127,500)	34,680						0003							
106274 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	05/16/2018	03/20/2020	100	100,000	135.00000000		(107,100)		(102,000)		(102,000)	5,100						0003							
106508 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	05/23/2018	03/20/2020	200	200,000	135.00000000		(210,700)		(204,000)		(204,000)	6,700						0003							
107168 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	06/12/2018	03/20/2020	130	130,000	135.00000000		(112,300)		(132,600)		(132,600)	(20,300)						0003							
107255 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	06/15/2018	03/20/2020	200	200,000	135.00000000		(177,250)		(204,000)		(204,000)	(26,750)						0003							
107469 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	06/25/2018	06/19/2020	200	200,000	140.00000000		(304,200)		(310,000)		(310,000)	(5,800)						0003							
107550 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	06/27/2018	06/19/2020	120	120,000	140.00000000		(161,332)		(186,000)		(186,000)	(24,668)						0003							
107675 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	06/29/2018	06/19/2020	100	100,000	140.00000000		(133,480)		(155,000)		(155,000)	(21,520)						0003							
108007 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	07/11/2018	06/19/2020	100	100,000	140.00000000		(116,500)		(155,000)		(155,000)	(38,500)						0003							
109608 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPBD07JBLYG310	09/17/2018	06/19/2020	100	100,000	140.00000000		(81,500)		(155,000)		(155,000)	(73,500)						0003							

E18.11

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)		
109793 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	09/21/2018	06/19/2020	273	273,300	140.00000000		(205,231)		(423,615)		(423,615)	(218,384)							0003	
110002 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	09/27/2018	09/18/2020	100	100,000	145.00000000		(105,917)		(219,000)		(219,000)	(113,083)								0003
112364 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/18/2018	12/18/2020	100	100,000	130.00000000		(165,737)		(171,000)		(171,000)	(5,263)								0003
112378 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/19/2018	12/18/2020	350	350,000	130.00000000		(546,225)		(598,500)		(598,500)	(52,275)								0003
112416 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	09/18/2020	350	350,000	125.00000000		(508,105)		(416,500)		(416,500)	91,605								0003
112419 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/20/2018	09/18/2020	100	100,000	125.00000000		(144,261)		(119,000)		(119,000)	25,261								0003
112463 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/21/2018	09/18/2020	100	100,000	125.00000000		(140,671)		(119,000)		(119,000)	21,671								0003
112495 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/21/2018	12/18/2020	300	300,000	125.00000000		(486,513)		(441,000)		(441,000)	45,513								0003
112540 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/27/2018	12/18/2020	100	100,000	125.00000000		(170,972)		(147,000)		(147,000)	23,972								0003
112562 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/27/2018	12/18/2020	50	50,000	130.00000000		(91,532)		(85,500)		(85,500)	6,032								0003
112564 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN /CLEARED THROUGH CITI GLOBAL MARK MBNUM2BPPBD07JBLYG310	12/27/2018	12/18/2020	50	50,000	130.00000000		(88,488)		(85,500)		(85,500)	2,988								0003
0519999999. Subtotal - Written Options - Hedging Other - Put Options											(4,220,194)		(4,556,715)	XXX	(4,556,715)	(336,521)						XXX	XXX	
0569999999. Subtotal - Written Options - Hedging Other											(4,220,194)		(4,556,715)	XXX	(4,556,715)	(336,521)						XXX	XXX	
0639999999. Subtotal - Written Options - Replications														XXX								XXX	XXX	
0709999999. Subtotal - Written Options - Income Generation														XXX								XXX	XXX	
0779999999. Subtotal - Written Options - Other														XXX								XXX	XXX	
0789999999. Total Written Options - Call Options and Warrants														XXX								XXX	XXX	
0799999999. Total Written Options - Put Options											(4,220,194)		(4,556,715)	XXX	(4,556,715)	(336,521)						XXX	XXX	
0809999999. Total Written Options - Caps														XXX								XXX	XXX	
0819999999. Total Written Options - Floors														XXX								XXX	XXX	
0829999999. Total Written Options - Collars														XXX								XXX	XXX	
0839999999. Total Written Options - Other														XXX								XXX	XXX	
0849999999. Total Written Options											(4,220,194)		(4,556,715)	XXX	(4,556,715)	(336,521)						XXX	XXX	
0909999999. Subtotal - Swaps - Hedging Effective														XXX								XXX	XXX	
Interest Rate Swap 000060 /1498/[At Maturity] LIBOR [2.51713%]/At Maturity FIXED 9.00746%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	08/07/1992	08/11/2022		98,821,992	9.00746% [LIBOR]			8,148,852	26,849,067		26,849,067	(7,464,047)						938,809	0001	
Interest Rate Swap 000184 /1499/[At Maturity] LIBOR [2.792%]/At Maturity FIXED 7.516%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6KGMZ0031MB27	06/18/1996	06/22/2026		20,125,384	7.516% [LIBOR]			1,284,739	9,020,693		9,020,693	(1,480,649)						275,210	0001	

E18.12

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 000495 /34492/[Semi-Annual] FIXED [5.945%]/Semi-Annual LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	11/17/1998	11/19/2028		16,000,000	LIBOR [5.945%]			(604,407)	(4,537,420)		(4,537,420)	957,443					251,587	0001	
Interest Rate Swap 000502 /34493/[Semi-Annual] FIXED [5.697%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	12/09/1998	12/11/2028		10,000,000	LIBOR [5.697%]			(352,907)	(2,629,750)		(2,629,750)	577,268					157,718	0001	
Interest Rate Swap 000643 /1500/[At Maturity] LIBOR [2.50925%]/At Maturity FIXED 7.1095%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	07/26/1999	07/28/2019		76,929,179	7.1095% [LIBOR]			4,678,072	2,058,087		2,058,087	(4,159,880)					292,938	0001	
Interest Rate Swap 000646 /838/[Semi-Annual] LIBOR [2.52038%]/Semi-Annual FIXED 6.937%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	07/28/1999	07/30/2019		45,800,000	6.937% [LIBOR]			2,172,572	1,106,559		1,106,559	(2,414,788)					174,401	0001	
Interest Rate Swap 010005 /34494/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 7.297%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	08/12/1999	08/16/2019		3,500,000	7.297% [LIBOR]			179,735	98,531		98,531	(197,797)					13,890	0001	
Interest Rate Swap 010136 /1501/[At Maturity] LIBOR [2.73813%]/At Maturity FIXED 7.06445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	08/27/1999	09/03/2019		198,219,563	7.06445% [LIBOR]			11,892,828	5,956,423		5,956,423	(10,657,810)					817,280	0001	
Interest Rate Swap 020422 /1094/[Semi-Annual] LIBOR [2.78819%]/Semi-Annual FIXED 7.069%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	09/13/1999	09/15/2019		30,000,000	7.069% [LIBOR]			1,464,458	900,483		900,483	(1,641,005)					126,392	0001	
Interest Rate Swap 010457 /34497/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 7.745%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	05/05/2000	05/09/2020		20,000,000	7.745% [LIBOR]			1,112,268	1,343,296		1,343,296	(1,261,353)					116,619	0001	
Interest Rate Swap 010689 /853/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 7.0225%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	09/26/2000	09/28/2020		4,000,000	7.0225% [LIBOR]			192,080	294,221		294,221	(226,074)					26,382	0001	
Interest Rate Swap 020430 /1095/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 6.37%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	01/25/2001	01/29/2031		20,000,000	6.37% [LIBOR]			836,861	7,508,321		7,508,321	(1,403,420)					347,563	0001	
Interest Rate Swap 020439 /1098/[Quarterly] LIBOR [2.52863%]/Semi-Annual FIXED 6.446%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	01/29/2001	01/31/2031		19,000,000	6.446% [LIBOR]			808,698	7,280,383		7,280,383	(1,348,089)					330,185	0001	

E18.13

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 010972 /855/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 6.13%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	02/01/2001	02/05/2031		10,000,000	6.13% [LIBOR]			394,691	3,454,054		3,454,054	(729,618)				173,925		0001	
Interest Rate Swap 011046 /34498/[Semi-Annual] FIXED [6.14%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/28/2001	03/02/2021		2,000,000	LIBOR [6.14%]			(79,429)	(147,088)		(147,088)	96,709				14,731		0001	
Interest Rate Swap 011954 /34501/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 6.276%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	07/19/2001	07/23/2031		11,000,000	6.276% [LIBOR]			448,601	4,088,102		4,088,102	(835,543)				194,920		0001	
Interest Rate Swap 020411 /1090/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 6.215%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFZY1ONSX8D621K86	07/31/2001	08/02/2031		26,000,000	6.215% [LIBOR]			1,045,786	9,657,516		9,657,516	(1,848,769)				461,270		0001	
Interest Rate Swap 012014 /862/[Quarterly] LIBOR [2.61613%]/Semi-Annual FIXED 6.1775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	08/13/2001	08/15/2031		15,000,000	6.1775% [LIBOR]			602,169	5,510,876		5,510,876	(1,051,451)				266,540		0001	
Interest Rate Swap 020421 /1093/[Quarterly] LIBOR [2.80069%]/Semi-Annual FIXED 6.03%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	09/14/2001	09/18/2031		50,000,000	6.03% [LIBOR]			1,920,466	17,683,209		17,683,209	(3,501,053)				891,628		0001	
Interest Rate Swap 012076 /864/[Semi-Annual] LIBOR [2.80363%]/Semi-Annual FIXED 5.98%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDWITX03601TB7DW3U69	09/17/2001	09/19/2031		50,000,000	5.98% [LIBOR]			1,893,282	17,389,560		17,389,560	(3,473,866)				891,628		0001	
Interest Rate Swap 020448 /1101/[Quarterly] LIBOR [2.41425%]/Semi-Annual FIXED 6.13%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	01/08/2002	01/12/2032		37,000,000	6.13% [LIBOR]			1,452,601	13,730,970		13,730,970	(2,619,794)				667,797		0001	
Interest Rate Swap 020449 /1102/[Quarterly] LIBOR [2.41425%]/Semi-Annual FIXED 6.135%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	01/08/2002	01/12/2032		60,000,000	6.135% [LIBOR]			2,358,569	22,309,673		22,309,673	(4,314,783)				1,082,913		0001	
Interest Rate Swap 020451 /1104/[Quarterly] LIBOR [2.43644%]/Semi-Annual FIXED 6.1%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	01/14/2002	01/19/2027		100,000,000	6.1% [LIBOR]			3,900,624	25,250,875		25,250,875	(5,674,016)				1,418,626		0001	

E18.14

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 012898 /872/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 6.0975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	02/01/2002	02/05/2032		10,000,000	6.0975% [LIBOR]			391,441	3,696,632		3,696,632	(715,727)				180,970		0001	
Interest Rate Swap 012899 /873/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 6.0975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... 65G9EF7VJP5170UK5573	02/01/2002	02/05/2032		10,000,000	6.0975% [LIBOR]			391,441	3,689,501		3,689,501	(707,602)				180,970		0001	
Interest Rate Swap 020453 /1106/[Quarterly] LIBOR [2.59238%]/Semi-Annual FIXED 6.055%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS MITSUI MARINE DERIVATIVE PRODUCTS, L ... X1H61U0UXPKXR510V18	02/04/2002	02/06/2032		50,000,000	6.055% [LIBOR]			1,935,734	18,240,007		18,240,007	(3,567,242)				904,848		0001	
Interest Rate Swap 020455 /1108/[Quarterly] LIBOR [2.61413%]/Semi-Annual FIXED 6.043%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	02/12/2002	02/14/2022		35,000,000	6.043% [LIBOR]			1,355,893	3,618,986		3,618,986	(1,674,701)				309,112		0001	
Interest Rate Swap 013316 /877/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 6.039%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	04/25/2002	04/29/2022		35,000,000	6.039% [LIBOR]			1,348,657	3,858,803		3,858,803	(1,675,936)				319,345		0001	
Interest Rate Swap 013457 /878/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 6.1%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. ... B4TYDEB6GKMZ0031MB27	05/22/2002	05/24/2032		30,000,000	6.1% [LIBOR]			1,180,447	11,282,628		11,282,628	(2,185,967)				549,090		0001	
Interest Rate Swap 013467 /879/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 6.155%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. ... B4TYDEB6GKMZ0031MB27	05/23/2002	05/28/2032		10,000,000	6.155% [LIBOR]			398,988	3,827,308		3,827,308	(734,870)				183,098		0001	
Interest Rate Swap 013530 /880/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 6.145%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS MITSUI MARINE DERIVATIVE PRODUCTS, L ... X1H61U0UXPKXR510V18	06/07/2002	06/11/2032		10,000,000	6.145% [LIBOR]			397,707	3,824,240		3,824,240	(734,642)				183,371		0001	
Interest Rate Swap 013687 /885/[Quarterly] LIBOR [2.41425%]/Semi-Annual FIXED 5.9725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. ... B4TYDEB6GKMZ0031MB27	07/08/2002	07/12/2032		30,000,000	5.9725% [LIBOR]			1,130,535	10,926,821		10,926,821	(2,154,803)				551,747		0001	
Interest Rate Swap 013746 /890/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 5.821%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	07/26/2002	07/30/2032		13,000,000	5.821% [LIBOR]			472,322	4,530,808		4,530,808	(913,042)				239,532		0001	
Interest Rate Swap 014056 /895/[Quarterly] LIBOR [2.77594%]/Semi-Annual FIXED 5.2725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS MITSUI MARINE DERIVATIVE PRODUCTS, L ... X1H61U0UXPKXR510V18	09/10/2002	09/12/2032		30,000,000	5.2725% [LIBOR]			930,967	8,604,533		8,604,533	(1,960,427)				555,203		0001	

E18.15

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 014275 /901/[Quarterly] LIBOR [2.883%/Annual FIXED 5.5844%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	09/27/2002	12/15/2031		47,169,023	5.5844% [LIBOR]			1,467,243	18,793,400		18,793,400	(3,590,663)				849,042		0001	
Interest Rate Swap 014333 /903/[Quarterly] LIBOR [2.59125%/Semi-Annual FIXED 5.5%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS MITSUI MARINE DERIVATIVE PRODUCTS, L ... X1H61U0UXPKXR510V18	11/06/2002	11/08/2032		54,000,000	5.5% [LIBOR]			1,791,939	17,065,760		17,065,760	(3,671,707)				1,005,184		0001	
Interest Rate Swap 014501 /910/[Quarterly] LIBOR [2.82375%/Semi-Annual FIXED 5.2975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	12/19/2002	12/23/2032		30,000,000	5.2975% [LIBOR]			922,960	8,825,802		8,825,802	(1,983,186)				560,848		0001	
Interest Rate Swap 014801 /915/[Quarterly] LIBOR [2.61813%/Semi-Annual FIXED 5.2%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. ... B4TYDEB6GMZ0031MB27	02/07/2003	02/11/2033		6,000,000	5.2% [LIBOR]			181,418	1,706,576		1,706,576	(394,560)				112,690		0001	
Interest Rate Swap 020357 /162/[At Maturity] FIXED [5.521%/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	Barclays Bank PLC ... G5GSEF7VJP5170UK5573	02/11/2003	10/15/2019		100,840,150	LIBOR [5.521%]			(9,553,681)	(5,487,974)		(5,487,974)	9,087,391				584,118		0001	
Interest Rate Swap 020358 /163/[At Maturity] FIXED [5.49601%/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	02/11/2003	10/15/2019		40,500,000	LIBOR [5.49601%]			(3,792,602)	(2,178,719)		(2,178,719)	3,610,062				234,597		0001	
Interest Rate Swap 020359 /164/[At Maturity] FIXED [5.48982%/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	Barclays Bank PLC ... G5GSEF7VJP5170UK5573	02/12/2003	10/15/2019		60,820,013	LIBOR [5.48983%]			(5,674,966)	(3,261,211)		(3,261,211)	5,406,028				352,288		0001	
Interest Rate Swap 020360 /165/[At Maturity] FIXED [5.473%/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG ... BFM8T61CT2L10CEMIK50	02/19/2003	07/15/2020		54,595,991	LIBOR [5.473%]			(5,064,272)	(5,679,249)		(5,679,249)	5,090,668				441,414		0001	
Interest Rate Swap 014853 /916/[Semi-Annual] FIXED [5.0882%/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	02/21/2003	02/25/2023		15,000,000	LIBOR [5.0882%]			(438,604)	(1,490,606)		(1,490,606)	601,084				152,971		0001	
Interest Rate Swap 014854 /917/[Quarterly] LIBOR [2.68925%/Semi-Annual FIXED 6.01%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	02/21/2003	02/25/2033		35,000,000	6.01% [LIBOR]			1,108,226	13,467,130		13,467,130	(2,392,262)				658,289		0001	
Interest Rate Swap 020362 /167/[At Maturity] FIXED [5.42126%/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	Barclays Bank PLC ... G5GSEF7VJP5170UK5573	02/25/2003	07/15/2020		78,906,000	LIBOR [5.42126%]			(7,124,886)	(8,055,777)		(8,055,777)	7,178,407				637,820		0001	

E18.16

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 020363 /168/[At Maturity] FIXED [5.38734%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	Barclays Bank PLC . G5GSEF7VJP5170UK5573	02/28/2003	07/15/2020		92,480,418	LIBOR [5.38734%]			(8,213,762)	(9,264,501)		(9,264,501)	8,292,771				747,407		0001	
Interest Rate Swap 020368 /521/[At Maturity] FIXED [5.28461%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL . E58DKGIMJYJLN8C3868	03/05/2003	10/15/2020		37,178,427	LIBOR [5.28461%]			(3,151,998)	(4,074,272)		(4,074,272)	3,231,347				323,899		0001	
Interest Rate Swap 015029 /1502/[At Maturity] LIBOR [2.82163%]/At Maturity FIXED 5.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES . I7331LVCZKQKX57XV54	03/21/2003	03/25/2033		11,840,642	5.64% [LIBOR]			507,688	6,222,861		6,222,861	(1,183,533)				223,409		0001	
Interest Rate Swap 015134 /925/[Quarterly] LIBOR [2.853%]/Annual FIXED 5.45432%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG . 7LTFWZY1ONSX8D621K86	03/28/2003	12/15/2032		48,245,648	LIBOR [5.45432%]			1,490,576	20,613,931		20,613,931	(3,933,381)				901,303		0001	
Interest Rate Swap 020378 /176/[At Maturity] FIXED [4.9159%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	Barclays Bank PLC . G5GSEF7VJP5170UK5573	05/16/2003	10/15/2020		39,990,022	LIBOR [4.9159%]			(2,820,588)	(3,572,722)		(3,572,722)	2,966,689				347,465		0001	
Interest Rate Swap 020462 /177/[At Maturity] FIXED [4.875%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	Barclays Bank PLC . G5GSEF7VJP5170UK5573	06/04/2003	07/15/2020		43,873,000	LIBOR [4.875%]			(3,017,124)	(3,217,625)		(3,217,625)	3,156,096				353,370		0001	
Interest Rate Swap 020465 /178/[At Maturity] FIXED [4.7856%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	Barclays Bank PLC . G5GSEF7VJP5170UK5573	06/05/2003	07/15/2020		1,529,399	LIBOR [4.7856%]			(100,445)	(107,197)		(107,197)	105,828				12,318		0001	
Interest Rate Swap 015399 /938/[Semi-Annual] FIXED [4.5725%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG . 7LTFWZY1ONSX8D621K86	06/06/2003	06/10/2023		10,000,000	LIBOR [4.5725%]			(240,464)	(841,235)		(841,235)	352,138				105,475		0001	
Interest Rate Swap 015446 /941/[Semi-Annual] FIXED [4.54125%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG . 7LTFWZY1ONSX8D621K86	06/19/2003	06/23/2023		30,000,000	LIBOR [4.54125%]			(696,085)	(2,496,949)		(2,496,949)	1,043,899				317,490		0001	
Interest Rate Swap 020469 /180/[At Maturity] FIXED [4.844%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEAR THROUGH CME . VVVVCKR63DVZ70PB21	06/25/2003	10/15/2020		40,680,115	LIBOR [4.844%]			(2,748,964)	(3,462,181)		(3,462,181)	2,902,489				352,925		0001	
Interest Rate Swap 020471 /182/[At Maturity] FIXED [5.065%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	Barclays Bank PLC . G5GSEF7VJP5170UK5573	06/30/2003	10/15/2020		39,219,837	LIBOR [5.065%]			(2,953,564)	(3,801,180)		(3,801,180)	3,076,653				340,221		0001	

E18.17

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap 015738 /34509/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.405%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	07/25/2003	07/29/2033		15,000,000	5.405% [LIBOR]			482,896	4,760,017		4,760,017	(1,038,735)				286,378		0001
Interest Rate Swap 015861 /960/[Quarterly] LIBOR [2.59125%]/Semi-Annual FIXED 5.67%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX80621K86	08/06/2003	08/08/2033		20,000,000	5.67% [LIBOR]			697,681	6,996,505		6,996,505	(1,436,423)				382,230		0001
Interest Rate Swap 015973 /34514/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 5.6575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	08/19/2003	08/21/2033		3,600,000	5.6575% [LIBOR]			125,918	1,266,096		1,266,096	(262,100)				68,872		0001
Interest Rate Swap 016382 /1503/[At Maturity] LIBOR [2.40806%]/At Maturity FIXED 5.6305%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	10/02/2003	10/06/2023		11,376,351	5.6305% [LIBOR]			472,384	2,004,526		2,004,526	(513,444)				124,232		0001
Interest Rate Swap 019977 /1042/[Semi-Annual] FIXED [5.082%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGJMYJYLN8C3868	02/27/2004	03/02/2024		10,000,000	LIBOR [5.082%]			(291,343)	(1,185,897)		(1,185,897)	429,956				113,798		0001
Interest Rate Swap 017549 /984/[Quarterly] LIBOR [2.80069%]/Semi-Annual FIXED 5.006%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	03/16/2004	03/18/2034		6,000,000	5.006% [LIBOR]			169,016	1,657,623		1,657,623	(394,555)				117,038		0001
Interest Rate Swap 017696 /985/[Semi-Annual] FIXED [4.91%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... K03XUN7C6T14HNAYL002	03/26/2004	03/30/2024		15,000,000	LIBOR [4.91%]			(403,735)	(1,713,665)		(1,713,665)	588,843				171,683		0001
Interest Rate Swap 017698 /1504/[At Maturity] LIBOR [2.803%]/At Maturity FIXED 5.347%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	03/26/2004	03/30/2034		17,191,734	5.347% [LIBOR]			669,969	8,861,105		8,861,105	(1,788,889)				335,679		0001
Interest Rate Swap 017802 /1505/[At Maturity] LIBOR [2.40806%]/At Maturity FIXED 5.695%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGJMYJYLN8C3868	04/05/2004	04/07/2029		24,387,968	5.695% [LIBOR]			1,045,393	8,936,143		8,936,143	(1,847,238)				390,969		0001
Interest Rate Swap 018382 /1506/[At Maturity] LIBOR [2.40806%]/At Maturity FIXED 5.852%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	07/06/2004	07/08/2029		53,218,769	5.852% [LIBOR]			2,351,887	23,394,577		23,394,577	(4,076,932)				863,473		0001
Interest Rate Swap 018608 /995/[Quarterly] LIBOR [2.6445%]/Semi-Annual FIXED 5.375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS MITSUI MARINE DERIVATIVE PRODUCTS, L ... X1H61U0UXPKXR510V18	08/18/2004	08/20/2034		40,000,000	5.375% [LIBOR]			1,285,236	13,210,196		13,210,196	(2,870,041)				790,949		0001

E18.18

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 019421 /1004/[Semi-Annual] FIXED [4.9405%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	.01/24/2005	.01/26/2025		200,000,000	LIBOR [4.9405%]			(5,493,532)	(26,366,957)		(26,366,957)	8,101,899				2,465,766		0001	
Interest Rate Swap 019424 /1005/[Quarterly] LIBOR [2.508%]/Semi-Annual FIXED 5.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	.01/24/2005	.01/26/2035		50,000,000	5.0% [LIBOR]			1,403,133	14,353,965		14,353,965	(3,385,662)				1,002,185		0001	
Interest Rate Swap 019429 /1006/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.0325%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	.01/25/2005	.01/27/2035		50,000,000	5.0325% [LIBOR]			1,420,526	14,574,002		14,574,002	(3,405,587)				1,002,497		0001	
Interest Rate Swap 019462 /1007/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.0525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	.01/25/2005	.01/27/2035		100,000,000	5.0525% [LIBOR]			2,861,052	28,871,628		28,871,628	(7,392,314)				2,004,993		0001	
Interest Rate Swap 019468 /1008/[Semi-Annual] FIXED [4.844%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	.01/26/2005	.01/28/2020		200,000,000	LIBOR [4.844%]			(5,316,610)	(4,454,891)		(4,454,891)	6,806,153				1,039,230		0001	
Interest Rate Swap 019469 /1009/[Quarterly] LIBOR [2.52863%]/Semi-Annual FIXED 5.068%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	.01/27/2005	.01/31/2035		25,000,000	5.068% [LIBOR]			719,576	7,273,595		7,273,595	(1,853,188)				501,248		0001	
Interest Rate Swap 019553 /1017/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 4.789%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	.02/08/2005	.02/10/2035		75,000,000	4.789% [LIBOR]			1,958,851	19,473,505		19,473,505	(4,923,384)				1,505,614		0001	
Interest Rate Swap 019555 /1018/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 4.809%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	.02/09/2005	.02/11/2035		75,000,000	4.809% [LIBOR]			1,974,479	19,702,192		19,702,192	(5,038,173)				1,505,615		0001	
Interest Rate Swap 019558 /1020/[Quarterly] LIBOR [2.61413%]/Semi-Annual FIXED 4.854%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	.02/10/2005	.02/14/2035		45,000,000	4.854% [LIBOR]			1,208,241	11,834,433		11,834,433	(3,236,850)				903,369		0001	
Interest Rate Swap 019563 /1021/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 4.896%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	.02/15/2005	.02/17/2035		50,000,000	4.896% [LIBOR]			1,368,108	13,725,994		13,725,994	(3,409,453)				1,004,365		0001	

E18.19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 019589 /1022/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 4.983%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	02/17/2005	02/22/2035		50,000,000	4.983% [LIBOR]			1,410,752	14,012,495		14,012,495	(3,673,979)				1,004,365		0001	
Interest Rate Swap 019593 /1023/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 5.092%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/18/2005	02/22/2035		50,000,000	5.092% [LIBOR]			1,465,252	15,005,124		15,005,124	(3,452,156)				1,004,365		0001	
Interest Rate Swap 019594 /1024/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 4.9975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/18/2005	02/22/2025		70,000,000	4.9975% [LIBOR]			1,985,202	9,545,972		9,545,972	(2,893,535)				867,972		0001	
Interest Rate Swap 019599 /1025/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 5.127%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/22/2005	02/24/2045		50,000,000	5.127% [LIBOR]			1,480,911	21,664,778		21,664,778	(4,765,572)				1,278,427		0001	
Interest Rate Swap 019653 /1026/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 5.097%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	02/28/2005	03/02/2025		65,000,000	5.097% [LIBOR]			1,903,476	9,064,056		9,064,056	(2,940,874)				807,937		0001	
Interest Rate Swap 019666 /1027/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 5.193%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/02/2005	03/04/2035		45,000,000	5.193% [LIBOR]			1,362,730	13,885,655		13,885,655	(3,418,953)				905,048		0001	
Interest Rate Swap 020105 /1044/[Quarterly] LIBOR [2.42519%]/Semi-Annual FIXED 5.292%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GMZ0031MB27	04/08/2005	04/12/2035		50,000,000	5.292% [LIBOR]			1,544,500	16,432,709		16,432,709	(3,637,187)				1,008,712		0001	
Interest Rate Swap 020723 /1507/[At Maturity] LIBOR [2.82375%]/At Maturity FIXED 4.9086%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1QNSX80621K86	06/20/2005	06/22/2035		10,587,499	4.9086% [LIBOR]			350,871	4,560,333		4,560,333	(1,061,579)				214,903		0001	
Interest Rate Swap 021271 /1508/[At Maturity] LIBOR [2.68925%]/At Maturity FIXED 4.924%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFMT61CT2L10CEMIK50	08/23/2005	08/25/2035		14,121,099	4.924% [LIBOR]			482,203	6,234,348		6,234,348	(1,489,061)				288,188		0001	
Interest Rate Swap 021346 /1509/[At Maturity] LIBOR [2.73813%]/At Maturity FIXED 4.84%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	08/30/2005	09/01/2035		9,314,186	4.84% [LIBOR]			308,713	3,953,554		3,953,554	(935,275)				190,201		0001	

E18.20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 021447 /1510/[At Maturity] LIBOR [2.76575%]/At Maturity FIXED 4.852%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	09/02/2005	09/07/2035		22,379,311	4.852% [LIBOR]			744,278	9,584,229		9,584,229	(2,252,881)				457,135		0001	
Interest Rate Swap 022343 /1128/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 5.18125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFZYICNSX8D621K86	11/23/2005	11/25/2035		90,000,000	5.18125% [LIBOR]			2,715,370	29,113,200		29,113,200	(6,562,065)				1,850,480		0001	
Interest Rate Swap 022842 /1132/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 4.994%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYL002	12/28/2005	12/30/2020		12,000,000	4.994% [LIBOR]			334,732	542,697		542,697	(444,840)				84,853		0001	
Interest Rate Swap 023612 /1141/[Quarterly] LIBOR [2.779%]/Semi-Annual FIXED 5.33%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG ... BFM8T61CT2L10CEMIK50	03/09/2006	03/13/2026		24,000,000	5.33% [LIBOR]			757,206	4,206,497		4,206,497	(1,167,155)				321,994		0001	
Interest Rate Swap 023773 /1145/[Semi-Annual] FIXED [5.264%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	03/20/2006	03/22/2026		145,000,000	LIBOR [5.264%]			(4,424,310)	(25,207,134)		(25,207,134)	6,656,593				1,949,428		0001	
Interest Rate Swap 023774 /1146/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 5.27%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	03/20/2006	03/22/2036		189,000,000	5.27% [LIBOR]	50,000		5,778,199	64,223,100		64,223,100	(13,908,544)				3,922,604		0001	
Interest Rate Swap 024819 /1151/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 5.604%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG ... BFM8T61CT2L10CEMIK50	06/13/2006	06/15/2036		85,000,000	5.604% [LIBOR]			2,908,365	32,930,687		32,930,687	(6,874,917)				1,775,870		0001	
Interest Rate Swap 024941 /1152/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 5.796%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFZYICNSX8D621K86	06/19/2006	06/21/2036		15,000,000	5.796% [LIBOR]			538,810	6,274,305		6,274,305	(1,217,228)				313,568		0001	
Interest Rate Swap 024946 /1153/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 5.784%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFZYICNSX8D621K86	06/21/2006	06/23/2021		55,000,000	5.784% [LIBOR]			1,959,668	4,156,327		4,156,327	(2,470,935)				433,070		0001	
Interest Rate Swap 024947 /1154/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 5.8065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFZYICNSX8D621K86	06/21/2006	06/23/2036		20,000,000	5.8065% [LIBOR]	52,000		717,106	8,393,752		8,393,752	(1,625,667)				418,091		0001	

E18.21

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap 024948 /1155/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 5.807%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1QNSX8D621K86	06/21/2006	06/23/2026		35,000,000	5.807% [LIBOR]			1,255,111	7,568,272		7,568,272	(1,816,615)				478,618		0001
Interest Rate Swap 024988 /1158/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 5.8725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	06/28/2006	06/30/2026		24,000,000	5.8725% [LIBOR]			880,891	5,306,753		5,306,753	(1,274,824)				328,634		0001
Interest Rate Swap 025191 /1163/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 5.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	07/18/2006	07/20/2036		13,000,000	5.797% [LIBOR]			467,339	5,453,826		5,453,826	(1,042,166)				272,380		0001
Interest Rate Swap 025196 /1164/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 5.811%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1QNSX8D621K86	07/18/2006	07/20/2026		57,000,000	5.811% [LIBOR]			2,057,082	12,463,042		12,463,042	(2,967,709)				783,620		0001
Interest Rate Swap 025335 /1168/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 5.654%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITX03601TB7D13U69	07/31/2006	08/02/2036		17,000,000	5.654% [LIBOR]			588,413	6,788,039		6,788,039	(1,370,551)				356,494		0001
Interest Rate Swap 025336 /1169/[Semi-Annual] FIXED [5.6455%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1QNSX8D621K86	07/31/2006	08/02/2036		28,250,000	LIBOR [5.6455%]			(975,403)	(11,275,332)		(11,275,332)	2,254,068				592,409		0001
Interest Rate Swap 025475 /1170/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 5.507%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	08/17/2006	08/21/2036		30,000,000	5.507% [LIBOR]			1,004,167	11,392,337		11,392,337	(2,317,662)				630,000		0001
Interest Rate Swap 026216 /1511/[At Maturity] LIBOR [2.43644%]/At Maturity FIXED 5.4973%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1QNSX8D621K86	10/12/2006	10/16/2036		37,827,589	5.4973% [LIBOR]			1,532,451	24,603,379		24,603,379	(4,768,502)				797,750		0001
Interest Rate Swap 026385 /1182/[Quarterly] LIBOR [2.541%]/Semi-Annual FIXED 5.33%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1QNSX8D621K86	10/30/2006	11/01/2036		19,000,000	5.33% [LIBOR]			596,799	6,802,438		6,802,438	(1,461,157)				401,256		0001
Interest Rate Swap 026948 /1187/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 5.175%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1QNSX8D621K86	11/22/2006	11/24/2036		40,000,000	5.175% [LIBOR]			1,203,929	13,462,937		13,462,937	(3,015,704)				846,168		0001
Interest Rate Swap 027272 /1191/[Quarterly] LIBOR [2.75125%]/Semi-Annual FIXED 5.028%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1QNSX8D621K86	12/01/2006	12/05/2036		25,000,000	5.028% [LIBOR]			716,259	7,893,109		7,893,109	(1,847,118)				529,298		0001

E18.22

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 027823 /1196/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 5.235%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMLJYYJLN8C3868	12/21/2006	12/27/2036		320,000,000	5.235% [LIBOR]			9,650,221	108,788,561		108,788,561	(25,988,498)				6,788,225		0001	
Interest Rate Swap 027847 /1198/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 5.264%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	12/22/2006	12/28/2036		200,000,000	5.264% [LIBOR]			6,086,988	70,030,692		70,030,692	(15,052,341)				4,242,641		0001	
Interest Rate Swap 028223 /1204/[Quarterly] LIBOR [2.48988%]/Semi-Annual FIXED 5.393%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	01/23/2007	01/25/2037		25,000,000	5.393% [LIBOR]			800,497	9,254,284		9,254,284	(1,922,495)				531,360		0001	
Interest Rate Swap 028226 /1206/[Quarterly] LIBOR [2.48988%]/Semi-Annual FIXED 5.3975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	01/23/2007	01/25/2037		65,000,000	5.3975% [LIBOR]			2,084,217	24,103,515		24,103,515	(5,001,806)				1,381,537		0001	
Interest Rate Swap 028246 /1207/[Quarterly] LIBOR [2.48988%]/Semi-Annual FIXED 5.42%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	01/23/2007	01/25/2037		50,000,000	5.42% [LIBOR]			1,614,494	18,904,638		18,904,638	(3,968,845)				1,062,721		0001	
Interest Rate Swap 028258 /1209/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.5025%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	01/25/2007	01/29/2037		50,000,000	5.5025% [LIBOR]			1,658,403	19,327,778		19,327,778	(3,908,782)				1,063,015		0001	
Interest Rate Swap 028259 /1210/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.47%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1ONSX8D621K86	01/25/2007	01/29/2037		65,000,000	5.47% [LIBOR]			2,134,798	24,849,229		24,849,229	(5,141,010)				1,381,919		0001	
Interest Rate Swap 028429 /1214/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 5.4725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/01/2007	02/05/2037		35,000,000	5.4725% [LIBOR]			1,151,292	13,369,520		13,369,520	(2,727,586)				744,522		0001	
Interest Rate Swap 028447 /1215/[Quarterly] LIBOR [2.58925%]/Semi-Annual FIXED 5.3745%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL02	02/05/2007	02/07/2022		50,000,000	5.3745% [LIBOR]			1,595,692	4,143,730		4,143,730	(2,071,969)				440,170		0001	
Interest Rate Swap 028582 /1217/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 5.421%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1ONSX8D621K86	02/09/2007	02/13/2037		50,000,000	5.421% [LIBOR]			1,624,051	18,766,157		18,766,157	(3,936,810)				1,064,190		0001	

E18.23

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 028606 /1219/[Quarterly] LIBOR [2.64581%/Semi-Annual FIXED 5.907%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	02/16/2007	02/21/2027		100,000,000	5.907% [LIBOR]			3,747,222	23,526,212		23,526,212	(5,783,554)				1,426,534		0001	
Interest Rate Swap 028607 /1220/[Quarterly] LIBOR [2.64581%/Semi-Annual FIXED 5.907%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	02/16/2007	02/21/2027		200,000,000	5.907% [LIBOR]			7,494,445	47,052,425		47,052,425	(11,567,107)				2,853,069		0001	
Interest Rate Swap 028860 /1223/[Quarterly] LIBOR [2.75125%/Semi-Annual FIXED 5.237%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1QNSX80621K86	03/01/2007	03/05/2037		30,000,000	5.237% [LIBOR]			922,211	10,484,066		10,484,066	(2,307,289)				639,570		0001	
Interest Rate Swap 028886 /1224/[Semi-Annual] LIBOR [2.76575%/Semi-Annual FIXED 6.2%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQF57RNE97	03/05/2007	03/07/2027		300,000,000	6.2% [LIBOR]			12,092,600	79,020,113		79,020,113	(17,487,010)				4,292,726		0001	
Interest Rate Swap 028911 /1226/[Quarterly] LIBOR [2.77594%/Semi-Annual FIXED 6.21%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDWITX03601TB7DW3U69	03/08/2007	03/12/2027		100,000,000	6.21% [LIBOR]			4,040,724	26,292,203		26,292,203	(5,806,843)				1,431,782		0001	
Interest Rate Swap 029239 /1230/[Quarterly] LIBOR [2.82163%/Semi-Annual FIXED 5.75%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	03/23/2007	03/27/2027		100,000,000	5.75% [LIBOR]			3,530,694	22,594,426		22,594,426	(5,656,628)				1,436,141		0001	
Interest Rate Swap 030133 /1234/[Semi-Annual] FIXED [4.98%/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	05/21/2007	05/23/2027		47,500,000	LIBOR [4.98%			(1,336,775)	(8,139,088)		(8,139,088)	2,361,822				688,341		0001	
Interest Rate Swap 030178 /1237/[Quarterly] LIBOR [2.706%/Semi-Annual FIXED 5.6%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L1QCEM1K50	05/24/2007	05/29/2037		75,000,000	5.6% [LIBOR]			2,574,738	30,240,627		30,240,627	(6,248,514)				1,609,008		0001	
Interest Rate Swap 030427 /1238/[Semi-Annual] FIXED [5.603%/Quarterly LIBOR 2.73613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GMZ0031MB27	05/31/2007	06/04/2027		40,000,000	LIBOR [5.603%			(1,375,316)	(8,913,937)		(8,913,937)	2,119,523				580,689		0001	
Interest Rate Swap 031359 /1247/[Quarterly] LIBOR [2.52038%/Semi-Annual FIXED 5.725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L1QCEM1K50	07/26/2007	07/30/2037		100,000,000	5.725% [LIBOR]			3,537,245	42,430,701		42,430,701	(8,507,609)				2,155,226		0001	

E18.24

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap 031361 /1249/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 5.736%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAVLU02	.07/26/2007	.07/30/2027		150,000,000	5.736% [LIBOR]			5,322,368	35,568,912		35,568,912	(8,119,863)				2,196,873		0001
Interest Rate Swap 031737 /1255/[Semi-Annual] FIXED [5.2975%]/Quarterly LIBOR 2.7775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.09/12/2007	.09/14/2037		60,000,000	LIBOR [5.2975%]		(1,871,557)	(21,924,272)		(21,924,272)	4,647,786					1,297,652		0001
Interest Rate Swap 032052 /1257/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 5.304%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.10/31/2007	.11/02/2037		25,000,000	5.304% [LIBOR]			777,813	9,212,224		9,212,224	(1,943,370)				542,563		0001
Interest Rate Swap 032053 /1258/[Semi-Annual] FIXED [5.305%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.10/31/2007	.11/02/2037		25,000,000	LIBOR [5.305%]			(778,063)	(9,215,965)		(9,215,965)	1,943,659				542,563		0001
Interest Rate Swap 032997 /1295/[Quarterly] LIBOR [2.48738%]/Semi-Annual FIXED 4.69%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.01/22/2008	.01/24/2028		172,000,000	4.69% [LIBOR]			4,293,076	27,923,435		27,923,435	(7,714,888)				2,590,014		0001
Interest Rate Swap 032998 /1296/[Quarterly] LIBOR [2.48738%]/Semi-Annual FIXED 4.76%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.01/22/2008	.01/24/2038		350,000,000	4.76% [LIBOR]	2,150,000		8,980,911	101,385,723		101,385,723	(25,163,916)				7,642,112		0001
Interest Rate Swap 033112 /1299/[Semi-Annual] FIXED [4.49%]/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.01/30/2008	.02/01/2020		30,000,000	LIBOR [4.49%]			(690,315)	(564,887)		(564,887)	919,380				156,605		0001
Interest Rate Swap 033113 /1300/[Quarterly] LIBOR [2.541%]/Semi-Annual FIXED 5.47%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAVLU02	.01/30/2008	.02/01/2033		150,000,000	5.47% [LIBOR]	(100,000)		4,415,658	47,457,619		47,457,619	(9,746,173)				2,815,249		0001
Interest Rate Swap 033368 /1515/[At Maturity] FIXED [5.2322%]/At Maturity LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1CNSX8D621K86	.02/14/2008	.02/19/2027		132,548,927	LIBOR [5.2322%]			(7,849,324)	(51,114,574)		(51,114,574)	11,221,099				1,890,856		0001
Interest Rate Swap 033369 /1516/[At Maturity] FIXED [5.2825%]/At Maturity LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDIWTX03601TB7DW3U69	.02/14/2008	.02/19/2027		131,344,932	LIBOR [5.2825%]			(7,932,999)	(51,792,946)		(51,792,946)	11,451,855				1,873,680		0001
Interest Rate Swap 033381 /1517/[At Maturity] FIXED [5.289%]/At Maturity LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1CNSX8D621K86	.02/15/2008	.02/19/2027		131,892,203	LIBOR [5.289%]			(7,986,256)	(52,386,035)		(52,386,035)	11,354,031				1,881,487		0001

E18.25

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 033434 /1518/[At Maturity] FIXED [5.163%/At Maturity LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWFZY1ONSX8D621K86	02/21/2008	08/25/2026		134,610,089	LIBOR [5.163%			(7,745,422)	(47,020,916)		(47,020,916)	10,702,091					1,861,566	0001	
Interest Rate Swap 033469 /1519/[At Maturity] FIXED [5.3355%/At Maturity LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	02/26/2008	08/28/2026		133,548,386	LIBOR [5.3355%			(8,217,454)	(50,822,325)		(50,822,325)	11,343,635					1,848,090	0001	
Interest Rate Swap 033470 /1520/[At Maturity] FIXED [5.2914%/At Maturity LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGUFU57PNE97	02/26/2008	08/28/2026		133,548,386	LIBOR [5.2914%			(8,078,323)	(51,008,439)		(51,008,439)	11,341,149					1,848,090	0001	
Interest Rate Swap 033522 /1521/[At Maturity] FIXED [5.15%/At Maturity LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWFZY1ONSX8D621K86	02/28/2008	09/03/2027		130,329,324	LIBOR [5.15%			(7,440,831)	(51,178,609)		(51,178,609)	11,280,650					1,919,871	0001	
Interest Rate Swap 033531 /1522/[At Maturity] FIXED [5.081%/At Maturity LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	02/29/2008	09/07/2027		43,828,319	LIBOR [5.081%			(2,432,252)	(16,505,467)		(16,505,467)	3,772,804					646,003	0001	
Interest Rate Swap 033535 /1523/[At Maturity] FIXED [5.064%/At Maturity LIBOR 2.73613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWFZY1ONSX8D621K86	02/29/2008	09/07/2027		132,519,866	LIBOR [5.064%			(7,306,555)	(49,691,005)		(49,691,005)	11,190,478					1,953,264	0001	
Interest Rate Swap 033549 /1524/[At Maturity] FIXED [5.006%/At Maturity LIBOR 2.73613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWFZY1ONSX8D621K86	02/29/2008	09/07/2027		133,615,072	LIBOR [5.006%			(7,192,308)	(48,497,815)		(48,497,815)	11,088,520					1,969,406	0001	
Interest Rate Swap 033618 /1324/[Quarterly] LIBOR [2.76713%/Semi-Annual] FIXED 5.84%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWFZY1ONSX8D621K86	03/06/2008	03/10/2033		40,000,000	5.84% [LIBOR]			1,135,991	14,500,587		14,500,587	(2,569,775)					753,392	0001	
Interest Rate Swap 033715 /1326/[Semi-Annual] FIXED [4.6875%/Quarterly LIBOR 2.80069%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	03/14/2008	03/18/2028		100,000,000	LIBOR [4.6875%			(2,498,431)	(16,402,885)		(16,402,885)	4,539,400					1,518,223	0001	
Interest Rate Swap 033720 /1327/[Semi-Annual] FIXED [4.54%/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. ... B4TYDEB6GKMZ0031MB27	03/17/2008	03/19/2028		130,000,000	LIBOR [4.54%			(3,057,113)	(19,731,476)		(19,731,476)	5,850,301					1,973,689	0001	
Interest Rate Swap 034339 /5285/[Semi-Annual] FIXED [4.5425%/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	05/16/2008	05/20/2020		250,000,000	LIBOR [4.5425%			(5,951,473)	(6,226,455)		(6,226,455)	7,982,664					1,473,729	0001	

E18.26

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap 034340 /5289/[Semi-Annual] FIXED [4.5475%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	05/16/2008	05/20/2020		137,000,000	LIBOR [4.5475%]			(3,268,257)	(3,424,466)		(3,424,466)	4,384,740				807,604		0001	
Interest Rate Swap 034357 /5328/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 4.5275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	05/21/2008	05/23/2020		65,000,000	4.5275% [LIBOR]			1,535,147	1,625,854		1,625,854	(2,069,872)				385,916		0001	
Interest Rate Swap 034420 /5491/[Quarterly] LIBOR [2.73613%]/Semi-Annual FIXED 5.66%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	UBS AG	05/29/2008	06/04/2033		92,000,000	5.66% [LIBOR]			1,712,900	31,437,385		31,437,385	(5,203,373)				1,747,395		0001	
Interest Rate Swap /5601/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 5.6375%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	UBS AG	06/06/2008	06/11/2033		30,000,000	5.6375% [LIBOR]			535,890	10,178,888		10,178,888	(1,673,861)				570,197		0001	
Interest Rate Swap 034475 /5731/[Quarterly] LIBOR [2.80069%]/Semi-Annual FIXED 5.56%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	06/13/2008	06/18/2033		35,000,000	5.56% [LIBOR]			589,556	11,668,241		11,668,241	(1,846,688)				665,690		0001	
Interest Rate Swap 034534 /5953/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 5.4125%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	07/03/2008	07/07/2030		18,000,000	5.4125% [LIBOR]			577,242	4,779,454		4,779,454	(1,079,947)				305,470		0001	
Interest Rate Swap /6568/[Quarterly] LIBOR [2.6445%]/Semi-Annual FIXED 5.27%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	08/18/2008	08/20/2028		90,000,000	5.27% [LIBOR]			2,797,280	19,759,301		19,759,301	(4,782,359)				1,397,176		0001	
Interest Rate Swap /6589/[Semi-Annual] FIXED [4.879%]/Quarterly LIBOR 2.64581%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	08/19/2008	08/21/2028		125,000,000	LIBOR [4.879%]			(3,399,028)	(23,309,382)		(23,309,382)	6,141,022				1,940,522		0001	
Interest Rate Swap /6613/[Semi-Annual] FIXED [4.82%]/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	08/20/2008	08/22/2028		75,000,000	LIBOR [4.82%]			(1,993,878)	(13,580,279)		(13,580,279)	3,584,771				1,164,313		0001	
Interest Rate Swap 034625 /6630/[At Maturity] FIXED [4.985%]/At Maturity LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG	08/21/2008	02/25/2030		185,791,758	LIBOR [4.985%]			(9,796,700)	(82,962,991)		(82,962,991)	20,042,090				3,101,943		0001	
Interest Rate Swap /6791/[Quarterly] LIBOR [2.706%]/Semi-Annual FIXED 5.18%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	08/27/2008	08/29/2028		17,000,000	5.18% [LIBOR]			512,207	3,610,683		3,610,683	(890,459)				264,185		0001	

E18.27

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /6861/[Semi-Annual] FIXED [4.72375%]/Quarterly LIBOR 2.73613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1CNSX8D621K86	09/02/2008	09/04/2028		75,000,000	LIBOR [4.72375%]			(1,919,280)	(13,027,713)		(13,027,713)	3,575,962				1,166,726		0001	
Interest Rate Swap /6952/[Semi-Annual] FIXED [4.512%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYL02	09/09/2008	09/11/2028		75,000,000	LIBOR [4.512%]			(1,758,055)	(11,657,270)		(11,657,270)	3,440,974				1,167,931		0001	
Interest Rate Swap /6986/[Quarterly] LIBOR [2.79819%]/Semi-Annual FIXED 4.9%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITX03601TB7DWI3U69	09/11/2008	09/16/2028		25,000,000	4.9% [LIBOR]			678,648	4,717,284		4,717,284	(1,245,110)				389,711		0001	
Interest Rate Swap /7368/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 5.025%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYYJLN8C3868	09/30/2008	10/02/2028		35,000,000	5.025% [LIBOR]			984,317	6,853,592		6,853,592	(1,896,383)				546,717		0001	
Interest Rate Swap /7392/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 4.83%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5I70UK5573	10/02/2008	10/07/2028		29,000,000	4.83% [LIBOR]			761,075	5,324,963		5,324,963	(1,396,382)				453,458		0001	
Interest Rate Swap /7407/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 4.92%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1CNSX8D621K86	10/03/2008	10/07/2023		33,000,000	4.92% [LIBOR]			895,751	3,480,518		3,480,518	(1,275,287)				360,743		0001	
Interest Rate Swap /7451/[Quarterly] LIBOR [2.41425%]/Semi-Annual FIXED 4.655%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1CNSX8D621K86	10/08/2008	10/10/2023		30,000,000	4.655% [LIBOR]			735,285	2,808,485		2,808,485	(1,083,816)				327,948		0001	
Interest Rate Swap /7490/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 4.871%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1CNSX8D621K86	10/09/2008	10/16/2028		105,000,000	4.871% [LIBOR]			2,804,951	19,747,445		19,747,445	(5,167,557)				1,642,671		0001	
Interest Rate Swap /7497/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 4.8%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1CNSX8D621K86	10/09/2008	10/14/2020		18,000,000	4.8% [LIBOR]			468,069	665,099		665,099	(629,348)				120,412		0001	
Interest Rate Swap /7591/[Semi-Annual] FIXED [4.45753%]/Quarterly LIBOR 2.44881%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	10/15/2008	10/17/2038		50,000,000	LIBOR [4.45753%]			(1,127,931)	(12,678,913)		(12,678,913)	3,618,365				1,112,430		0001	
Interest Rate Swap /7596/[Semi-Annual] FIXED [4.40116%]/Quarterly LIBOR 2.44881%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	10/15/2008	10/17/2038		50,000,000	LIBOR [4.40116%]			(1,099,746)	(12,235,674)		(12,235,674)	3,583,899				1,112,430		0001	
Interest Rate Swap /7661/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 4.99%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1CNSX8D621K86	10/17/2008	10/21/2023		40,000,000	4.99% [LIBOR]			1,116,929	4,383,559		4,383,559	(1,573,462)				438,634		0001	

E18.28

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /7669/[Semi-Annual] FIXED [4.435%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6KMZ0031MB27	10/20/2008	10/22/2023		128,000,000	LIBOR [4.435%]			(2,863,774)	(10,784,865)		(10,784,865)	4,379,580				1,403,630		0001	
Interest Rate Swap /7670/[Semi-Annual] FIXED [4.4333%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	10/20/2008	10/22/2038		50,000,000	LIBOR [4.4333%]			(1,117,857)	(12,191,781)		(12,191,781)	3,673,060				1,112,711		0001	
Interest Rate Swap /7671/[Semi-Annual] FIXED [4.3595%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	10/20/2008	10/22/2038		50,000,000	LIBOR [4.3595%]			(1,080,957)	(11,618,559)		(11,618,559)	3,628,836				1,112,711		0001	
Interest Rate Swap /7679/[Semi-Annual] FIXED [4.2592%]/Quarterly LIBOR 2.47719%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDMWXX03601TB7DW3U69	10/21/2008	10/23/2038		50,000,000	LIBOR [4.2592%]			(1,030,739)	(10,955,110)		(10,955,110)	3,518,327				1,112,991		0001	
Interest Rate Swap /7693/[Semi-Annual] FIXED [4.2142%]/Quarterly LIBOR 2.47719%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDMWXX03601TB7DW3U69	10/21/2008	10/23/2038		50,000,000	LIBOR [4.2142%]			(1,008,239)	(10,605,260)		(10,605,260)	3,491,251				1,112,991		0001	
Interest Rate Swap /7710/[Semi-Annual] FIXED [4.112%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LWTFZY1QNSX8D621K86	10/22/2008	10/24/2023		7,700,000	LIBOR [4.112%]			(147,684)	(538,203)		(538,203)	239,204				84,525		0001	
Interest Rate Swap /7720/[Semi-Annual] FIXED [4.01284%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDMWXX03601TB7DW3U69	10/23/2008	10/27/2038		50,000,000	LIBOR [4.01284%]			(910,696)	(9,042,301)		(9,042,301)	3,371,234				1,113,272		0001	
Interest Rate Swap /7767/[Semi-Annual] FIXED [3.96%]/Quarterly LIBOR 2.50925%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG 7LWTFZY1QNSX8D621K86	10/23/2008	10/29/2028		146,000,000	LIBOR [3.96%]	250,000		(344,430)	(15,968,883)		(15,968,883)	3,355,968				2,288,757		0001	
Interest Rate Swap /7768/[Semi-Annual] FIXED [3.92%]/Quarterly LIBOR 2.50925%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG 7LWTFZY1QNSX8D621K86	10/23/2008	10/29/2033		123,000,000	LIBOR [3.92%]	266,619		(281,697)	(16,911,763)		(16,911,763)	4,527,220				2,368,349		0001	
Interest Rate Swap /7790/[Semi-Annual] FIXED [4.01514%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPUBMPROB8K5P83	10/24/2008	10/28/2038		50,000,000	LIBOR [4.01514%]			(914,723)	(9,138,257)		(9,138,257)	3,279,434				1,113,272		0001	
Interest Rate Swap /7876/[Semi-Annual] FIXED [4.38%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLNB83868	10/30/2008	11/03/2038		50,000,000	LIBOR [4.38%]			(1,095,052)	(11,658,368)		(11,658,368)	3,784,045				1,113,553		0001	

E18.29

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /7896/[Semi-Annual] FIXED [4.3224%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	10/31/2008	11/04/2038		50,000,000	LIBOR [4.3224%			(1,066,477)	(11,212,589)		(11,212,589)	3,748,622				1,113,553		0001	
Interest Rate Swap /7912/[Semi-Annual] FIXED [4.35515%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUISFPUBMPRO8K5P83	10/31/2008	11/04/2038		50,000,000	LIBOR [4.35515%			(1,082,852)	(11,788,785)		(11,788,785)	3,485,840				1,113,553		0001	
Interest Rate Swap /8087/[Semi-Annual] FIXED [4.41364%/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUISFPUBMPRO8K5P83	11/04/2008	11/06/2038		50,000,000	LIBOR [4.41364%			(1,115,054)	(12,249,519)		(12,249,519)	3,522,468				1,114,114		0001	
Interest Rate Swap /8107/[Semi-Annual] FIXED [4.29105%/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	11/04/2008	11/06/2038		50,000,000	LIBOR [4.29105%			(1,053,759)	(10,973,921)		(10,973,921)	3,731,507				1,114,114		0001	
Interest Rate Swap /8108/[Semi-Annual] FIXED [4.28277%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDMTXX03601TB7DW3U69	11/04/2008	02/15/2031		50,000,000	LIBOR [4.28277%			(1,059,863)	(7,901,594)		(7,901,594)	2,540,342				870,704		0001	
Interest Rate Swap /8147/[Semi-Annual] FIXED [4.1678%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	11/05/2008	02/15/2031		50,000,000	LIBOR [4.1678%			(1,002,378)	(7,072,055)		(7,072,055)	2,665,519				870,704		0001	
Interest Rate Swap /8172/[Semi-Annual] FIXED [4.1495%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFZY1CNSY8D621K86	11/05/2008	02/15/2031		50,000,000	LIBOR [4.1495%			(993,228)	(7,227,081)		(7,227,081)	2,464,995				870,704		0001	
Interest Rate Swap /8191/[Semi-Annual] FIXED [4.1865%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	11/06/2008	02/15/2031		50,000,000	LIBOR [4.1865%			(1,011,728)	(7,169,641)		(7,169,641)	2,674,960				870,704		0001	
Interest Rate Swap /8290/[Semi-Annual] FIXED [4.25691%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDMTXX03601TB7DW3U69	11/07/2008	02/15/2031		31,200,000	LIBOR [4.25691%			(653,286)	(4,846,190)		(4,846,190)	1,577,178				543,319		0001	
Interest Rate Swap /8291/[Semi-Annual] FIXED [4.25873%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	11/07/2008	02/15/2031		20,800,000	LIBOR [4.25873%			(435,903)	(3,139,373)		(3,139,373)	1,127,954				362,213		0001	
Interest Rate Swap /8382/[Quarterly] LIBOR [2.61413%/Semi-Annual] FIXED 4.19%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEAR THROUGH CME VYVVKR63DVZ2N0PB21	11/12/2008	11/14/2028		23,000,000	4.19% [LIBOR]			464,825	2,936,173		2,936,173	(1,005,719)				361,290		0001	

E18.30

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /8400/(Quarterly) LIBOR [2.61413%]/Semi-Annual FIXED 4.125%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/12/2008	11/14/2028		20,000,000	4.125% [LIBOR]			391,196	2,439,440		2,439,440	(862,165)				314,166		0001	
Interest Rate Swap /8404/(Semi-Annual) FIXED [4.1605%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	11/12/2008	05/15/2030		50,000,000	LIBOR [4.1605%]			(998,728)	(6,985,938)		(6,985,938)	2,358,671				843,356		0001	
Interest Rate Swap /8405/(Semi-Annual) FIXED [4.11%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	11/12/2008	05/15/2030		50,000,000	LIBOR [4.11%]			(973,478)	(6,735,822)		(6,735,822)	2,334,055				843,356		0001	
Interest Rate Swap /8408/(Quarterly) LIBOR [2.64%]/Semi-Annual FIXED 4.0975%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/13/2008	11/17/2028		30,000,000	4.0975% [LIBOR]			581,315	3,589,769		3,589,769	(1,285,627)				471,487		0001	
Interest Rate Swap /8415/(Quarterly) LIBOR [2.64%]/Semi-Annual FIXED 4.13%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/13/2008	11/17/2028		42,000,000	4.13% [LIBOR]			827,491	5,145,208		5,145,208	(1,812,871)				660,082		0001	
Interest Rate Swap /8427/(Quarterly) LIBOR [2.64%]/Semi-Annual FIXED 4.475%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/14/2008	11/18/2028		20,000,000	4.475% [LIBOR]			462,096	3,055,868		3,055,868	(929,521)				314,484		0001	
Interest Rate Swap /8497/(Quarterly) LIBOR [2.64%]/Semi-Annual FIXED 5.36%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	11/17/2008	11/19/2028		30,000,000	5.36% [LIBOR]			959,320	6,971,288		6,971,288	(1,627,852)				471,726		0001	
Interest Rate Swap /8519/(Semi-Annual) FIXED [3.8617%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	11/18/2008	11/20/2038		50,000,000	3.8617%			(849,895)	(7,884,099)		(7,884,099)	3,293,337				1,114,955		0001	
Interest Rate Swap /8542/(Semi-Annual) FIXED [3.6425%]/Quarterly LIBOR 2.64581%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	11/19/2008	11/21/2038		82,000,000	3.6425%			(1,215,832)	(9,755,152)		(9,755,152)	5,468,576				1,828,526		0001	
Interest Rate Swap /8578/(Semi-Annual) FIXED [3.1875%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	11/20/2008	11/24/2038		86,000,000	3.1875%			(879,198)	(4,142,729)		(4,142,729)	5,250,720				1,918,204		0001	
Interest Rate Swap /8770/(Semi-Annual) FIXED [3.44967%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	11/24/2008	11/26/2038		50,000,000	3.44967%			(646,238)	(4,670,756)		(4,670,756)	3,047,836				1,115,516		0001	
Interest Rate Swap /8790/(Semi-Annual) FIXED [3.2091%]/Quarterly LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	11/25/2008	11/28/2038		50,000,000	3.2091%			(521,992)	(2,902,057)		(2,902,057)	2,639,384				1,115,516		0001	

E18.31

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /8934/[Semi-Annual] FIXED [2.78663%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/05/2008	02/15/2031		57,000,000	LIBOR [2.78663%]			(355,444)	(86,429)		(86,429)	2,050,834				992,602		0001	
Interest Rate Swap /9000/[Semi-Annual] FIXED [2.69761%]/Quarterly LIBOR 2.77594%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYYJLN8C3868	12/10/2008	12/12/2038		50,000,000	LIBOR [2.69761%]			(264,167)	1,411,486		1,411,486	2,755,280				1,116,636		0001	
Interest Rate Swap /9001/[Semi-Annual] FIXED [2.8225%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	12/10/2008	02/15/2031		50,000,000	LIBOR [2.8225%]			(329,728)	(276,315)		(276,315)	1,817,521				870,704		0001	
Interest Rate Swap /9020/[Semi-Annual] FIXED [2.72285%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/11/2008	12/15/2038		50,000,000	LIBOR [2.72285%]			(270,228)	1,009,168		1,009,168	2,612,892				1,116,915		0001	
Interest Rate Swap /9041/[Semi-Annual] FIXED [2.73526%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ... ES71P3U3RH1GC71XBUI1	12/11/2008	12/15/2038		50,000,000	LIBOR [2.73526%]			(276,433)	816,009		816,009	2,485,916				1,116,915		0001	
Interest Rate Swap /9044/[Semi-Annual] FIXED [2.7093%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/11/2008	12/15/2038		50,000,000	LIBOR [2.7093%]			(263,453)	1,115,074		1,115,074	2,604,707				1,116,915		0001	
Interest Rate Swap /9083/[Semi-Annual] FIXED [2.64265%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYYJLN8C3868	12/12/2008	12/16/2038		50,000,000	LIBOR [2.64265%]			(228,621)	1,841,854		1,841,854	2,718,206				1,116,915		0001	
Interest Rate Swap /9092/[Semi-Annual] FIXED [2.80316%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ... ES71P3U3RH1GC71XBUI1	12/12/2008	05/15/2037		50,000,000	LIBOR [2.80316%]			(320,058)	221,969		221,969	2,389,002				1,071,798		0001	
Interest Rate Swap /9109/[Semi-Annual] FIXED [2.73069%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYYJLN8C3868	12/15/2008	05/15/2037		50,000,000	LIBOR [2.73069%]			(283,823)	1,036,714		1,036,714	2,625,149				1,071,798		0001	
Interest Rate Swap /9118/[Semi-Annual] FIXED [2.66716%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYYJLN8C3868	12/16/2008	05/15/2037		50,000,000	LIBOR [2.66716%]			(252,058)	1,501,444		1,501,444	2,587,363				1,071,798		0001	
Interest Rate Swap /9120/[Semi-Annual] FIXED [2.71%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	12/16/2008	02/15/2037		50,000,000	LIBOR [2.71%]			(273,478)	924,436		924,436	2,394,544				1,064,483		0001	

E18.32

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /9121/[Semi-Annual] FIXED [2.6025%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAYLU02	12/16/2008	02/15/2037		50,000,000	LIBOR [2.6025%]			(219,728)	1,705,240		1,705,240	2,333,189				1,064,483		0001	
Interest Rate Swap /9123/[Semi-Annual] FIXED [2.52721%]/Quarterly LIBOR 2.80069%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGIMJYYJLN8C3868	12/16/2008	12/18/2038		50,000,000	LIBOR [2.52721%]			(169,071)	2,744,246		2,744,246	2,648,473				1,117,195		0001	
Interest Rate Swap /9156/[Semi-Annual] FIXED [2.373%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAYLU02	12/18/2008	02/15/2036		50,000,000	LIBOR [2.373%]			(104,978)	3,181,292		3,181,292	2,116,490				1,034,710		0001	
Interest Rate Swap /9186/[Semi-Annual] FIXED [2.51687%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAYLU02	12/19/2008	12/23/2038		50,000,000	LIBOR [2.51687%]			(147,951)	2,574,423		2,574,423	2,436,195				1,117,475		0001	
Interest Rate Swap /9187/[Semi-Annual] FIXED [2.52693%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	12/19/2008	12/23/2038		50,000,000	LIBOR [2.52693%]			(152,981)	2,483,711		2,483,711	2,411,998				1,117,475		0001	
Interest Rate Swap /9191/[Semi-Annual] FIXED [2.62582%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDIWXX03601TB7DW3U69	12/22/2008	12/24/2038		50,000,000	LIBOR [2.62582%]			(203,080)	1,774,277		1,774,277	2,552,019				1,117,475		0001	
Interest Rate Swap /9202/[Semi-Annual] FIXED [2.69209%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	12/23/2008	12/29/2038		100,000,000	LIBOR [2.69209%]			(481,133)	2,366,939		2,366,939	5,024,678				2,236,068		0001	
Interest Rate Swap /9203/[Semi-Annual] FIXED [2.68655%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDIWXX03601TB7DW3U69	12/23/2008	12/29/2038		50,000,000	LIBOR [2.68655%]			(237,789)	1,292,678		1,292,678	2,590,143				1,118,034		0001	
Interest Rate Swap /9204/[Semi-Annual] FIXED [2.70871%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDIWXX03601TB7DW3U69	12/23/2008	12/29/2038		50,000,000	LIBOR [2.70871%]			(248,899)	1,119,174		1,119,174	2,603,575				1,118,034		0001	
Interest Rate Swap /9206/[Semi-Annual] FIXED [2.71%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WEFA76	12/24/2008	12/30/2038		50,000,000	LIBOR [2.71%]			(249,546)	1,205,075		1,205,075	2,420,442				1,118,034		0001	
Interest Rate Swap /9207/[Semi-Annual] FIXED [2.71%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WEFA76	12/24/2008	12/30/2038		50,000,000	LIBOR [2.71%]			(249,546)	1,205,075		1,205,075	2,420,442				1,118,034		0001	

E18.33

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /9226/[Semi-Annual] FIXED [2.6747%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/29/2008	02/15/2036		50,000,000	LIBOR [2.6747%			(255,828)	1,218,250		1,218,250	2,174,879				1,034,710		0001	
Interest Rate Swap /9253/[Semi-Annual] FIXED [2.67725%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO9K5P83	12/29/2008	12/31/2038		50,000,000	LIBOR [2.67725%			(233,126)	1,292,873		1,292,873	2,503,838				1,118,034		0001	
Interest Rate Swap /9342/[Semi-Annual] FIXED [2.662%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/31/2008	02/15/2036		50,000,000	LIBOR [2.662%			(249,478)	1,306,342		1,306,342	2,167,933				1,034,710		0001	
Interest Rate Swap /9386/[Semi-Annual] FIXED [3.08064%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDWITXX03601TB7DW3U69	01/06/2009	01/08/2039		50,000,000	LIBOR [3.08064%			(437,519)	(1,789,339)		(1,789,339)	2,829,476				1,118,872		0001	
Interest Rate Swap /9387/[Semi-Annual] FIXED [3.08108%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO9K5P83	01/06/2009	01/08/2039		50,000,000	LIBOR [3.08108%			(437,739)	(1,863,678)		(1,863,678)	2,743,673				1,118,872		0001	
Interest Rate Swap /9388/[Semi-Annual] FIXED [3.00625%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	01/06/2009	01/08/2039		25,000,000	LIBOR [3.00625%			(200,162)	(497,416)		(497,416)	1,471,440				559,436		0001	
Interest Rate Swap /9399/[Semi-Annual] FIXED [3.05051%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDWITXX03601TB7DW3U69	01/07/2009	01/09/2039		50,000,000	LIBOR [3.05051%			(422,930)	(1,554,151)		(1,554,151)	2,811,158				1,118,872		0001	
Interest Rate Swap /9400/[Semi-Annual] FIXED [3.03116%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	01/07/2009	01/09/2039		50,000,000	LIBOR [3.03116%			(413,255)	(1,190,315)		(1,190,315)	2,958,553				1,118,872		0001	
Interest Rate Swap /9408/[Semi-Annual] FIXED [2.89847%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	01/08/2009	05/15/2037		50,000,000	LIBOR [2.89847%			(367,713)	(190,620)		(190,620)	2,724,938				1,071,798		0001	
Interest Rate Swap /9424/[Semi-Annual] FIXED [2.87376%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	01/08/2009	02/15/2037		50,000,000	LIBOR [2.87376%			(355,358)	(10,024)		(10,024)	2,687,632				1,064,483		0001	
Interest Rate Swap /9428/[Semi-Annual] FIXED [2.80839%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDWITXX03601TB7DW3U69	01/09/2009	05/15/2037		50,000,000	LIBOR [2.80839%			(322,673)	253,507		253,507	2,507,388				1,071,798		0001	

E18.34

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /9429/[Semi-Annual] FIXED [2.8574%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	.01/09/2009	.05/15/2037		50,000,000	LIBOR [2.8574%			(347,178)	109,813		109,813	2,700,512				1,071,798		0001	
Interest Rate Swap /9445/[Semi-Annual] FIXED [2.865%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E57ODZIZ7FF32WIEFA76	.01/09/2009	.02/15/2037		50,000,000	LIBOR [2.865%			(350,978)	(61,359)		(61,359)	2,364,249				1,064,483		0001	
Interest Rate Swap /9456/[Semi-Annual] FIXED [2.823%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E57ODZIZ7FF32WIEFA76	.01/12/2009	.02/15/2037		50,000,000	LIBOR [2.823%			(329,978)	243,284		243,284	2,340,673				1,064,483		0001	
Interest Rate Swap /9466/[Semi-Annual] FIXED [2.78182%/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.01/12/2009	.01/14/2039		50,000,000	LIBOR [2.78182%			(291,101)	510,703		510,703	2,616,568				1,119,151		0001	
Interest Rate Swap /9503/[Semi-Annual] FIXED [2.76255%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.01/13/2009	.02/15/2037		50,000,000	LIBOR [2.76255%			(299,753)	559,158		559,158	2,433,217				1,064,483		0001	
Interest Rate Swap /9511/[Semi-Annual] FIXED [2.69412%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.01/14/2009	.05/15/2037		50,000,000	LIBOR [2.69412%			(265,538)	1,074,556		1,074,556	2,414,903				1,071,798		0001	
Interest Rate Swap /9514/[Semi-Annual] FIXED [2.67278%/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.01/14/2009	.05/15/2037		50,000,000	LIBOR [2.67278%			(254,868)	1,232,870		1,232,870	2,402,383				1,071,798		0001	
Interest Rate Swap /9587/[Semi-Annual] FIXED [2.72428%/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDIWXX03601TB7DIW3U69	.01/16/2009	.01/20/2039		50,000,000	LIBOR [2.72428%			(261,098)	995,778		995,778	2,616,285				1,119,710		0001	
Interest Rate Swap /9650/[Semi-Annual] FIXED [3.11638%/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPR08K5P83	.01/23/2009	.01/27/2039		50,000,000	LIBOR [3.11638%			(462,466)	(2,154,024)		(2,154,024)	2,767,481				1,120,268		0001	
Interest Rate Swap /9887/[Semi-Annual] FIXED [3.3453%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331VCZKQKX57XV54	.01/30/2009	.02/03/2039		50,000,000	LIBOR [3.3453%			(577,702)	(3,918,224)		(3,918,224)	2,975,459				1,120,547		0001	
Interest Rate Swap /10017/[Quarterly] LIBOR [2.61813%/Semi-Annual] FIXED 3.938%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES GDIWXX03601TB7DIW3U69	.02/09/2009	.02/11/2039		200,000,000	3.938% [LIBOR]			3,523,276	34,147,173		34,147,173	(13,467,193)				4,484,417		0001	
Interest Rate Swap /10132/[Quarterly] LIBOR [2.64%/Semi-Annual] FIXED 4.75%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.02/17/2009	.02/19/2019		300,000,000	4.75% [LIBOR]			7,763,195	806,058		806,058	(8,783,630)				561,249		0001	

E18.35

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /10137/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 5.145%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	02/17/2009	02/19/2019		18,000,000	5.145% [LIBOR]			536,892	57,677		57,677	(596,059)				33,675		0001	
Interest Rate Swap /10203/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 5.22%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS MITSUI MARINE DERIVATIVE PRODUCTS, L X1H61U0UXPKXR510V18	02/24/2009	02/26/2019		36,000,000	5.22% [LIBOR]			1,102,610	133,913		133,913	(1,225,660)				72,000		0001	
Interest Rate Swap /10481/[Quarterly] LIBOR [2.75125%]/Semi-Annual FIXED 5.36%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/03/2009	03/05/2019		38,000,000	5.36% [LIBOR]			1,214,874	175,927		175,927	(1,351,119)				80,610		0001	
Interest Rate Swap /10831/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 4.85%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFU57RNE97	03/23/2009	03/25/2039		300,000,000	4.85% [LIBOR]			7,897,959	96,070,693		96,070,693	(23,508,001)				6,748,333		0001	
Interest Rate Swap /10848/[Semi-Annual] FIXED [3.41%]/Quarterly LIBOR 2.82163%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/24/2009	03/26/2029		5,000,000	LIBOR [3.41%]			(59,583)	(287,777)		(287,777)	200,200				80,000		0001	
Interest Rate Swap /10879/[Semi-Annual] FIXED [3.765%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFU57RNE97	03/24/2009	03/30/2046		37,500,000	LIBOR [3.765%]			(579,962)	(6,818,253)		(6,818,253)	3,025,377				978,779		0001	
Interest Rate Swap /10891/[Semi-Annual] FIXED [3.9425%]/Quarterly LIBOR 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/24/2009	03/27/2029		82,500,000	LIBOR [3.9425%]				(8,489,624)		(8,489,624)	1,940,469				1,320,000		0001	
Interest Rate Swap /10893/[Semi-Annual] FIXED [3.384%]/Quarterly LIBOR 2.82163%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/24/2009	03/26/2029		5,000,000	LIBOR [3.384%]			(58,283)	(276,055)		(276,055)	198,931				80,000		0001	
Interest Rate Swap /11096/[Semi-Annual] FIXED [3.185%]/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL NQ6HPNCCU6TUTQYE16	03/30/2009	04/01/2024		50,000,000	LIBOR [3.185%]			(486,386)	(1,467,864)		(1,467,864)	1,146,924				573,367		0001	
Interest Rate Swap /11978/[At Maturity] FIXED [3.78%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1ONSX8D621K86	05/05/2009	04/15/2030		38,175,283	LIBOR [3.78%]			(1,066,625)	(6,781,738)		(6,781,738)	2,691,262				641,356		0001	
Interest Rate Swap /12209/[Semi-Annual] FIXED [3.675%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	05/15/2009	05/19/2039		110,000,000	LIBOR [3.675%]			(1,664,005)	(13,888,683)		(13,888,683)	7,499,066				2,483,541		0001	
Interest Rate Swap /12214/[Semi-Annual] FIXED [3.23%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1ONSX8D621K86	05/15/2009	05/19/2019		45,000,000	LIBOR [3.23%]			(480,479)	(89,908)		(89,908)	702,637				140,512		0001	

E18.36

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /13281/[Quarterly] LIBOR [2.80363%]/Semi-Annual FIXED 4.11%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	06/17/2009	06/19/2024		192,000,000	4.11% [LIBOR]			3,689,521	14,945,429		14,945,429	(6,170,961)				2,245,251		0001	
Interest Rate Swap /13282/[Semi-Annual] FIXED [4.16875%]/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	06/17/2009	06/19/2029		73,000,000	LIBOR [4.16875%]			(1,445,674)	(9,676,073)		(9,676,073)	3,245,128				1,181,044		0001	
Interest Rate Swap /13368/[Semi-Annual] FIXED [4.0425%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	06/19/2009	06/23/2019		75,000,000	LIBOR [4.0425%]			(1,366,149)	(446,833)		(446,833)	1,791,182				259,808		0001	
Interest Rate Swap /13369/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 4.37875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	06/19/2009	06/23/2039		60,000,000	LIBOR [4.37875%]			1,294,669	14,291,883		14,291,883	(4,633,854)				1,357,645		0001	
Interest Rate Swap /13402/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 4.1575%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	06/23/2009	06/25/2024		15,000,000	4.1575% [LIBOR]			291,023	1,206,640		1,206,640	(491,535)				175,731		0001	
Interest Rate Swap /13414/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 4.4%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A.	06/23/2009	02/16/2040		200,000,000	4.4% [LIBOR]			4,476,583	50,441,910		50,441,910	(15,088,903)				4,596,738		0001	
Interest Rate Swap /13443/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 4.45%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	06/24/2009	02/16/2040		145,000,000	4.45% [LIBOR]			3,318,023	37,900,883		37,900,883	(10,923,213)				3,332,635		0001	
Interest Rate Swap /13474/[Semi-Annual] FIXED [4.1015%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	06/25/2009	06/29/2029		20,000,000	LIBOR [4.1015%]			(378,892)	(2,527,320)		(2,527,320)	890,179				324,037		0001	
Interest Rate Swap /14038/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 3.94%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	07/27/2009	07/29/2019		100,000,000	3.94% [LIBOR]			1,754,305	698,451		698,451	(2,328,415)				380,789		0001	
Interest Rate Swap /15105/[Semi-Annual] FIXED [3.45%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	09/11/2009	09/15/2019		200,000,000	LIBOR [3.45%]			(2,535,213)	(953,800)		(953,800)	3,826,292				842,615		0001	
Interest Rate Swap /15108/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.75%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	09/11/2009	09/15/2024		225,000,000	3.75% [LIBOR]			3,527,115	13,169,319		13,169,319	(7,074,781)				2,688,256		0001	
Interest Rate Swap /15107/[Semi-Annual] FIXED [3.865%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	09/11/2009	09/15/2029		165,000,000	LIBOR [3.865%]			(2,776,301)	(16,732,501)		(16,732,501)	7,593,487				2,699,906		0001	

E18.37

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /15108/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.93%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	09/11/2009	09/15/2039		100,000,000	3.93% [LIBOR]			1,747,606	16,825,307		16,825,307	(7,216,885)				2,275,412		0001	
Interest Rate Swap /15301/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 3.6425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUISFPUBMPROK5P83	09/23/2009	09/25/2019		60,000,000	3.6425% [LIBOR]			855,092	375,195		375,195	(1,266,951)				258,070		0001	
Interest Rate Swap /15369/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 3.42875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFMBT61CT2L1QCEMIK50	09/28/2009	09/30/2019		60,000,000	3.42875% [LIBOR]			726,189	288,119		288,119	(932,516)				259,808		0001	
Interest Rate Swap /15804/[Semi-Annual] FIXED [3.556%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/07/2009	10/09/2021		150,000,000	LIBOR [3.556%]			(2,027,024)	(3,816,265)		(3,816,265)	3,574,314				1,250,500		0001	
Interest Rate Swap /15839/[Semi-Annual] FIXED [3.725%]/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	10/09/2009	10/13/2021		53,000,000	LIBOR [3.725%]			(806,852)	(1,560,970)		(1,560,970)	1,363,499				442,637		0001	
Interest Rate Swap /16030/[Semi-Annual] FIXED [3.57%]/Quarterly LIBOR 2.47719%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1QNSX8D621K86	10/21/2009	10/23/2019		52,000,000	LIBOR [3.57%]			(713,538)	(348,651)		(348,651)	1,074,379				234,000		0001	
Interest Rate Swap /16031/[Semi-Annual] FIXED [3.74%]/Quarterly LIBOR 2.47719%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1QNSX8D621K86	10/21/2009	10/23/2021		70,000,000	LIBOR [3.74%]			(1,079,532)	(2,172,935)		(2,172,935)	1,786,168				587,750		0001	
Interest Rate Swap /16032/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 3.92%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1QNSX8D621K86	10/21/2009	10/23/2024		215,000,000	3.92% [LIBOR]			3,702,706	15,481,477		15,481,477	(6,617,134)				2,591,174		0001	
Interest Rate Swap /16033/[Semi-Annual] FIXED [4.04%]/Quarterly LIBOR 2.47719%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1QNSX8D621K86	10/21/2009	10/23/2029		254,000,000	LIBOR [4.04%]			(4,679,159)	(31,394,444)		(31,394,444)	11,239,011				4,175,578		0001	
Interest Rate Swap /16034/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 4.12%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1QNSX8D621K86	10/21/2009	10/23/2039		105,000,000	4.12% [LIBOR]			2,018,298	21,604,323		21,604,323	(7,350,294)				2,395,519		0001	
Interest Rate Swap /16441/[Semi-Annual] FIXED [3.855%]/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	11/04/2009	11/06/2021		10,000,000	LIBOR [3.855%]			(167,147)	(344,936)		(344,936)	268,345				84,558		0001	

E18.38

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /16462/[Quarterly] LIBOR [2.59238%]/Semi-Annual FIXED 4.09%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	11/04/2009	11/06/2024		18,000,000	4.09% [LIBOR]			343,164	1,410,697		1,410,697	(628,014)				217,681		0001	
Interest Rate Swap /16528/[Semi-Annual] FIXED [3.673%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	11/06/2009	11/10/2019		75,000,000	LIBOR [3.673%]			(1,121,851)	(594,696)		(594,696)	1,646,855				349,777		0001	
Interest Rate Swap /16931/[Semi-Annual] FIXED [3.7425%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	11/30/2009	12/02/2024		10,000,000	LIBOR [3.7425%]			(157,393)	(600,004)		(600,004)	318,847				121,655		0001	
Interest Rate Swap /16932/[Semi-Annual] FIXED [3.2975%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	11/30/2009	12/02/2019		10,000,000	LIBOR [3.2975%]			(112,893)	(50,333)		(50,333)	184,836				47,958		0001	
Interest Rate Swap /16933/[Semi-Annual] FIXED [4.026%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	11/30/2009	12/02/2039		10,000,000	LIBOR [4.026%]			(185,743)	(1,907,805)		(1,907,805)	696,793				228,692		0001	
Interest Rate Swap /16993/[Semi-Annual] FIXED [3.6225%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	12/04/2009	12/08/2019		100,000,000	LIBOR [3.6225%]			(1,456,818)	(809,779)		(809,779)	2,172,464				484,768		0001	
Interest Rate Swap /17051/[Semi-Annual] FIXED [3.73%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	12/08/2009	12/10/2021		100,000,000	LIBOR [3.73%]			(1,562,140)	(3,203,654)		(3,203,654)	2,576,833				857,321		0001	
Interest Rate Swap /17058/[Semi-Annual] FIXED [3.52%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1G71XBU11	12/08/2009	12/10/2019		55,500,000	LIBOR [3.52%]			(750,437)	(398,333)		(398,333)	1,149,402				269,046		0001	
Interest Rate Swap /17080/[Quarterly] LIBOR [2.7775%]/Semi-Annual FIXED 5.13%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	12/10/2009	12/14/2031		93,000,000	5.13% [LIBOR]			2,745,138	23,624,091		23,624,091	(6,111,216)				1,674,000		0001	
Interest Rate Swap /17100/[Semi-Annual] FIXED [4.405%]/Quarterly LIBOR 2.43631%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCFJXT09	12/11/2009	01/13/2040		4,400,000	LIBOR [4.405%]			(96,904)	(1,118,640)		(1,118,640)	319,975				100,913		0001	
Interest Rate Swap /17138/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.7125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJSPUBMROK8P83	12/15/2009	12/17/2019		40,000,000	3.7125% [LIBOR]			609,366	364,772		364,772	(907,354)				195,959		0001	
Interest Rate Swap /17139/[Semi-Annual] FIXED [3.956%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	12/15/2009	12/17/2021		180,000,000	LIBOR [3.956%]			(3,180,448)	(6,959,856)		(6,959,856)	5,014,505				1,548,419		0001	

E18.39

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /17237/(Semi-Annual) FIXED [4.065%/Quarterly LIBOR 2.82375%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	12/21/2009	12/23/2021		100,000,000	LIBOR [4.065%]			(1,844,032)	(4,109,617)		(4,109,617)	2,929,137				863,134		0001	
Interest Rate Swap /17238/(Semi-Annual) FIXED [3.85%/Quarterly LIBOR 2.82375%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1ONSX8D621K86	12/21/2009	12/23/2019		100,000,000	LIBOR [3.85%]			(1,629,032)	(1,051,374)		(1,051,374)	2,400,602				494,975		0001	
Interest Rate Swap /17277/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED 3.8925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUB8MPR08K5P83	12/24/2009	12/30/2019		40,000,000	3.8925% [LIBOR]			673,951	448,424		448,424	(981,162)				200,000		0001	
Interest Rate Swap /17465/(Quarterly) LIBOR [2.40806%]/Semi-Annual FIXED 3.93469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	01/06/2010	01/08/2020		150,000,000	3.93469% [LIBOR]			2,593,628	1,782,164		1,782,164	(3,719,908)				757,463		0001	
Interest Rate Swap /17538/(Quarterly) LIBOR [2.42519%]/Semi-Annual FIXED 4.563%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL002	01/08/2010	01/12/2040		140,000,000	4.563% [LIBOR]			3,304,001	39,104,364		39,104,364	(10,596,595)				3,210,093		0001	
Interest Rate Swap /17571/(Quarterly) LIBOR [2.43631%]/Semi-Annual FIXED 3.82%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUB8MPR08K5P83	01/12/2010	01/14/2020		100,000,000	3.82% [LIBOR]			1,620,382	1,104,457		1,104,457	(2,384,170)				509,902		0001	
Interest Rate Swap /17639/(Semi-Annual) FIXED [4.935%/Quarterly LIBOR 2.47719%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	01/19/2010	01/23/2042		35,000,000	LIBOR [4.935%]			(958,016)	(12,780,016)		(12,780,016)	2,359,325				840,365		0001	
Interest Rate Swap /17695/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 5.164%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKXST7XV54	01/26/2010	01/28/2040		175,000,000	5.164% [LIBOR]			5,212,034	66,050,157		66,050,157	(14,709,152)				4,017,384		0001	
Interest Rate Swap /17696/(Quarterly) LIBOR [0.0%]/Semi-Annual FIXED 5.2225%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCE0V1H4R804	01/26/2010	01/28/2032		55,000,000	5.2225% [LIBOR]				10,640,214		10,640,214	(1,283,019)				994,573		0001	
Interest Rate Swap /17697/(Quarterly) LIBOR [0.0%]/Semi-Annual FIXED 5.325%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	01/26/2010	01/28/2030		72,000,000	5.325% [LIBOR]				15,756,868		15,756,868	(1,528,611)				1,198,319		0001	
Interest Rate Swap /17698/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 5.012%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUB8MPR08K5P83	01/26/2010	01/28/2040		106,000,000	5.012% [LIBOR]			2,995,883	37,476,183		37,476,183	(8,541,655)				2,433,387		0001	
Interest Rate Swap /17699/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 4.685%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCE0V1H4R804	01/26/2010	01/28/2041		72,000,000	4.685% [LIBOR]			1,799,500	22,276,128		22,276,128	(5,827,750)				1,691,617		0001	

E18.40

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)		
Interest Rate Swap /17700/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 4.43375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	01/26/2010	01/28/2040		43,000,000	4.43375% [LIBOR]			966,664	11,027,944		11,027,944	(3,234,703)				987,129		0001		
Interest Rate Swap /17702/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.146%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	01/27/2010	01/29/2035		16,500,000	5.146% [LIBOR]			488,450	5,078,952		5,078,952	(998,090)				330,824		0001		
Interest Rate Swap /17703/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.111%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	01/27/2010	01/29/2040		65,000,000	5.111% [LIBOR]			1,901,448	24,058,590		24,058,590	(5,317,050)				1,492,171		0001		
Interest Rate Swap /17704/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 5.1425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	01/27/2010	01/29/2040		106,500,000	5.1425% [LIBOR]				36,918,478		36,918,478	(5,037,565)					2,444,865		0001	
Interest Rate Swap /17705/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 5.161%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	01/27/2010	01/30/2037		92,000,000	5.161% [LIBOR]			2,735,386	31,029,817		31,029,817	(6,890,821)				1,955,947		0001		
Interest Rate Swap /17706/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 4.955%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	01/27/2010	01/29/2040		93,000,000	4.955% [LIBOR]				19,737,867		19,737,867	(2,410,839)					2,134,953		0001	
Interest Rate Swap /17707/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 4.86%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV1H4R804	01/27/2010	01/29/2040		56,000,000	4.86% [LIBOR]				6,906,373		6,906,373	(1,520,065)					1,285,563		0001	
Interest Rate Swap /17708/[Quarterly] LIBOR [2.52663%]/Semi-Annual FIXED 4.67%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	01/27/2010	01/31/2040		11,000,000	4.67% [LIBOR]			272,833	3,268,269		3,268,269	(857,252)					252,521		0001	
Interest Rate Swap /17709/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	01/27/2010	01/29/2040		90,000,000	5.0% [LIBOR]			2,532,875	31,406,522		31,406,522	(7,414,703)					2,066,083		0001	
Interest Rate Swap /17710/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.01%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	01/27/2010	01/29/2030		14,000,000	5.01% [LIBOR]			395,403	3,024,682		3,024,682	(795,146)					233,006		0001	
Interest Rate Swap /17730/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 3.752%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	01/27/2010	01/29/2020		30,000,000	3.752% [LIBOR]			469,892	325,869		325,869	(695,648)					155,885		0001	
Interest Rate Swap /17899/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 5.1775%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	02/02/2010	02/04/2040		90,000,000	5.1775% [LIBOR]				31,897,254		31,897,254	(4,090,379)					2,067,063		0001	

E18.41

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /17943/[Semi-Annual] FIXED [4.1225%/Quarterly LIBOR 2.61813%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMLJYYJLN8C3868	02/08/2010	02/10/2025		125,000,000	LIBOR [4.1225%]			(2,431,627)	(10,382,599)		(10,382,599)	4,472,174				1,544,901		0001	
Interest Rate Swap /17964/[Quarterly] LIBOR [2.61813%/Semi-Annual] FIXED 4.4%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFYICNSX8D621K86	02/09/2010	02/11/2040		117,500,000	4.4% [LIBOR]			2,612,775	29,786,951		29,786,951	(8,728,082)				2,699,944		0001	
Interest Rate Swap /17965/[Semi-Annual] FIXED [4.3075%/Quarterly] LIBOR 2.61813%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFYICNSX8D621K86	02/09/2010	02/11/2030		145,000,000	LIBOR [4.3075%]			(3,090,150)	(21,990,665)		(21,990,665)	6,936,748				2,416,546		0001	
Interest Rate Swap /17967/[Semi-Annual] FIXED [4.33%/Quarterly] LIBOR 2.61813%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	02/09/2010	02/11/2030		145,000,000	LIBOR [4.33%]			(3,122,775)	(22,297,182)		(22,297,182)	6,920,748				2,416,546		0001	
Interest Rate Swap /17968/[Quarterly] LIBOR [2.61813%/Semi-Annual] FIXED 4.4225%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	02/09/2010	02/11/2040		117,500,000	4.4225% [LIBOR]			2,639,212	30,268,328		30,268,328	(8,635,675)				2,699,944		0001	
Interest Rate Swap /17990/[Quarterly] LIBOR [2.64%/Semi-Annual] FIXED 3.7575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	02/16/2010	02/18/2020		72,000,000	3.7575% [LIBOR]			1,146,946	821,445		821,445	(1,713,051)				382,685		0001	
Interest Rate Swap /18006/[Semi-Annual] FIXED [3.84875%/Quarterly] LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMLJYYJLN8C3868	02/18/2010	02/22/2020		30,000,000	LIBOR [3.84875%]			(506,176)	(376,229)		(376,229)	737,469				160,857		0001	
Interest Rate Swap /18020/[Quarterly] LIBOR [2.67694%/Semi-Annual] FIXED 4.3425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM6T61CT2L10CEMIK50	02/18/2010	02/22/2025		42,000,000	4.3425% [LIBOR]			916,021	4,072,038		4,072,038	(1,551,731)				520,783		0001	
Interest Rate Swap /18021/[Semi-Annual] FIXED [3.895%/Quarterly] LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFYICNSX8D621K86	02/18/2010	02/22/2020		57,000,000	LIBOR [3.895%]			(988,097)	(746,363)		(746,363)	1,432,816				305,628		0001	
Interest Rate Swap /18032/[Quarterly] LIBOR [2.67694%/Semi-Annual] FIXED 3.89%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	02/19/2010	02/23/2020		45,000,000	3.89% [LIBOR]			775,919	588,112		588,112	(1,124,518)				241,286		0001	
Interest Rate Swap /18050/[Semi-Annual] FIXED [4.237%/Quarterly] LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LCVZKQXST7V54	02/23/2010	02/25/2025		250,000,000	LIBOR [4.237%]			(5,182,069)	(23,318,049)		(23,318,049)	8,725,284				3,099,899		0001	
Interest Rate Swap /18298/[Quarterly] LIBOR [2.76713%/Semi-Annual] FIXED 3.6925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	03/05/2010	03/09/2020		40,000,000	3.6925% [LIBOR]			609,549	447,500		447,500	(931,498)				218,174		0001	

E18.42

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /18389/(Semi-Annual) FIXED [4.4095%/Quarterly LIBOR 2.76713%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/08/2010	03/10/2030		20,000,000	LIBOR [4.4095%]			(448,328)	(3,148,787)		(3,148,787)	1,058,270				334,664		0001
Interest Rate Swap /18390/(Semi-Annual) FIXED [4.24%/Quarterly LIBOR 2.76713%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57PNE97	03/08/2010	03/10/2025		17,400,000	LIBOR [4.24%]			(360,552)	(1,639,240)		(1,639,240)	611,188				216,453		0001
Interest Rate Swap /18398/(Quarterly) LIBOR [2.76713%/Semi-Annual] FIXED 5.378%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/08/2010	03/10/2020		18,000,000	5.378% [LIBOR]			577,825	554,893		554,893	(713,242)				98,179		0001
Interest Rate Swap /18604/(Semi-Annual) FIXED [3.74%/Quarterly LIBOR 2.7819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/15/2010	03/17/2020		15,000,000	LIBOR [3.74%]			(232,637)	(178,084)		(178,084)	355,094				82,500		0001
Interest Rate Swap /18637/(Quarterly) LIBOR [2.80069%/Semi-Annual] FIXED 3.728%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM6T61CT2L10CEMIK50	03/16/2010	03/18/2020		35,000,000	3.728% [LIBOR]			538,626	407,572		407,572	(828,018)				193,294		0001
Interest Rate Swap /18646/(Quarterly) LIBOR [2.82375%/Semi-Annual] FIXED 5.56%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	03/18/2010	03/22/2020		28,000,000	5.56% [LIBOR]			937,230	948,741		948,741	(1,160,388)				155,268		0001
Interest Rate Swap /18699/(Semi-Annual) FIXED [3.795%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	03/25/2010	03/29/2020		75,000,000	LIBOR [3.795%]			(1,182,423)	(969,432)		(969,432)	1,816,958				419,263		0001
Interest Rate Swap /18727/(Semi-Annual) FIXED [3.795%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	03/26/2010	03/30/2020		51,000,000	LIBOR [3.795%]			(804,048)	(659,214)		(659,214)	1,235,532				285,099		0001
Interest Rate Swap /18949/(Semi-Annual) FIXED [4.5275%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/31/2010	04/06/2040		110,000,000	LIBOR [4.5275%]			(2,550,402)	(29,616,345)		(29,616,345)	8,913,411				2,536,568		0001
Interest Rate Swap /18954/(Quarterly) LIBOR [2.40806%/Semi-Annual] FIXED 5.525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	03/31/2010	04/06/2020		18,000,000	5.525% [LIBOR]			596,889	620,752		620,752	(738,271)				101,424		0001
Interest Rate Swap /18969/(Quarterly) LIBOR [2.40806%/Semi-Annual] FIXED 5.53%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	04/01/2010	04/07/2020		18,000,000	5.53% [LIBOR]			598,391	623,265		623,265	(739,340)				101,424		0001

E18.43

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /18998/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 4.0275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYLNC3868	04/05/2010	04/07/2020		70,000,000	4.0275% [LIBOR]			1,275,328	1,120,715		1,120,715	(1,852,951)				394,430		0001	
Interest Rate Swap /19004/[Semi-Annual] FIXED [4.032%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	04/05/2010	04/07/2020		100,000,000	LIBOR [4.032%]			(1,826,397)	(1,608,155)		(1,608,155)	2,647,072				563,471		0001	
Interest Rate Swap /19034/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 3.9575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM6T61CT2L1QCEMIK50	04/06/2010	04/08/2020		93,000,000	3.9575% [LIBOR]			1,629,264	1,403,865		1,403,865	(2,413,316)				524,028		0001	
Interest Rate Swap /34515/[Semi-Annual] FIXED [6.296%]/Semi-Annual LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCLFXT09	04/14/2010	12/29/2027		17,000,000	LIBOR [6.296%]			(695,111)	(4,942,724)		(4,942,724)	1,034,501				255,000		0001	
Interest Rate Swap /34516/[Semi-Annual] FIXED [6.3275%]/Semi-Annual LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCLFXT09	04/14/2010	12/31/2027		5,000,000	LIBOR [6.3275%]			(206,024)	(1,468,051)		(1,468,051)	305,832				75,000		0001	
Interest Rate Swap /19193/[Semi-Annual] FIXED [4.5%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPUBMPRO8K5P83	04/16/2010	04/20/2040		57,000,000	LIBOR [4.5%]			(1,309,812)	(15,507,525)		(15,507,525)	4,262,969				1,315,639		0001	
Interest Rate Swap /19196/[Semi-Annual] FIXED [4.38%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPUBMPRO8K5P83	04/16/2010	04/20/2030		219,000,000	LIBOR [4.38%]			(4,769,635)	(35,197,679)		(35,197,679)	10,663,777				3,682,523		0001	
Interest Rate Swap /19243/[Semi-Annual] FIXED [4.47625%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYLNC3868	04/19/2010	04/21/2040		57,000,000	LIBOR [4.47625%]			(1,298,787)	(14,905,495)		(14,905,495)	4,588,201				1,315,639		0001	
Interest Rate Swap /19247/[Semi-Annual] FIXED [4.365%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPUBMPRO8K5P83	04/19/2010	04/21/2030		218,000,000	LIBOR [4.365%]			(4,724,765)	(34,714,186)		(34,714,186)	10,584,586				3,665,707		0001	
Interest Rate Swap /19270/[Semi-Annual] FIXED [4.5%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1ONSX8D621K86	04/20/2010	04/22/2040		100,000,000	LIBOR [4.5%]			(2,302,323)	(27,170,547)		(27,170,547)	7,589,223				2,308,138		0001	
Interest Rate Swap /19281/[Semi-Annual] FIXED [4.431%]/Quarterly LIBOR 2.47719%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQX5T7XV54	04/21/2010	04/23/2040		71,000,000	LIBOR [4.431%]			(1,585,564)	(18,456,155)		(18,456,155)	5,360,546				1,638,778		0001	
Interest Rate Swap /19283/[Semi-Annual] FIXED [3.9495%]/Quarterly LIBOR 2.47719%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYLNC3868	04/21/2010	04/23/2022		70,000,000	LIBOR [3.9495%]			(1,226,182)	(2,970,354)		(2,970,354)	2,006,597				637,730		0001	

E18.44

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /19334/[Semi-Annual] FIXED [4.025%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYYYYJLN8C3868	.04/26/2010	.04/28/2022		60,000,000	LIBOR [4.025%]			(1,103,583)	(2,697,886)		(2,697,886)	1,765,239				547,449		0001	
Interest Rate Swap /19378/[Semi-Annual] FIXED [4.377%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	.04/27/2010	.04/29/2040		23,000,000	LIBOR [4.377%]			(504,000)	(5,785,487)		(5,785,487)	1,722,020				531,121		0001	
Interest Rate Swap /19379/[Semi-Annual] FIXED [4.12%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	.04/27/2010	.04/29/2025		17,000,000	LIBOR [4.12%]			(328,832)	(1,511,857)		(1,511,857)	578,875				213,856		0001	
Interest Rate Swap /19380/[Semi-Annual] FIXED [3.699%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	.04/27/2010	.04/29/2020		23,000,000	LIBOR [3.699%]			(348,060)	(294,434)		(294,434)	542,367				132,624		0001	
Interest Rate Swap /19495/[Quarterly] LIBOR [2.59238%]/Semi-Annual FIXED 4.02%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUISFPUBMPRO8K5P83	.05/04/2010	.05/06/2025		20,000,000	4.02% [LIBOR]			367,293	1,665,670		1,665,670	(654,344)				251,992		0001	
Interest Rate Swap /19513/[Semi-Annual] FIXED [4.0136%]/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1CNSX80621K86	.05/04/2010	.05/06/2025		100,000,000	LIBOR [4.0136%]			(1,830,067)	(8,290,386)		(8,290,386)	3,270,773				1,259,960		0001	
Interest Rate Swap /19537/[Semi-Annual] FIXED [4.12594%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1G071XB11	.05/05/2010	.02/15/2040		100,000,000	LIBOR [4.12594%]			(1,962,897)	(21,011,662)		(21,011,662)	6,014,737				2,298,369		0001	
Interest Rate Swap /19573/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 4.85%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYYYYJLN8C3868	.05/06/2010	.09/20/2032		77,000,000	4.85% [LIBOR]			2,045,983	17,916,474		17,916,474	(5,014,730)				1,426,060		0001	
Interest Rate Swap /19653/[Quarterly] LIBOR [2.61413%]/Semi-Annual FIXED 4.24%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUISFPUBMPRO8K5P83	.05/12/2010	.05/14/2040		53,000,000	4.24% [LIBOR]			1,097,619	12,183,890		12,183,890	(3,806,140)				1,225,034		0001	
Interest Rate Swap /19780/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 3.771%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYYYYJLN8C3868	.05/19/2010	.05/21/2025		22,000,000	3.771% [LIBOR]			354,469	1,443,796		1,443,796	(728,032)				278,063		0001	
Interest Rate Swap /19785/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 4.03%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1CNSX80621K86	.05/19/2010	.05/21/2040		20,000,000	4.03% [LIBOR]			374,044	3,899,330		3,899,330	(1,406,275)				462,493		0001	
Interest Rate Swap /19786/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 3.4175%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUISFPUBMPRO8K5P83	.05/19/2010	.05/21/2020		337,500,000	3.4175% [LIBOR]			4,244,813	3,281,622		3,281,622	(7,091,359)				1,989,533		0001	

E18.45

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /19787/[Semi-Annual] FIXED [3.81%]/Quarterly LIBOR 2.64581%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPROK5P83	.05/19/2010	.05/21/2025		500,000,000	LIBOR [3.81%]			(8,251,112)	(35,665,625)		(35,665,625)	15,443,916				6,319,612		0001	
Interest Rate Swap /19788/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 4.065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPROK5P83	.05/19/2010	.05/21/2040		168,000,000	4.065% [LIBOR]			3,200,774	33,797,025		33,797,025	(11,711,228)				3,884,943		0001	
Interest Rate Swap /19791/[Semi-Annual] FIXED [3.4275%]/Quarterly LIBOR 2.64581%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	.05/19/2010	.05/21/2020		30,000,000	LIBOR [3.4275%]			(380,317)	(295,458)		(295,458)	637,577				176,847		0001	
Interest Rate Swap /19860/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 3.75625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBUI1	.05/21/2010	.05/25/2030		60,000,000	LIBOR [3.75625%]			955,247	5,986,130		5,986,130	(2,461,580)				1,013,361		0001	
Interest Rate Swap /19870/[Semi-Annual] FIXED [3.615%]/Quarterly LIBOR 2.68925%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ES8DKGJMYJYYJLN8C3868	.05/21/2010	.05/25/2025		43,000,000	LIBOR [3.615%]			(623,856)	(2,429,066)		(2,429,066)	1,362,237				544,337		0001	
Interest Rate Swap /19871/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 3.8575%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ES8DKGJMYJYYJLN8C3868	.05/21/2010	.05/25/2040		28,000,000	3.8575% [LIBOR]			474,132	4,497,570		4,497,570	(2,038,821)				647,642		0001	
Interest Rate Swap /19903/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 3.60625%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBUI1	.05/24/2010	.05/26/2025		43,000,000	LIBOR [3.60625%]			623,094	2,562,614		2,562,614	(1,211,507)				544,337		0001	
Interest Rate Swap /20225/[Semi-Annual] FIXED [4.037%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBUI1	.06/01/2010	.06/03/2040		29,000,000	LIBOR [4.037%]			(542,583)	(5,729,126)		(5,729,126)	1,742,343				671,242		0001	
Interest Rate Swap /20362/[Semi-Annual] FIXED [4.00125%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	.06/07/2010	.06/09/2040		79,000,000	LIBOR [4.00125%]			(1,447,772)	(15,045,730)		(15,045,730)	5,522,025				1,829,409		0001	
Interest Rate Swap /20363/[Semi-Annual] FIXED [3.7275%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	.06/07/2010	.06/09/2025		120,000,000	LIBOR [3.7275%]			(1,870,648)	(7,992,595)		(7,992,595)	3,656,879				1,522,629		0001	
Interest Rate Swap /20528/[Semi-Annual] FIXED [3.9675%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ES8DKGJMYJYYJLN8C3868	.06/09/2010	.06/11/2040		50,000,000	LIBOR [3.9675%]			(899,787)	(8,939,804)		(8,939,804)	3,720,533				1,157,854		0001	
Interest Rate Swap /20530/[Quarterly] LIBOR [2.7775%]/Semi-Annual FIXED 3.96%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1QNSX8D621K86	.06/10/2010	.06/14/2040		27,000,000	LIBOR [3.96%]			481,076	4,956,766		4,956,766	(1,879,119)				625,387		0001	

E18.46

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /20596/[Semi-Annual] FIXED [4.056%/Quarterly LIBOR 2.78819%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	06/11/2010	06/15/2040		20,000,000	LIBOR [4.056%]			(374,721)	(3,978,814)		(3,978,814)	1,431,582				463,249		0001	
Interest Rate Swap /20598/[Semi-Annual] FIXED [3.5675%/Quarterly LIBOR 2.78819%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	06/11/2010	06/15/2022		80,000,000	LIBOR [3.5675%]			(1,108,085)	(2,605,746)		(2,605,746)	1,970,171				744,043		0001	
Interest Rate Swap /20599/[Quarterly] LIBOR [2.78819%/Semi-Annual] FIXED 4.025%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	06/11/2010	06/15/2040		96,000,000	4.025% [LIBOR]			1,768,902	18,663,644		18,663,644	(6,735,977)				2,223,597		0001	
Interest Rate Swap /20600/[Semi-Annual] FIXED [3.99125%/Quarterly] LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	06/11/2010	06/15/2035		100,000,000	LIBOR [3.99125%]			(1,808,856)	(15,667,696)		(15,667,696)	5,884,678				2,028,546		0001	
Interest Rate Swap /20746/[Quarterly] LIBOR [2.80069%/Semi-Annual] FIXED 3.55875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	06/16/2010	06/18/2022		22,000,000	LIBOR [3.55875%]			301,330	684,879		684,879	(557,720)				204,907		0001	
Interest Rate Swap /20857/[Quarterly] LIBOR [2.81344%/Semi-Annual] FIXED 3.8725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG	06/24/2010	06/28/2040		33,000,000	3.8725% [LIBOR]			545,158	5,519,641		5,519,641	(2,273,235)				764,896		0001	
Interest Rate Swap /20904/[Semi-Annual] FIXED [3.7275%/Quarterly] LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	06/28/2010	06/30/2030		695,000,000	LIBOR [3.7275%]			(10,559,961)	(67,482,850)		(67,482,850)	29,882,523				11,779,174		0001	
Interest Rate Swap /20905/[Quarterly] LIBOR [2.803%/Semi-Annual] FIXED 3.8525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	06/28/2010	06/30/2040		555,000,000	3.8525% [LIBOR]			9,128,451	92,460,239		92,460,239	(37,357,556)				12,867,146		0001	
Interest Rate Swap /20908/[Quarterly] LIBOR [2.803%/Semi-Annual] FIXED 3.0925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	06/28/2010	06/30/2020		50,000,000	3.0925% [LIBOR]			441,327	272,329		272,329	(899,423)				306,186		0001	
Interest Rate Swap /20909/[Semi-Annual] FIXED [3.716%/Quarterly] LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	06/28/2010	06/30/2030		132,000,000	LIBOR [3.716%]			(1,990,411)	(12,677,002)		(12,677,002)	5,696,565				2,237,196		0001	
Interest Rate Swap /21029/[Quarterly] LIBOR [2.797%/Semi-Annual] FIXED 3.747%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	06/29/2010	07/01/2040		16,500,000	3.747% [LIBOR]			253,238	2,354,985		2,354,985	(1,177,997)				382,626		0001	
Interest Rate Swap /23444/[Quarterly] LIBOR [2.43844%/Semi-Annual] FIXED 5.01%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	07/14/2010	07/16/2020		45,000,000	5.01% [LIBOR]			1,264,781	1,572,511		1,572,511	(1,650,047)				279,218		0001	

E18.47

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /21361/(Quarterly) LIBOR [2.469%]/Semi-Annual FIXED 5.02%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX80621K86	07/19/2010	07/21/2020		45,000,000	5.02% [LIBOR]			1,270,045	1,592,658		1,592,658	(1,654,495)				281,025		0001	
Interest Rate Swap /21379/(Semi-Annual) FIXED [3.185%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX80621K86	07/20/2010	07/22/2022		95,000,000	LIBOR [3.185%]			(937,957)	(1,982,329)		(1,982,329)	1,988,098				896,228		0001	
Interest Rate Swap /21429/(Semi-Annual) FIXED [3.022%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX80621K86	07/26/2010	07/28/2020		125,000,000	LIBOR [3.022%]			(1,045,381)	(650,496)		(650,496)	2,182,802				785,613		0001	
Interest Rate Swap /21664/(Semi-Annual) FIXED [3.73%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX80621K86	07/30/2010	08/03/2040		70,000,000	LIBOR [3.73%]			(1,078,073)	(10,244,799)		(10,244,799)	4,685,587				1,626,276		0001	
Interest Rate Swap /21697/(Semi-Annual) FIXED [3.587%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION ... 11E8VN30JCEQV1H4R804	08/02/2010	08/04/2030		17,800,000	LIBOR [3.587%]			(248,765)	(1,482,814)		(1,482,814)	760,041				303,123		0001	
Interest Rate Swap /21729/(Semi-Annual) FIXED [3.597%]/Quarterly LIBOR 2.59238%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION ... 11E8VN30JCEQV1H4R804	08/04/2010	08/06/2030		10,000,000	LIBOR [3.597%]			(141,347)	(843,266)		(843,266)	428,082				170,294		0001	
Interest Rate Swap /21836/(Quarterly) LIBOR [2.61813%]/Semi-Annual FIXED 5.128%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMLJYYYJLN8C3868	08/10/2010	08/12/2020		33,000,000	5.128% [LIBOR]			975,603	1,264,029		1,264,029	(1,253,040)				210,011		0001	
Interest Rate Swap /22776/(Semi-Annual) FIXED [3.103%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKXST7XV54	09/14/2010	09/16/2025		20,000,000	LIBOR [3.103%]			(183,519)	(600,598)		(600,598)	506,029				259,037		0001	
Interest Rate Swap /23081/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED 5.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	09/21/2010	09/23/2020		60,000,000	5.0% [LIBOR]			1,667,419	2,332,757		2,332,757	(2,214,948)				394,588		0001	
Interest Rate Swap /23123/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED 5.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN706T14HNAYLU02	09/22/2010	09/24/2020		60,000,000	5.0% [LIBOR]			1,668,204	2,331,274		2,331,274	(2,209,345)				394,588		0001	
Interest Rate Swap /23443/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED 4.763%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	09/23/2010	03/23/2020		300,000,000	4.763% [LIBOR]			7,626,097	7,303,169		7,303,169	(10,120,202)				1,663,580		0001	
Interest Rate Swap /23539/(Semi-Annual) FIXED [3.2%]/Quarterly LIBOR 2.42519%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	10/08/2010	10/12/2030		20,000,000	LIBOR [3.2%]			(199,400)	(886,446)		(886,446)	761,567				343,366		0001	

E18.48

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /23775/[Semi-Annual] FIXED [3.33%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/20/2010	10/22/2030		25,000,000	LIBOR [3.33%]			(283,081)	(1,442,764)		(1,442,764)	986,219				429,571		0001
Interest Rate Swap /23776/[Semi-Annual] FIXED [2.5475%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	10/20/2010	10/22/2020		15,000,000	LIBOR [2.5475%]			(52,473)	30,994		30,994	197,280				100,902		0001
Interest Rate Swap /23875/[Semi-Annual] FIXED [3.37%]/Quarterly LIBOR 2.5092%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGGFU57PNE97	10/25/2010	10/27/2030		28,000,000	LIBOR [3.37%]			(329,994)	(1,749,333)		(1,749,333)	1,152,716				481,527		0001
Interest Rate Swap /24043/[Semi-Annual] LIBOR [2.43631%]/Semi-Annual FIXED [6.7635%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCLJFT09	10/28/2010	10/15/2022		12,000,000	6.7635% [LIBOR]	100,000		547,065	1,815,301		1,815,301	(664,053)				116,962		0001
Interest Rate Swap /24044/[Semi-Annual] FIXED [5.695%]/Semi-Annual LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCLJFT09	10/28/2010	12/16/2023		5,250,000	LIBOR [5.695%]			(183,956)	(763,429)		(763,429)	244,191				58,520		0001
Interest Rate Swap /24072/[Semi-Annual] FIXED [3.6925%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	11/01/2010	11/03/2040		50,000,000	LIBOR [3.6925%]			(751,302)	(6,774,201)		(6,774,201)	3,577,713				1,168,600		0001
Interest Rate Swap /24113/[Semi-Annual] FIXED [2.705%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	11/02/2010	11/04/2020		28,000,000	LIBOR [2.705%]			(144,355)	(20,357)		(20,357)	414,263				189,905		0001
Interest Rate Swap /24145/[Semi-Annual] FIXED [3.42%]/Quarterly LIBOR 2.5815%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV1H4R804	11/03/2010	11/05/2030		13,000,000	LIBOR [3.42%]			(160,798)	(872,092)		(872,092)	543,319				223,755		0001
Interest Rate Swap /24264/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED [2.83%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	11/09/2010	11/12/2020		50,000,000	2.83% [LIBOR]			329,186	142,213		142,213	(805,592)				341,870		0001
Interest Rate Swap /24266/[Semi-Annual] FIXED [3.415%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/10/2010	11/12/2025		100,000,000	LIBOR [3.415%]			(1,243,372)	(5,001,062)		(5,001,062)	2,780,236				1,310,534		0001
Interest Rate Swap /24347/[Semi-Annual] FIXED [3.255%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/15/2010	11/17/2022		14,000,000	LIBOR [3.255%]			(153,330)	(352,625)		(352,625)	306,502				137,884		0001

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /24354/[Semi-Annual] FIXED [2.979%/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGUFU57RNE97	11/15/2010	11/17/2020		13,000,000	LIBOR [2.979%			(106,498)	(76,743)		(76,743)	227,833				89,124		0001	
Interest Rate Swap /24450/[Semi-Annual] FIXED [3.51375%/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	11/17/2010	11/19/2025		150,000,000	LIBOR [3.51375%			(2,027,223)	(8,454,886)		(8,454,886)	4,317,190				1,968,661		0001	
Interest Rate Swap /24535/[Semi-Annual] FIXED [3.905%/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U9RH1GC71XB11	11/22/2010	11/24/2040		40,000,000	LIBOR [3.905%			(695,929)	(7,146,960)		(7,146,960)	2,389,852				936,162		0001	
Interest Rate Swap /24538/[Semi-Annual] FIXED [2.993%/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ES8DKGMLYYJLNC3868	11/22/2010	11/24/2020		15,000,000	LIBOR [2.993%			(124,173)	(88,616)		(88,616)	266,539				103,380		0001	
Interest Rate Swap /24540/[Semi-Annual] FIXED [2.98125%/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	11/22/2010	11/24/2020		11,000,000	LIBOR [2.98125%			(89,768)	(64,803)		(64,803)	193,400				75,812		0001	
Interest Rate Swap /24666/[Quarterly] LIBOR [2.68925%/Semi-Annual] FIXED 2.984%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	11/24/2010	11/26/2020		50,000,000	2.984% [LIBOR]			413,403	300,784		300,784	(883,886)				345,507		0001	
Interest Rate Swap /24804/[Quarterly] LIBOR [2.73813%/Semi-Annual] FIXED 3.7825%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. ES70DZIZ7FF32TWEFA76	11/30/2010	12/02/2040		11,000,000	3.7825% [LIBOR]			177,532	1,686,054		1,686,054	(714,345)				257,562		0001	
Interest Rate Swap /24952/[Quarterly] LIBOR [2.76575%/Semi-Annual] FIXED 3.1625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ES70DZIZ7FF32TWEFA76	12/03/2010	12/07/2020		50,000,000	3.1625% [LIBOR]			499,242	468,876		468,876	(967,296)				348,210		0001	
Interest Rate Swap /24962/[Semi-Annual] FIXED [4.00125%/Quarterly] LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJISFPU8MPR08K5P83	12/06/2010	12/08/2040		17,000,000	LIBOR [4.00125%			(312,047)	(3,297,443)		(3,297,443)	1,194,101				398,141		0001	
Interest Rate Swap /24963/[Semi-Annual] FIXED [3.135%/Quarterly] LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	12/06/2010	12/08/2020		21,000,000	LIBOR [3.135%			(203,557)	(186,096)		(186,096)	402,843				146,248		0001	
Interest Rate Swap /25235/[Quarterly] LIBOR [2.78819%/Semi-Annual] FIXED 4.89%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	12/14/2010	12/16/2020		60,000,000	4.89% [LIBOR]			1,622,756	2,541,569		2,541,569	(2,163,737)				420,000		0001	

E18.50

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /25394/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 3.52125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14HNAYLU02	12/17/2010	12/21/2020		50,000,000	3.52125% (LIBOR)			658,658	823,410		823,410	(1,138,771)				351,781		0001	
Interest Rate Swap /25406/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 5.05%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14HNAYLU02	12/17/2010	12/21/2030		17,500,000	5.05% (LIBOR)				3,334,383		3,334,383	(355,387)				302,856		0001	
Interest Rate Swap /25407/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 4.985%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XB11	12/17/2010	12/21/2030		10,250,000	4.985% (LIBOR)				1,422,935		1,422,935	(143,729)				177,387		0001	
Interest Rate Swap /25408/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 4.95%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	12/17/2010	12/21/2040		15,000,000	4.95% (LIBOR)			411,910	5,197,730		5,197,730	(1,327,371)				351,621		0001	
Interest Rate Swap /25409/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 4.736%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/17/2010	12/23/2040		18,000,000	4.736% (LIBOR)			452,706	5,682,855		5,682,855	(1,470,833)				421,945		0001	
Interest Rate Swap /25410/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 5.065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XB11	12/17/2010	12/21/2030		7,500,000	5.065% (LIBOR)			214,580	1,786,846		1,786,846	(391,798)				129,796		0001	
Interest Rate Swap /25411/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 4.17%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	12/17/2010	12/21/2040		22,000,000	4.17% (LIBOR)			432,535	4,838,927		4,838,927	(1,622,175)				515,711		0001	
Interest Rate Swap /25412/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 4.895%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/17/2010	12/21/2040		20,000,000	4.895% (LIBOR)			538,213	6,848,426		6,848,426	(1,674,327)				468,828		0001	
Interest Rate Swap /25413/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 4.3825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/17/2010	12/21/2040		11,000,000	4.3825% (LIBOR)			239,642	2,819,610		2,819,610	(848,508)				257,856		0001	
Interest Rate Swap /25414/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 4.58%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/17/2010	12/21/2040		10,000,000	4.58% (LIBOR)			237,607	2,895,055		2,895,055	(796,725)				234,414		0001	
Interest Rate Swap /25448/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 4.136%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XB11	12/21/2010	12/23/2040		30,000,000	4.136% (LIBOR)			574,510	6,533,823		6,533,823	(1,837,364)				703,242		0001	
Interest Rate Swap /25449/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 4.12%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	12/21/2010	12/23/2040		45,000,000	4.12% (LIBOR)			854,564	9,335,376		9,335,376	(3,487,958)				1,054,864		0001	

E18.51

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /25459/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 4.1625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A.	12/22/2010	12/24/2040		45,000,000	4.1625% [LIBOR]			874,278	9,870,546		9,870,546	(3,345,771)				1,054,864		0001	
Interest Rate Swap /25460/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 4.18%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	12/23/2010	12/29/2040		35,000,000	4.18% [LIBOR]			690,612	7,936,470		7,936,470	(2,596,055)				820,823		0001	
Interest Rate Swap /25543/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 4.263%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	12/28/2010	12/30/2040		95,000,000	4.263% [LIBOR]			1,953,586	22,564,474		22,564,474	(7,165,032)				2,227,947		0001	
Interest Rate Swap /25547/[Semi-Annual] FIXED [3.2975%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	12/29/2010	06/30/2019		40,000,000	LIBOR [3.2975%]			(435,290)	(101,287)		(101,287)	668,870				140,000		0001	
Interest Rate Swap /25633/[Quarterly] LIBOR [2.79388%]/Semi-Annual FIXED 3.755%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	12/30/2010	01/04/2021		35,000,000	3.755% [LIBOR]			540,003	746,952		746,952	(877,614)				248,105		0001	
Interest Rate Swap /25643/[Quarterly] LIBOR [2.79388%]/Semi-Annual FIXED 4.1875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	12/30/2010	01/04/2041		95,000,000	4.1875% [LIBOR]			1,876,597	21,387,758		21,387,758	(6,992,408)				2,228,454		0001	
Interest Rate Swap /25644/[Quarterly] LIBOR [2.79388%]/Semi-Annual FIXED 4.2025%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	12/30/2010	01/04/2041		80,000,000	4.2025% [LIBOR]			1,592,292	17,929,447		17,929,447	(5,609,449)				1,876,593		0001	
Interest Rate Swap /25829/[Semi-Annual] FIXED [3.75%]/Quarterly LIBOR 2.41425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	01/06/2011	01/10/2031		150,000,000	LIBOR [3.75%]			(2,318,923)	(15,299,890)		(15,299,890)	6,689,855				2,601,322		0001	
Interest Rate Swap /25865/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.25625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	01/07/2011	01/11/2041		22,000,000	4.25625% [LIBOR]			451,890	5,216,908		5,216,908	(1,632,009)				516,297		0001	
Interest Rate Swap /25866/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.4875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	01/07/2011	01/11/2041		11,000,000	4.4875% [LIBOR]			251,383	3,052,670		3,052,670	(697,517)				258,149		0001	
Interest Rate Swap /25867/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 4.8425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	01/07/2011	01/13/2041		18,000,000	4.8425% [LIBOR]			475,175	6,056,019		6,056,019	(1,455,917)				422,521		0001	
Interest Rate Swap /25868/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.69%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	01/07/2011	01/11/2041		10,000,000	4.69% [LIBOR]			248,780	3,095,878		3,095,878	(808,494)				234,681		0001	

E18.52

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /25878/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 5.03%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	01/07/2011	01/11/2041		20,000,000	5.03% [LIBOR]			565,559	7,153,477		7,153,477	(1,574,505)				469,361		0001	
Interest Rate Swap /25879/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 5.23%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	01/07/2011	01/11/2031		7,500,000	5.23% [LIBOR]			219,015	1,888,562		1,888,562	(427,619)				130,120		0001	
Interest Rate Swap /25880/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 5.065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	01/07/2011	01/11/2041		15,000,000	5.065% [LIBOR]			413,967	5,451,086		5,451,086	(1,171,468)				352,021		0001	
Interest Rate Swap /25881/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 5.2375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	01/07/2011	01/11/2031		17,500,000	5.2375% [LIBOR]				3,534,484		3,534,484	(331,748)				303,614		0001	
Interest Rate Swap /25882/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 5.19%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	01/07/2011	01/11/2031		10,250,000	5.19% [LIBOR]				1,520,703		1,520,703	(178,385)				177,831		0001	
Interest Rate Swap /25916/[Quarterly] LIBOR [2.42519%]/Semi-Annual FIXED 5.11%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMLJYYJLN8C3868	01/10/2011	01/12/2021		75,000,000	5.11% [LIBOR]			2,180,250	3,610,572		3,610,572	(2,861,164)				534,293		0001	
Interest Rate Swap /26033/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 5.435%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	01/18/2011	01/20/2021		75,000,000	5.435% [LIBOR]			2,424,687	4,174,666		4,174,666	(3,101,238)				538,227		0001	
Interest Rate Swap /26198/[Semi-Annual] FIXED [3.7325%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	01/26/2011	01/28/2023		120,000,000	LIBOR [3.7325%]			(1,856,166)	(5,396,915)		(5,396,915)	3,181,770				1,211,941		0001	
Interest Rate Swap /26295/[Quarterly] LIBOR [2.541%]/Semi-Annual FIXED 4.11375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ... ES71P3U3RH1G071XBU11	01/28/2011	02/01/2031		30,000,000	4.11375% [LIBOR]			577,440	4,222,070		4,222,070	(1,352,440)				521,560		0001	
Interest Rate Swap /26503/[Semi-Annual] FIXED [3.4275%]/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	01/28/2011	02/01/2021		120,000,000	LIBOR [3.4275%]			(1,486,259)	(1,905,002)		(1,905,002)	2,641,733				867,410		0001	
Interest Rate Swap /26537/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 4.3025%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ... ROMJUISFPUR8K5P83	01/31/2011	02/02/2041		100,000,000	4.3025% [LIBOR]			2,109,754	24,592,233		24,592,233	(7,416,004)				2,350,000		0001	
Interest Rate Swap /26539/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 4.305%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	01/31/2011	02/02/2041		100,000,000	4.305% [LIBOR]			2,112,254	24,593,027		24,593,027	(7,502,030)				2,350,000		0001	
Interest Rate Swap /26558/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 4.36%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	02/01/2011	02/03/2041		100,000,000	4.36% [LIBOR]			2,170,105	25,519,024		25,519,024	(7,575,590)				2,350,000		0001	

E18.53

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /26643/[Semi-Annual] FIXED [3.925%/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGUFU57RNE97	02/04/2011	02/08/2023		125,000,000	LIBOR [3.925%			(2,179,257)	(6,603,966)		(6,603,966)	3,606,725				1,267,071		0001	
Interest Rate Swap /26648/[Semi-Annual] FIXED [4.15625%/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/04/2011	02/08/2026		50,000,000	LIBOR [4.15625%			(987,328)	(4,968,807)		(4,968,807)	1,762,248				666,615		0001	
Interest Rate Swap /26828/[Semi-Annual] FIXED [4.17%/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	02/16/2011	02/18/2026		85,000,000	LIBOR [4.17%			(1,704,658)	(8,522,464)		(8,522,464)	2,973,909				1,134,838		0001	
Interest Rate Swap /26963/[Quarterly] LIBOR [2.68925%/Semi-Annual] FIXED 3.81375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	02/22/2011	02/24/2023		100,000,000	LIBOR [3.81375%			1,648,573	4,867,646		4,867,646	(2,740,383)				1,018,577		0001	
Interest Rate Swap /27102/[Quarterly] LIBOR [2.70681%/Semi-Annual] FIXED 4.885%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	02/24/2011	02/28/2041		59,000,000	5.073% [LIBOR]			1,381,255	21,822,800		21,822,800	(5,025,340)				1,388,695		0001	
Interest Rate Swap /27105/[Quarterly] LIBOR [2.70681%/Semi-Annual] FIXED 4.885%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6KMZ0031MB27	02/24/2011	02/28/2041		53,800,000	4.885% [LIBOR]			1,463,298	18,468,510		18,468,510	(4,532,761)				1,266,302		0001	
Interest Rate Swap /27127/[Quarterly] LIBOR [2.70681%/Semi-Annual] FIXED 5.175%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	02/24/2011	02/28/2031		13,500,000	5.175% [LIBOR]			327,640	3,336,493		3,336,493	(781,272)				235,381		0001	
Interest Rate Swap /27128/[Quarterly] LIBOR [2.70681%/Semi-Annual] FIXED 4.545%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV14HR804	02/24/2011	02/28/2041		13,600,000	4.545% [LIBOR]			323,664	3,900,335		3,900,335	(1,081,646)				320,106		0001	
Interest Rate Swap /27131/[Quarterly] LIBOR [0.0%/Semi-Annual] FIXED 5.29375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	02/24/2011	02/28/2026		3,000,000	LIBOR [5.29375%				202,003		202,003	(14,519)				40,137		0001	
Interest Rate Swap /27132/[Quarterly] LIBOR [0.0%/Semi-Annual] FIXED 5.065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	02/24/2011	02/28/2041		28,000,000	5.065% [LIBOR]				9,109,962		9,109,962	(1,293,960)				659,042		0001	
Interest Rate Swap /27133/[Quarterly] LIBOR [0.0%/Semi-Annual] FIXED 5.19%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	02/24/2011	02/28/2031		20,500,000	5.19% [LIBOR]				4,110,856		4,110,856	(412,754)				357,430		0001	
Interest Rate Swap /27134/[Quarterly] LIBOR [0.0%/Semi-Annual] FIXED 4.855%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL NQG6HPNCCU6TUTQE16	02/24/2011	02/28/2041		30,600,000	4.855% [LIBOR]				3,532,610		3,532,610	(678,066)				720,238		0001	

E18.54

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /27135/(Quarterly) LIBOR [0.0%]/Semi-Annual FIXED 5.02%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... NQ06HPCNCCU6TUTQYE16	02/24/2011	02/28/2041		23,000,000	5.02% [LIBOR]				6,027,056		6,027,056	(920,223)				541,356		0001	
Interest Rate Swap /27136/(Quarterly) LIBOR [0.0%]/Semi-Annual FIXED 5.1425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... NQ06HPCNCCU6TUTQYE16	02/24/2011	02/28/2031		15,500,000	5.1425% [LIBOR]				2,237,023		2,237,023	(272,255)				270,252		0001	
Interest Rate Swap /27139/(Quarterly) LIBOR [0.0%]/Semi-Annual FIXED 4.93%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... NQ06HPCNCCU6TUTQYE16	02/24/2011	02/27/2041		32,000,000	4.93% [LIBOR]				6,202,266		6,202,266	(1,126,197)				753,191		0001	
Interest Rate Swap /27153/(Quarterly) LIBOR [2.70681%]/Semi-Annual FIXED 4.32%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ... ES71P3U3RH1GC71XBU11	02/24/2011	02/28/2041		22,000,000	4.32% [LIBOR]			474,075	5,516,284		5,516,284	(1,379,429)				517,819		0001	
Interest Rate Swap /27154/(Quarterly) LIBOR [0.0%]/Semi-Annual FIXED 5.188%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMLJYYJLN8C3868	02/24/2011	02/28/2031		7,000,000	5.188% [LIBOR]				1,370,630		1,370,630	(171,289)				122,049		0001	
Interest Rate Swap /27155/(Quarterly) LIBOR [2.70681%]/Semi-Annual FIXED 4.746%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGUFU57RNE97	02/24/2011	02/28/2041		16,700,000	4.746% [LIBOR]			431,008	5,431,832		5,431,832	(1,370,362)				393,072		0001	
Interest Rate Swap /27160/(Quarterly) LIBOR [2.70681%]/Semi-Annual FIXED 5.04%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. ... B4TYDEB6GKMZ0031MB27	02/24/2011	02/28/2041		61,000,000	5.04% [LIBOR]			1,753,679	22,539,020		22,539,020	(5,261,485)				1,435,769		0001	
Interest Rate Swap /27455/(Semi-Annual) FIXED [3.6895%]/Quarterly LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGUFU57RNE97	03/03/2011	03/07/2021		100,000,000	LIBOR [3.6895%]			(1,525,485)	(2,231,551)		(2,231,551)	2,484,495				739,932		0001	
Interest Rate Swap /27477/(Semi-Annual) FIXED [4.4%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	03/07/2011	03/09/2039		60,000,000	LIBOR [4.4%]			(1,338,824)	(14,710,765)		(14,710,765)	4,218,845				1,347,999		0001	
Interest Rate Swap /27962/(Semi-Annual) FIXED [3.44875%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	03/22/2011	03/24/2021		12,000,000	LIBOR [3.44875%]			(147,491)	(208,702)		(208,702)	268,198				89,599		0001	
Interest Rate Swap /28070/(Semi-Annual) FIXED [3.56%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	03/25/2011	03/29/2021		15,000,000	LIBOR [3.56%]			(201,235)	(299,675)		(299,675)	350,302				112,500		0001	
Interest Rate Swap /28080/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED 4.29375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMU/SFPUBMIPR08K5P83	03/28/2011	03/30/2041		24,900,000	LIBOR [4.29375%]			516,753	6,115,292		6,115,292	(1,853,465)				587,265		0001	

E18.55

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Undiscounted Premium (Received) Paid	Current Year Initial Cost of Undiscounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /28081/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED 4.52375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	03/28/2011	03/30/2041		11,600,000	4.52375% [LIBOR]			267,416	3,297,024		3,297,024	(906,099)				273,585		0001
Interest Rate Swap /28082/(Quarterly) LIBOR [2.81344%]/Semi-Annual FIXED 4.71625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	03/28/2011	03/28/2041		11,500,000	4.71625% [LIBOR]			287,011	3,642,679		3,642,679	(926,926)				271,166		0001
Interest Rate Swap /28084/(Quarterly) LIBOR [0.0%]/Semi-Annual FIXED 5.14375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL	03/28/2011	03/30/2031		23,500,000	5.14375% [LIBOR]				4,510,019		4,510,019	(454,293)				411,250		0001
Interest Rate Swap /28085/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED 5.02375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL	03/28/2011	03/29/2041		25,900,000	5.02375% [LIBOR]			514,509	9,302,782		9,302,782	(1,838,421)				610,850		0001
Interest Rate Swap /28096/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED 4.8575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	03/28/2011	03/30/2041		20,500,000	4.8575% [LIBOR]			541,008	7,071,949		7,071,949	(1,712,624)				483,492		0001
Interest Rate Swap /28097/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED 4.2675%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON	03/28/2011	03/30/2041		14,600,000	4.2675% [LIBOR]			299,163	3,520,609		3,520,609	(1,081,885)				344,340		0001
Interest Rate Swap /28262/(Semi-Annual) FIXED [3.5975%]/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	03/30/2011	04/01/2021		10,000,000	LIBOR [3.5975%]			(138,527)	(208,099)		(208,099)	236,970				75,000		0001
Interest Rate Swap /28263/(Quarterly) LIBOR [2.797%]/Semi-Annual FIXED 4.31%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON	03/30/2011	04/01/2041		14,700,000	4.31% [LIBOR]			308,373	3,649,567		3,649,567	(1,097,105)				346,699		0001
Interest Rate Swap /28271/(Quarterly) LIBOR [2.797%]/Semi-Annual FIXED 3.543%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	03/30/2011	04/01/2021		50,000,000	3.543% [LIBOR]			665,386	980,741		980,741	(1,161,593)				375,000		0001
Interest Rate Swap /28823/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 4.09%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	04/21/2011	04/27/2031		100,000,000	4.09% [LIBOR]			1,898,552	13,991,368		13,991,368	(4,916,934)				1,755,705		0001
Interest Rate Swap /28824/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 4.212%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	04/21/2011	04/27/2041		100,000,000	4.212% [LIBOR]			2,020,552	23,198,972		23,198,972	(7,467,865)				2,362,731		0001
Interest Rate Swap /28825/(Semi-Annual) FIXED [3.7%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	04/21/2011	04/27/2023		30,000,000	LIBOR [3.7%]			(452,566)	(1,395,571)		(1,395,571)	780,776				312,130		0001

E18.56

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /28826/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 3.7%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XBU11	.04/21/2011	.04/27/2023		100,000,000	3.7% [LIBOR]			1,508,552	4,651,902		4,651,902	(2,602,590)				1,040,433		0001	
Interest Rate Swap /28853/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.83%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGIMJYYJLN8C3868	.04/21/2011	.04/27/2021		77,000,000	5.83% [LIBOR]			2,801,685	5,513,903		5,513,903	(3,501,598)				587,676		0001	
Interest Rate Swap /28881/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 3.4405%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCJFX09	.04/25/2011	.04/27/2021		50,000,000	3.4405% [LIBOR]			624,526	918,902		918,902	(1,117,824)				381,608		0001	
Interest Rate Swap /29088/[Semi-Annual] FIXED [3.342%]/Quarterly LIBOR [2.59238%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XBU11	.05/04/2011	.05/06/2021		25,000,000	LIBOR [3.342%]			(289,617)	(408,818)		(408,818)	529,531				191,621		0001	
Interest Rate Swap /29123/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 3.901%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1ONSX8D621K86	.05/05/2011	.05/09/2031		60,000,000	3.901% [LIBOR]			1,030,405	7,203,424		7,203,424	(2,846,255)				1,054,704		0001	
Interest Rate Swap /29124/[Semi-Annual] FIXED [3.268%]/Quarterly LIBOR 2.60113%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1ONSX8D621K86	.05/05/2011	.05/09/2021		25,000,000	LIBOR [3.268%]			(271,086)	(370,288)		(370,288)	518,203				192,029		0001	
Interest Rate Swap /29397/[Semi-Annual] FIXED [4.03%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	.05/16/2011	.05/18/2041		34,400,000	LIBOR [4.03%]			(641,725)	(6,933,608)		(6,933,608)	2,485,057				813,870		0001	
Interest Rate Swap /29768/[Semi-Annual] FIXED [3.212%]/Quarterly LIBOR 2.69119%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E57ODZIZ7F32TWEFA76	.05/25/2011	.05/27/2021		42,000,000	LIBOR [3.212%]			(442,602)	(578,861)		(578,861)	847,274				326,008		0001	
Interest Rate Swap /29796/[Semi-Annual] FIXED [4.24%]/Quarterly LIBOR 2.70%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	.05/25/2011	.05/29/2042		36,000,000	LIBOR [4.24%]			(746,274)	(8,831,714)		(8,831,714)	2,785,187				870,910		0001	
Interest Rate Swap /29952/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 3.167%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCJFX09	.05/27/2011	.06/01/2021		40,000,000	3.167% [LIBOR]			401,539	507,309		507,309	(799,963)				311,127		0001	
Interest Rate Swap /30129/[Semi-Annual] FIXED [3.145%]/Quarterly LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XBU11	.06/03/2011	.06/07/2021		50,000,000	LIBOR [3.145%]			(490,492)	(612,944)		(612,944)	978,014				390,512		0001	

E18.57

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /30137/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 4.71%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... NO68HPCNCU6TUQY616	06/03/2011	06/07/2041		26,800,000	4.71% [LIBOR]			682,324	8,286,427		8,286,427	(2,041,031)				634,770		0001	
Interest Rate Swap /30138/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 4.805%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION ... 11E8VN30JCEQV1H4R804	06/03/2011	06/07/2041		34,300,000	4.805% [LIBOR]			463,889	11,434,533		11,434,533	(2,403,004)				812,411		0001	
Interest Rate Swap /30139/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 4.945%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUNISFPUR8K5P83	06/03/2011	06/07/2031		18,000,000	4.945% [LIBOR]				2,384,179		2,384,179	(342,747)				317,433		0001	
Interest Rate Swap /30151/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 4.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	06/03/2011	06/09/2041		22,900,000	4.541% [LIBOR]			543,273	6,614,510		6,614,510	(1,817,355)				542,397		0001	
Interest Rate Swap /30152/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 4.385%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	06/03/2011	06/07/2041		12,800,000	4.385% [LIBOR]			284,286	3,355,112		3,355,112	(990,172)				303,174		0001	
Interest Rate Swap /30153/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 3.999%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	06/03/2011	06/07/2041		25,000,000	3.999% [LIBOR]			458,746	4,904,617		4,904,617	(1,809,305)				592,136		0001	
Interest Rate Swap /30154/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 4.2125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	06/03/2011	06/07/2041		13,000,000	4.2125% [LIBOR]			266,303	3,062,570		3,062,570	(984,361)				307,911		0001	
Interest Rate Swap /30155/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 4.833%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYL02	06/03/2011	06/08/2031		2,500,000	4.833% [LIBOR]				176,756		176,756	(35,591)				44,088		0001	
Interest Rate Swap /30159/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 4.925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. ... B4TYDEB6GMZ0031MB27	06/03/2011	06/07/2031		22,500,000	4.925% [LIBOR]				3,943,407		3,943,407	(480,069)				396,792		0001	
Interest Rate Swap /30521/[Semi-Annual] FIXED [3.87%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	06/14/2011	06/16/2031		155,000,000	LIBOR [3.87%]			(2,611,119)	(18,066,012)		(18,066,012)	7,239,057				2,735,651		0001	
Interest Rate Swap /30611/[Semi-Annual] FIXED [3.8825%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION ... 11E8VN30JCEQV1H4R804	06/15/2011	06/17/2031		75,000,000	LIBOR [3.8825%]			(1,270,062)	(8,850,168)		(8,850,168)	3,620,043				1,323,702		0001	
Interest Rate Swap /30613/[Semi-Annual] FIXED [3.6875%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION ... 11E8VN30JCEQV1H4R804	06/15/2011	06/17/2026		14,000,000	LIBOR [3.6875%]			(209,778)	(995,704)		(995,704)	457,287				191,191		0001	

E18.58

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /30614/[Semi-Annual] FIXED [3.1875%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWZY1ONSX8D621K86	06/15/2011	06/17/2021		195,000,000	LIBOR [3.1875%]			(1,946,911)	(2,619,774)		(2,619,774)	3,910,981				1,529,228		0001	
Interest Rate Swap /30800/[Semi-Annual] FIXED [3.56%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	06/23/2011	06/27/2026		10,000,000	LIBOR [3.56%]			(134,069)	(626,120)		(626,120)	304,587				136,931		0001	
Interest Rate Swap /30804/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 3.74125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	06/23/2011	06/27/2031		5,000,000	LIBOR [3.74125%]			76,097	516,415		516,415	(231,697)				88,353		0001	
Interest Rate Swap /30836/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 3.7275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	06/24/2011	06/28/2031		50,000,000	LIBOR [3.7275%]			753,497	5,095,039		5,095,039	(2,312,344)				883,883		0001	
Interest Rate Swap /31089/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.198%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U8RH1GC71XBU11	06/29/2011	07/01/2021		100,000,000	LIBOR [3.198%]			985,773	1,391,778		1,391,778	(1,988,167)				790,569		0001	
Interest Rate Swap /31090/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.2355%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U8RH1GC71XBU11	06/29/2011	07/01/2021		96,000,000	LIBOR [3.2355%]			982,342	1,422,967		1,422,967	(1,942,632)				758,947		0001	
Interest Rate Swap /31091/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.224%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	06/29/2011	07/01/2021		110,000,000	LIBOR [3.224%]			1,112,950	1,609,041		1,609,041	(2,237,191)				869,626		0001	
Interest Rate Swap /31103/[Semi-Annual] FIXED [4.3%]/Quarterly LIBOR 2.40825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ... E570DZIWZ7FF32TWEFA76	06/30/2011	07/05/2042		54,400,000	LIBOR [4.3%]			(1,136,124)	(13,726,164)		(13,726,164)	4,060,189				1,319,130		0001	
Interest Rate Swap /31154/[Quarterly] LIBOR [2.40825%]/Semi-Annual FIXED 3.2475%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	06/30/2011	07/05/2021		30,000,000	LIBOR [3.2475%]			310,789	457,253		457,253	(617,939)				238,118		0001	
Interest Rate Swap /31257/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.52625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	07/07/2011	07/11/2041		9,000,000	LIBOR [4.52625%]			209,164	2,585,867		2,585,867	(709,332)				213,596		0001	
Interest Rate Swap /31258/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.32%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	07/07/2011	07/11/2041		9,250,000	LIBOR [4.32%]			195,896	2,330,983		2,330,983	(704,348)				219,529		0001	
Interest Rate Swap /31259/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.101%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWZY1ONSX8D621K86	07/07/2011	07/11/2041		18,000,000	LIBOR [4.101%]			341,783	3,857,437		3,857,437	(1,326,124)				427,192		0001	

E18.59

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /31260/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.6975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGUFU57RNE97	07/07/2011	07/11/2041		16,200,000	4.6975% [LIBOR]			404,238	5,191,916		5,191,916	(1,330,547)				384,473		0001
Interest Rate Swap /31261/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.859%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1CNSX8D621K86	07/07/2011	07/11/2041		19,000,000	4.859% [LIBOR]			504,791	6,539,402		6,539,402	(1,586,294)				450,925		0001
Interest Rate Swap /31262/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 4.91%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1CNSX8D621K86	07/07/2011	07/11/2041		20,000,000	4.91% [LIBOR]			234,209	7,058,350		7,058,350	(1,349,996)				474,658		0001
Interest Rate Swap /31264/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 4.9825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	07/07/2011	07/11/2031		12,000,000	4.9825% [LIBOR]			1,608,239	1,608,239		1,608,239	(236,255)				212,386		0001
Interest Rate Swap /31272/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 5.0425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	07/07/2011	07/11/2031		17,000,000	5.0425% [LIBOR]			3,134,149	3,134,149		3,134,149	(366,874)				300,881		0001
Interest Rate Swap /31355/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 3.7725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN706T14HNAVLU02	07/11/2011	07/13/2031		40,000,000	3.7725% [LIBOR]			627,945	4,284,744		4,284,744	(1,869,344)				708,237		0001
Interest Rate Swap /31446/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 3.8775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	07/13/2011	07/15/2041		60,000,000	3.8775% [LIBOR]			1,006,729	10,488,008		10,488,008	(4,314,016)				1,424,289		0001
Interest Rate Swap /31447/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 3.73625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	07/13/2011	07/15/2031		30,000,000	3.73625% [LIBOR]			460,990	3,088,614		3,088,614	(1,392,153)				531,178		0001
Interest Rate Swap /31534/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 3.57%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN706T14HNAVLU02	07/18/2011	07/20/2026		3,750,000	3.57% [LIBOR]			51,297	241,070		241,070	(116,798)				51,554		0001
Interest Rate Swap /31697/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 3.3475%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPUBMPPR08K5P83	07/25/2011	07/27/2023		45,000,000	3.3475% [LIBOR]			520,223	1,520,714		1,520,714	(1,058,064)				481,521		0001
Interest Rate Swap /31957/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 3.875%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1CNSX8D621K86	07/29/2011	08/02/2041		8,000,000	3.875% [LIBOR]			134,580	1,407,889		1,407,889	(567,439)				190,116		0001
Interest Rate Swap /31989/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 3.64125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	07/29/2011	08/02/2031		50,000,000	3.64125% [LIBOR]			724,252	4,645,135		4,645,135	(2,306,642)				887,060		0001

E18.60

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /31990/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 3.81%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJJYYLNC83868	.07/29/2011	.08/02/2041	.....	8,000,000	3.81% [LIBOR]	.....	.....	129,380	1,271,330	.....	1,271,330	(597,886)	.....	.....	.....	190,116	.....	0001	.....
Interest Rate Swap /32050/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.754%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1CNSX8D621K86	.08/01/2011	.08/03/2041	.....	8,000,000	3.754% [LIBOR]	.....	.....	125,128	1,241,869	.....	1,241,869	(555,290)	.....	.....	.....	190,158	.....	0001	.....
Interest Rate Swap /32070/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.724%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1CNSX8D621K86	.08/02/2011	.08/04/2041	.....	8,000,000	3.724% [LIBOR]	.....	.....	122,764	1,200,654	.....	1,200,654	(552,157)	.....	.....	.....	190,158	.....	0001	.....
Interest Rate Swap /32081/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.679%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U9PH1GC71XBU11	.08/02/2011	.08/04/2041	.....	8,000,000	3.679% [LIBOR]	.....	.....	119,164	1,151,800	.....	1,151,800	(472,927)	.....	.....	.....	190,158	.....	0001	.....
Interest Rate Swap /32093/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.594%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1CNSX8D621K86	.08/02/2011	.08/04/2041	.....	8,000,000	3.594% [LIBOR]	.....	.....	112,364	1,022,083	.....	1,022,083	(538,661)	.....	.....	.....	190,158	.....	0001	.....
Interest Rate Swap /32116/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.52%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1CNSX8D621K86	.08/03/2011	.08/05/2041	.....	8,000,000	3.52% [LIBOR]	.....	.....	106,953	920,473	.....	920,473	(530,991)	.....	.....	.....	190,158	.....	0001	.....
Interest Rate Swap /32147/[Quarterly] LIBOR [2.59125%]/Semi-Annual FIXED 3.46%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1CNSX8D621K86	.08/04/2011	.08/08/2041	.....	8,000,000	3.46% [LIBOR]	.....	.....	102,272	838,403	.....	838,403	(525,001)	.....	.....	.....	190,200	.....	0001	.....
Interest Rate Swap /32161/[Quarterly] LIBOR [2.59125%]/Semi-Annual FIXED 3.455%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170LK5573	.08/04/2011	.08/08/2041	.....	20,000,000	3.455% [LIBOR]	.....	.....	254,681	2,079,551	.....	2,079,551	(1,271,174)	.....	.....	.....	475,500	.....	0001	.....
Interest Rate Swap /32190/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 3.44%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	.08/05/2011	.08/09/2041	.....	8,000,000	3.44% [LIBOR]	.....	.....	100,507	808,822	.....	808,822	(525,878)	.....	.....	.....	190,200	.....	0001	.....
Interest Rate Swap /32209/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 3.4675%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1CNSX8D621K86	.08/05/2011	.08/09/2041	.....	8,000,000	3.4675% [LIBOR]	.....	.....	102,707	848,832	.....	848,832	(525,778)	.....	.....	.....	190,200	.....	0001	.....
Interest Rate Swap /32218/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 3.4675%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	.08/05/2011	.08/09/2041	.....	8,000,000	3.4675% [LIBOR]	.....	.....	102,707	846,587	.....	846,587	(528,737)	.....	.....	.....	190,200	.....	0001	.....
Interest Rate Swap /32224/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 3.5%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJFPU8MPPRO8K5P83	.08/08/2011	.08/10/2041	.....	23,500,000	3.5% [LIBOR]	.....	.....	310,858	2,638,817	.....	2,638,817	(1,529,686)	.....	.....	.....	558,836	.....	0001	.....
Interest Rate Swap /32255/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 3.453%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	.08/08/2011	.08/10/2041	.....	13,000,000	3.453% [LIBOR]	.....	.....	165,854	1,343,430	.....	1,343,430	(857,279)	.....	.....	.....	309,143	.....	0001	.....

E18.61

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /32280/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 3.416%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7V54	08/08/2011	08/10/2041		8,000,000	3.416% [LIBOR]			99,104	775,902		775,902	(523,710)				190,242		0001	
Interest Rate Swap /32296/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 3.4065%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION ... 11E8VN30JCEQV1H4R804	08/08/2011	08/10/2041		8,000,000	3.4065% [LIBOR]			98,344	761,961		761,961	(525,229)				190,242		0001	
Interest Rate Swap /32324/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 3.38125%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYJLN8C3868	08/08/2011	08/10/2041		8,000,000	3.38125% [LIBOR]			96,324	685,519		685,519	(552,439)				190,242		0001	
Interest Rate Swap /32612/[Semi-Annual] FIXED [3.38125%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	08/11/2011	08/15/2041		100,000,000	LIBOR [3.38125%]			(1,218,207)	(9,159,547)		(9,159,547)	6,432,728				2,378,550		0001	
Interest Rate Swap /32703/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 2.4375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7V54	08/12/2011	08/16/2021		100,000,000	2.4375% [LIBOR]			275,792	(426,124)		(426,124)	(1,306,978)				810,864		0001	
Interest Rate Swap /32732/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 2.39625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYJLN8C3868	08/15/2011	08/17/2021		100,000,000	2.39625% [LIBOR]			236,466	(583,581)		(583,581)	(1,294,017)				810,864		0001	
Interest Rate Swap /32940/[Semi-Annual] FIXED [2.23%]/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ... E57QDZIZ7FF32TWEFA76	08/19/2011	08/23/2021		36,000,000	LIBOR [2.23%]			(23,135)	344,659		344,659	391,786				293,019		0001	
Interest Rate Swap /32955/[Semi-Annual] FIXED [2.2225%]/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGOFU57RNE97	08/19/2011	08/23/2021		20,000,000	2.2225% [LIBOR]			(11,353)	193,510		193,510	219,367				162,788		0001	
Interest Rate Swap /33067/[Semi-Annual] FIXED [2.27%]/Quarterly LIBOR 2.68925%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ... ROMUJISFPUBMPRO8K5P83	08/22/2011	08/24/2021		43,600,000	LIBOR [2.27%]			(45,703)	370,721		370,721	499,868				354,878		0001	
Interest Rate Swap /33068/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 2.735%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ... ROMUJISFPUBMPRO8K5P83	08/22/2011	08/24/2026		31,400,000	2.735% [LIBOR]			178,924	203,824		203,824	(739,302)				434,241		0001	
Interest Rate Swap /33232/[Semi-Annual] FIXED [3.3%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	08/24/2011	08/26/2041		225,000,000	LIBOR [3.3%]			(2,571,312)	(17,471,224)		(17,471,224)	14,266,044				5,355,284		0001	
Interest Rate Swap /33252/[Semi-Annual] FIXED [3.08%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N0Q6HPCNCU6TUTQY16	08/25/2011	08/30/2031		10,000,000	LIBOR [3.08%]			(91,564)	(324,801)		(324,801)	395,062				177,904		0001	

E18.62

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /33270/[Semi-Annual] FIXED [2.898%/Quarterly LIBOR 2.70663%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	08/25/2011	08/30/2026		150,000,000	LIBOR [2.898%]			(1,100,458)	(2,700,406)		(2,700,406)	3,764,925				2,075,753		0001	
Interest Rate Swap /33274/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 3.01%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKXST7XV54	08/26/2011	08/31/2031		128,000,000	3.01% [LIBOR]			1,098,560	3,253,377		3,253,377	(5,093,778)				2,277,177		0001	
Interest Rate Swap /33352/[Semi-Annual] FIXED [3.27%/Quarterly LIBOR 2.70663%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUIFFPUBMPRO8K5P83	08/29/2011	08/31/2041		7,500,000	LIBOR [3.27%]			(83,923)	(552,673)		(552,673)	468,342				178,549		0001	
Interest Rate Swap /33381/[Semi-Annual] FIXED [3.20375%/Quarterly LIBOR 2.73813%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ... ES71P3U3RH1GC71XBU11	08/31/2011	09/02/2041		7,500,000	LIBOR [3.20375%]			(77,638)	(467,868)		(467,868)	423,383				178,549		0001	
Interest Rate Swap /33382/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 3.1525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKXST7XV54	08/31/2011	09/02/2041		130,000,000	3.1525% [LIBOR]			1,279,103	6,726,197		6,726,197	(8,089,229)				3,094,846		0001	
Interest Rate Swap /33385/[Semi-Annual] FIXED [3.1675%/Quarterly LIBOR 2.73813%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYJLN8C3868	08/31/2011	09/02/2041		7,500,000	LIBOR [3.1675%]			(74,919)	(368,086)		(368,086)	497,977				178,549		0001	
Interest Rate Swap /33460/[Semi-Annual] FIXED [3.21125%/Quarterly LIBOR 2.73888%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKXST7XV54	09/01/2011	09/06/2041		7,500,000	LIBOR [3.21125%]			(78,695)	(464,016)		(464,016)	472,359				178,588		0001	
Interest Rate Swap /33469/[Semi-Annual] FIXED [2.34625%/Quarterly LIBOR 2.73888%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14#NAYLU02	09/01/2011	09/06/2021		24,000,000	LIBOR [2.34625%]			(44,225)	162,232		162,232	295,409				196,815		0001	
Interest Rate Swap /33485/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 3.03625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14#NAYLU02	09/02/2011	09/06/2041		140,000,000	3.03625% [LIBOR]			1,223,979	4,512,936		4,512,936	(8,406,895)				3,333,647		0001	
Interest Rate Swap /33500/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 3.075%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ... E58DKGMJYYJLN8C3868	09/02/2011	09/06/2041		135,000,000	3.075% [LIBOR]			1,232,578	4,486,329		4,486,329	(8,793,769)				3,214,588		0001	
Interest Rate Swap /33566/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 2.9925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTFWZY1ONSX8D621K86	09/02/2011	09/06/2041		75,000,000	2.9925% [LIBOR]			622,891	1,831,556		1,831,556	(4,485,273)				1,785,882		0001	

E18.63

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /33611/(Semi-Annual) FIXED [2.14625%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLNB83868	09/06/2011	09/08/2021		30,000,000	LIBOR [2.14625%]			5,830	377,896		377,896	321,444				246,018		0001	
Interest Rate Swap /33632/(Quarterly) LIBOR [2.76713%]/Semi-Annual FIXED 2.92625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES I7331LVCZKQKX57XV54	09/06/2011	09/08/2041		100,000,000	LIBOR [2.92625%]			760,568	1,278,385		1,278,385	(5,931,114)				2,381,701		0001	
Interest Rate Swap /33798/(Quarterly) LIBOR [2.779%]/Semi-Annual FIXED 2.96375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAYLU02	09/09/2011	09/13/2041		80,000,000	LIBOR [2.96375%]			631,020	1,575,974		1,575,974	(4,730,060)				1,905,781		0001	
Interest Rate Swap /33824/(Quarterly) LIBOR [2.7775%]/Semi-Annual FIXED 2.58%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUSFPUBM8P08K5P83	09/12/2011	09/14/2026		12,000,000	2.58% [LIBOR]			48,211	(55,836)		(55,836)	(267,081)				166,601		0001	
Interest Rate Swap /34030/(Semi-Annual) FIXED [2.26625%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJUSFPUBM8P08K5P83	09/16/2011	09/20/2021		300,000,000	LIBOR [2.26625%]			(220,113)	2,686,961		2,686,961	3,441,957				2,473,864		0001	
Interest Rate Swap /34059/(Semi-Annual) FIXED [2.265%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAYLU02	09/16/2011	09/20/2021		100,000,000	LIBOR [2.265%]			(72,121)	901,859		901,859	1,143,661				824,621		0001	
Interest Rate Swap /34104/(Quarterly) LIBOR [2.78963%]/Semi-Annual FIXED 2.91125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	09/19/2011	09/21/2041		44,000,000	LIBOR [2.91125%]			311,219	525,377		525,377	(2,402,384)				1,048,872		0001	
Interest Rate Swap /34234/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 2.385%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	09/22/2011	09/26/2026		11,500,000	2.385% [LIBOR]			19,166	(212,008)		(212,008)	(234,302)				159,970		0001	
Interest Rate Swap /34235/(Semi-Annual) FIXED [2.515%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAYLU02	09/22/2011	09/26/2031		30,000,000	LIBOR [2.515%]			(88,999)	878,434		878,434	1,042,350				535,397		0001	
Interest Rate Swap /34236/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 2.36%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	09/22/2011	09/26/2026		11,500,000	2.36% [LIBOR]			16,291	(232,261)		(232,261)	(231,875)				159,970		0001	
Interest Rate Swap /34237/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 2.395%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	09/22/2011	09/26/2026		11,500,000	2.395% [LIBOR]			20,316	(203,907)		(203,907)	(235,273)				159,970		0001	
Interest Rate Swap /34238/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 2.615%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/22/2011	09/26/2041		40,000,000	2.615% [LIBOR]			158,665	(1,649,502)		(1,649,502)	(2,197,684)				953,730		0001	

E18.64

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /34260/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 2.355%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/22/2011	09/26/2026		12,000,000	2.355% [LIBOR]			16,400	(251,866)		(251,866)	(245,094)				166,925		0001	
Interest Rate Swap /34293/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 2.289%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/22/2011	09/26/2026		11,800,000	2.289% [LIBOR]			8,338	(302,793)		(302,793)	(233,598)				164,143		0001	
Interest Rate Swap /34417/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 2.075%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XBU11	09/26/2011	09/28/2021		60,000,000	2.075% [LIBOR]			(87,303)	(847,058)		(847,058)	(575,788)				496,588		0001	
Interest Rate Swap /34425/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 2.774%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	09/26/2011	09/28/2041		11,100,000	2.774% [LIBOR]			61,438	(136,507)		(136,507)	(614,138)				264,718		0001	
Interest Rate Swap /34426/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 3.012%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	09/26/2011	09/28/2041		10,900,000	3.012% [LIBOR]			86,273	313,339		313,339	(636,835)				259,948		0001	
Interest Rate Swap /34428/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.396%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL NQG6HPCNCU6TUTQYE16	09/26/2011	09/28/2031		18,600,000	3.396% [LIBOR]				844,091		844,091	(379,151)				332,076		0001	
Interest Rate Swap /34429/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 3.284%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/26/2011	09/28/2041		14,100,000	3.284% [LIBOR]			30,166	1,066,570		1,066,570	(749,229)				336,264		0001	
Interest Rate Swap /34430/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 3.241%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/26/2011	09/28/2041		11,900,000	3.241% [LIBOR]			121,439	810,760		810,760	(753,057)				283,797		0001	
Interest Rate Swap /34438/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.2925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAYLU02	09/26/2011	09/28/2041		2,200,000	3.2925% [LIBOR]				128,350		128,350	(92,614)				52,467		0001	
Interest Rate Swap /34439/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 3.1%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14#NAYLU02	09/26/2011	09/29/2041		10,000,000	3.1% [LIBOR]			88,156	432,219		432,219	(607,695)				238,485		0001	
Interest Rate Swap /34442/[Semi-Annual] FIXED [2.74375%]/Quarterly LIBOR 2.803%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XBU11	09/27/2011	09/29/2031		11,000,000	LIBOR [2.74375%]			(57,785)	41,784		41,784	397,038				196,389		0001	
Interest Rate Swap /34486/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 2.87532%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XBU11	09/27/2011	09/29/2041		200,000,000	LIBOR [2.87532%]			1,313,769	1,150,050		1,150,050	(10,870,740)				4,769,696		0001	

E18.65

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /34487/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 2.83564%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	09/27/2011	09/29/2041		150,000,000	2.83564% [LIBOR]			925,807	(165,088)		(165,088)	(8,116,328)				3,577,272		0001	
Interest Rate Swap /34549/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 2.17779%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCFXT09	09/28/2011	09/30/2021		316,000,000	2.17779% [LIBOR]			(128,439)	(3,608,152)		(3,608,152)	(3,332,047)				2,620,134		0001	
Interest Rate Swap /34636/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 2.162%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	09/28/2011	09/30/2021		500,000,000	2.162% [LIBOR]			(282,177)	(5,918,478)		(5,918,478)	(5,278,463)				4,145,781		0001	
Interest Rate Swap /34637/[Quarterly] LIBOR [2.80763%]/Semi-Annual FIXED 2.82125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCFXT09	09/29/2011	10/03/2041		122,000,000	2.82125% [LIBOR]			744,703	(504,848)		(504,848)	(6,826,012)				2,910,154		0001	
Interest Rate Swap /34681/[Quarterly] LIBOR [2.79388%]/Semi-Annual FIXED 2.71475%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCFXT09	09/30/2011	10/04/2041		102,000,000	2.71475% [LIBOR]			512,667	(2,295,034)		(2,295,034)	(5,565,299)				2,433,080		0001	
Interest Rate Swap /34691/[Semi-Annual] FIXED [2.6875%]/Quarterly LIBOR 2.79388%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14HNAYLU02	09/30/2011	10/04/2041		100,000,000	LIBOR [2.6875%]			(475,365)	2,797,973		2,797,973	5,543,198				2,385,372		0001	
Interest Rate Swap /34726/[Semi-Annual] FIXED [1.99%]/Quarterly LIBOR 2.40825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJSPUBMPROK8K5P83	10/03/2011	10/05/2021		4,250,000	LIBOR [1.99%]			9,415	69,212		69,212	37,160				35,303		0001	
Interest Rate Swap /34844/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 2.17%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ES8DKGMJYYJLN8C3868	10/06/2011	10/11/2021		250,000,000	2.17% [LIBOR]			(80,511)	(3,051,301)		(3,051,301)	(2,700,412)				2,084,167		0001	
Interest Rate Swap /34879/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 2.68%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	10/07/2011	10/11/2031		125,000,000	2.68% [LIBOR]			597,245	(1,340,618)		(1,340,618)	(4,459,588)				2,235,194		0001	
Interest Rate Swap /34882/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 2.3%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14HNAYLU02	10/07/2011	10/11/2021		500,000,000	2.3% [LIBOR]			488,979	(4,026,797)		(4,026,797)	(5,853,051)				4,168,333		0001	
Interest Rate Swap /34883/[Semi-Annual] FIXED [2.8025%]/Quarterly LIBOR 2.42044%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN7C6T14HNAYLU02	10/07/2011	10/11/2036		8,000,000	LIBOR [2.8025%]			(48,024)	38,275		38,275	385,517				168,713		0001	
Interest Rate Swap /34886/[Semi-Annual] FIXED [2.799%]/Quarterly LIBOR 2.42519%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVC2KQKX57XV54	10/07/2011	10/12/2036		8,000,000	LIBOR [2.799%]			(47,680)	42,749		42,749	388,402				168,713		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /34940/[Semi-Annual] FIXED [2.814%/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJMYJLNC83868	10/11/2011	10/13/2041		2,250,000	LIBOR [2.814%			(13,756)	25,846		25,846	138,573				53,706		0001	
Interest Rate Swap /34942/[Semi-Annual] FIXED [2.313%/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJMYJLNC83868	10/11/2011	10/13/2021		3,250,000	LIBOR [2.313%			(3,587)	27,098		27,098	39,657				27,143		0001	
Interest Rate Swap /34946/[Semi-Annual] FIXED [2.8%/Quarterly LIBOR 2.43631%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/11/2011	10/13/2031		9,600,000	LIBOR [2.8%			(57,347)	(18,374)		(18,374)	363,453				171,663		0001	
Interest Rate Swap /34995/[Semi-Annual] FIXED [2.86625%/Quarterly LIBOR 2.43631%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/12/2011	10/14/2031		10,000,000	LIBOR [2.86625%			(66,663)	(91,604)		(91,604)	385,324				178,816		0001	
Interest Rate Swap /35041/[Quarterly] LIBOR [2.43631%/Semi-Annual] FIXED 2.393%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	10/12/2011	10/14/2021		100,000,000	2.393% [LIBOR]			193,382	(554,594)		(554,594)	(1,268,060)				835,165		0001	
Interest Rate Swap /35065/[Quarterly] LIBOR [2.43631%/Semi-Annual] FIXED 2.375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL002	10/12/2011	10/14/2021		93,750,000	2.375% [LIBOR]			164,420	(562,717)		(562,717)	(1,167,838)				782,967		0001	
Interest Rate Swap /35073/[Quarterly] LIBOR [2.43631%/Semi-Annual] FIXED 2.375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	10/12/2011	10/14/2021		156,250,000	2.375% [LIBOR]			274,034	(941,920)		(941,920)	(1,954,412)				1,304,945		0001	
Interest Rate Swap /35094/[Semi-Annual] FIXED [2.78375%/Quarterly LIBOR 2.44881%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJMYJLNC83868	10/13/2011	10/17/2031		19,200,000	LIBOR [2.78375%			(111,760)	83,711		83,711	787,069				343,460		0001	
Interest Rate Swap /35104/[Semi-Annual] FIXED [2.937%/Quarterly LIBOR 2.44456%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U9H1GC71XB011	10/14/2011	10/18/2036		8,300,000	LIBOR [2.937%			(61,323)	(125,274)		(125,274)	396,002				175,138		0001	
Interest Rate Swap /35106/[Quarterly] LIBOR [2.44456%/Semi-Annual] FIXED 2.77%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WEFA76	10/14/2011	10/18/2026		15,850,000	2.77% [LIBOR]			90,635	127,337		127,337	(366,863)				221,333		0001	
Interest Rate Swap /35107/[Semi-Annual] FIXED [2.415%/Quarterly LIBOR 2.44456%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WEFA76	10/14/2011	10/18/2021		44,000,000	LIBOR [2.415%			(95,406)	217,485		217,485	555,151				368,130		0001	

E18.67

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /35119/[Semi-Annual] FIXED [2.96125%]/Quarterly LIBOR 2.44456%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	10/14/2011	10/18/2036		8,300,000	LIBOR [2.96125%]			(63,336)	(148,689)		(148,689)	418,968				175,138		0001	
Interest Rate Swap /35184/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 3.207%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. ... KB1H1DSRPFMYMCFXT09	10/17/2011	10/21/2041		10,900,000	3.207% [LIBOR]			110,016	684,737		684,737	(665,543)				260,291		0001	
Interest Rate Swap /35185/[Quarterly] LIBOR [2.44963%]/Semi-Annual FIXED 2.957%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. ... KB1H1DSRPFMYMCFXT09	10/17/2011	10/19/2041		11,100,000	2.957% [LIBOR]			84,018	217,983		217,983	(641,052)				265,067		0001	
Interest Rate Swap /35186/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 3.326%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. ... KB1H1DSRPFMYMCFXT09	10/17/2011	10/20/2041		10,000,000	3.326% [LIBOR]			112,392	833,827		833,827	(626,030)				238,799		0001	
Interest Rate Swap /35187/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.424%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... NQ6HPNCCU6TUQYE16	10/17/2011	10/19/2041		2,200,000	3.424% [LIBOR]				164,638		164,638	(87,195)				52,536		0001	
Interest Rate Swap /35188/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.54%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	10/17/2011	10/19/2031		18,600,000	3.54% [LIBOR]				1,073,576		1,073,576	(398,218)				332,857		0001	
Interest Rate Swap /35189/[Quarterly] LIBOR [2.44963%]/Semi-Annual FIXED 3.45%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	10/17/2011	10/19/2041		14,100,000	3.45% [LIBOR]			26,292	1,462,755		1,462,755	(744,364)				336,707		0001	
Interest Rate Swap /35190/[Quarterly] LIBOR [2.44963%]/Semi-Annual FIXED 3.43%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	10/17/2011	10/19/2041		11,900,000	3.43% [LIBOR]			146,360	1,193,377		1,193,377	(779,833)				284,171		0001	
Interest Rate Swap /35192/[Semi-Annual] FIXED [2.936%]/Quarterly LIBOR 2.44963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	10/17/2011	10/19/2041		1,000,000	LIBOR [2.936%]			(7,359)	(14,994)		(14,994)	57,103				23,880		0001	
Interest Rate Swap /35263/[Semi-Annual] FIXED [2.95%]/Quarterly LIBOR 2.469%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	10/18/2011	10/20/2036		8,300,000	LIBOR [2.95%]			(62,077)	(135,579)		(135,579)	417,792				175,138		0001	
Interest Rate Swap /35331/[Semi-Annual] FIXED [2.85%]/Quarterly LIBOR 2.469%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	10/19/2011	10/21/2031		19,160,000	LIBOR [2.85%]			(124,985)	(134,723)		(134,723)	715,312				342,878		0001	
Interest Rate Swap /35405/[Semi-Annual] FIXED [3.02%]/Quarterly LIBOR 2.508%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX5T7XV54	10/24/2011	10/26/2036		8,300,000	LIBOR [3.02%]			(68,580)	(219,192)		(219,192)	424,638				175,236		0001	

E18.68

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /35451/[Semi-Annual] FIXED [2.9675%/Quarterly LIBOR 2.50925%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/25/2011	10/27/2036		27,600,000	LIBOR [2.9675%]			(214,190)	(521,029)		(521,029)	1,396,113				582,713		0001	
Interest Rate Swap /35452/[Semi-Annual] FIXED [2.9625%/Quarterly LIBOR 2.50925%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/25/2011	10/27/2031		3,000,000	LIBOR [2.9625%]			(23,132)	(59,360)		(59,360)	118,695				53,728		0001	
Interest Rate Swap /35453/[Semi-Annual] FIXED [2.43825%/Quarterly LIBOR 2.50925%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/25/2011	10/27/2021		2,600,000	LIBOR [2.43825%]			(6,365)	11,297		11,297	34,289				21,869		0001	
Interest Rate Swap /35518/[Semi-Annual] FIXED [3.06875%/Quarterly LIBOR 2.52663%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/27/2011	10/31/2036		8,300,000	LIBOR [3.06875%]			(72,961)	(279,631)		(279,631)	429,613				175,236		0001	
Interest Rate Swap /35519/[Semi-Annual] FIXED [3.06%/Quarterly LIBOR 2.52663%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/27/2011	10/31/2036		8,300,000	LIBOR [3.06%]			(72,235)	(269,209)		(269,209)	428,790				175,236		0001	
Interest Rate Swap /35520/[Semi-Annual] FIXED [3.1475%/Quarterly LIBOR 2.52663%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WIFA76	10/27/2011	10/31/2036		8,300,000	LIBOR [3.1475%]			(79,498)	(350,950)		(350,950)	413,827				175,236		0001	
Interest Rate Swap /35522/[Semi-Annual] FIXED [3.1725%/Quarterly LIBOR 2.52663%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WIFA76	10/27/2011	10/31/2036		8,300,000	LIBOR [3.1725%]			(81,573)	(380,690)		(380,690)	416,138				175,236		0001	
Interest Rate Swap /35540/[Semi-Annual] FIXED [3.1775%/Quarterly LIBOR 2.52663%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/27/2011	10/31/2036		8,300,000	LIBOR [3.1775%]			(81,988)	(408,365)		(408,365)	426,355				175,236		0001	
Interest Rate Swap /35602/[Quarterly] LIBOR [2.52663%]/Semi-Annual FIXED 3.2%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL002	10/27/2011	10/31/2041		100,000,000	3.2% (LIBOR)			1,010,304	6,124,331		6,124,331	(6,229,230)				2,389,037		0001	
Interest Rate Swap /35603/[Semi-Annual] FIXED [2.54625%/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/28/2011	11/01/2021		16,000,000	LIBOR [2.54625%]			(57,168)	22,402		22,402	228,275				134,818		0001	
Interest Rate Swap /35606/[Semi-Annual] FIXED [2.6725%/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/28/2011	11/01/2023		19,000,000	LIBOR [2.6725%]			(91,874)	(85,492)		(85,492)	328,338				209,000		0001	
Interest Rate Swap /35609/[Quarterly] LIBOR [2.541%]/Semi-Annual FIXED 3.09%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV1H4R804	10/28/2011	11/01/2041		150,000,000	3.09% (LIBOR)			1,351,574	6,171,626		6,171,626	(9,278,570)				3,584,341		0001	

E18.69

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /35754/[Semi-Annual] FIXED [2.55%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/01/2011	11/03/2026		233,000,000	LIBOR [2.55%			(839,044)	1,795,599		1,795,599	4,949,980				3,262,000		0001	
Interest Rate Swap /35755/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.6775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/01/2011	11/03/2031		167,000,000	2.6775% [LIBOR]			814,300	(2,230,616)		(2,230,616)	(5,827,135)				2,992,051		0001	
Interest Rate Swap /35868/[Semi-Annual] FIXED [2.2575%]/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES I7331LVCZKQKX5T7XV54	11/04/2011	11/08/2021		307,400,000	LIBOR [2.2575%			(233,335)	2,855,978		2,855,978	3,549,087				2,599,303		0001	
Interest Rate Swap /35887/[Semi-Annual] FIXED [2.2%]/Quarterly LIBOR 2.60113%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES I7331LVCZKQKX5T7XV54	11/07/2011	11/09/2021		100,000,000	LIBOR [2.2%			(16,342)	1,086,109		1,086,109	1,098,411				845,577		0001	
Interest Rate Swap /36063/[Semi-Annual] FIXED [2.88%]/Quarterly LIBOR 2.62%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES I7331LVCZKQKX5T7XV54	11/14/2011	11/16/2041		200,000,000	LIBOR [2.88%			(1,436,583)	(998,642)		(998,642)	11,792,976				4,783,304		0001	
Interest Rate Swap /36064/[Semi-Annual] FIXED [2.26375%]/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G56SEF7VJP5170UK5573	11/14/2011	11/16/2021		300,000,000	LIBOR [2.26375%			(306,125)	2,728,815		2,728,815	3,434,677				2,545,584		0001	
Interest Rate Swap /36065/[Semi-Annual] FIXED [2.87875%]/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	11/14/2011	11/16/2041		200,000,000	LIBOR [2.87875%			(1,434,083)	(1,058,823)		(1,058,823)	11,652,997				4,783,304		0001	
Interest Rate Swap /36372/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.6625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	11/21/2011	11/23/2041		30,000,000	2.6625% [LIBOR]			149,029	(967,027)		(967,027)	(1,665,153)				717,809		0001	
Interest Rate Swap /36514/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 2.08875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA E571P3U8PH1GC71XBUI1	11/23/2011	11/25/2021		218,000,000	LIBOR [2.08875%			(164,420)	(3,061,849)		(3,061,849)	(2,174,653)				1,859,401		0001	
Interest Rate Swap /36516/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 2.09%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKMLJYYJLNC3868	11/23/2011	11/25/2021		182,000,000	2.09% [LIBOR]			(134,993)	(2,689,832)		(2,689,832)	(1,891,400)				1,552,344		0001	
Interest Rate Swap /36831/[Semi-Annual] FIXED [2.7%]/Quarterly LIBOR 2.73813%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES I7331LVCZKQKX5T7XV54	11/30/2011	12/02/2036		8,300,000	LIBOR [2.7%			(44,108)	163,960		163,960	397,212				175,678		0001	
Interest Rate Swap /36832/[Semi-Annual] FIXED [2.7175%]/Quarterly LIBOR 2.73813%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES I7331LVCZKQKX5T7XV54	11/30/2011	12/02/2036		8,300,000	LIBOR [2.7175%			(45,561)	143,049		143,049	398,861				175,678		0001	

E18.70

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /36854/[Semi-Annual] FIXED [2.635%]/Quarterly LIBOR 2.73813%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	11/30/2011	12/02/2031		18,850,000	LIBOR [2.635%]			(87,921)	320,178		320,178	672,439				338,776		0001	
Interest Rate Swap /36883/[Semi-Annual] FIXED [2.805%]/Quarterly LIBOR 2.75125%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	12/01/2011	12/05/2036		8,300,000	LIBOR [2.805%]			(53,289)	39,594		39,594	394,324				175,727		0001	
Interest Rate Swap /36970/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.2975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/02/2011	12/06/2031		15,800,000	3.2975% [LIBOR]				339,129		339,129	(287,030)				284,180		0001	
Interest Rate Swap /36972/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.26625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/02/2011	12/06/2031		17,500,000	3.26625% [LIBOR]				567,454		567,454	(350,817)				314,757		0001	
Interest Rate Swap /36973/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 3.206%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	12/02/2011	12/06/2041		26,200,000	3.206% [LIBOR]			6,506	1,643,686		1,643,686	(1,280,103)				627,297		0001	
Interest Rate Swap /36974/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 3.1975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	12/02/2011	12/06/2041		20,700,000	3.1975% [LIBOR]			214,353	1,268,116		1,268,116	(1,269,813)				495,613		0001	
Interest Rate Swap /36975/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 3.08%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/02/2011	12/06/2041		17,500,000	3.08% [LIBOR]			160,654	707,143		707,143	(1,078,546)				418,996		0001	
Interest Rate Swap /36977/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 2.9775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	12/02/2011	12/06/2041		14,200,000	2.9775% [LIBOR]			115,804	335,340		335,340	(786,839)				339,985		0001	
Interest Rate Swap /36979/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 2.7525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL NQG6HPCNCCU6TUTQYE16	12/02/2011	12/06/2041		23,900,000	2.7525% [LIBOR]			141,134	(379,424)		(379,424)	(1,311,014)				572,229		0001	
Interest Rate Swap /37203/[Semi-Annual] FIXED [2.68%]/Quarterly LIBOR 2.779%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	12/09/2011	12/13/2031		17,000,000	LIBOR [2.68%]			(85,854)	206,964		206,964	615,101				306,000		0001	
Interest Rate Swap /37204/[Semi-Annual] FIXED [2.7775%]/Quarterly LIBOR 2.779%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/09/2011	12/13/2041		17,500,000	LIBOR [2.7775%]			(105,442)	277,676		277,676	946,557				419,179		0001	
Interest Rate Swap /37352/[Semi-Annual] FIXED [1.92375%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMJII/SFUPM8R0K5P83	12/14/2011	06/16/2020		50,000,000	LIBOR [1.92375%]			130,829	562,064		562,064	335,124				302,076		0001	

E18.71

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /37358/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.103%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	12/14/2011	12/18/2031		9,700,000	3.103% [LIBOR]				101,427		101,427	(179,994)				174,667		0001	
Interest Rate Swap /37359/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.1375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	12/14/2011	12/16/2031		8,500,000	3.1375% [LIBOR]				197,342		197,342	(176,606)				153,000		0001	
Interest Rate Swap /37360/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 2.999%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	12/14/2011	12/16/2041		12,500,000	2.999% [LIBOR]			101,699	320,170		320,170	(720,265)				299,479		0001	
Interest Rate Swap /37361/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 2.795%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	12/14/2011	12/16/2041		5,700,000	2.795% [LIBOR]			34,747	(50,093)		(50,093)	(315,249)				136,562		0001	
Interest Rate Swap /37362/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 2.69%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL ... N068PNCNCU6TUTQYE16	12/14/2011	12/17/2041		5,500,000	2.69% [LIBOR]			27,550	(145,735)		(145,735)	(297,698)				131,771		0001	
Interest Rate Swap /37365/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.0225%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/14/2011	12/16/2041		2,700,000	3.0225% [LIBOR]				39,195		39,195	(103,972)				64,687		0001	
Interest Rate Swap /37366/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 2.8925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/14/2011	12/16/2041		10,600,000	2.8925% [LIBOR]			74,952	42,822		42,822	(588,567)				253,958		0001	
Interest Rate Swap /37367/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.025%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/14/2011	12/17/2041		14,600,000	3.025% [LIBOR]			214	394,306		394,306	(674,201)				349,791		0001	
Interest Rate Swap /37368/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 2.6%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/14/2011	12/16/2041		13,800,000	2.6% [LIBOR]			57,214	(643,864)		(643,864)	(714,527)				330,624		0001	
Interest Rate Swap /37469/[Semi-Annual] FIXED [1.8825%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ... ROMUWISFPUBM8P83	12/19/2011	06/21/2020		50,000,000	1.8825% [LIBOR]			160,717	596,809		596,809	313,106				304,138		0001	
Interest Rate Swap /37470/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 2.185%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/19/2011	12/21/2023		240,000,000	2.185% [LIBOR]			(45,440)	(4,443,490)		(4,443,490)	(3,039,686)				2,677,910		0001	
Interest Rate Swap /37472/[Semi-Annual] FIXED [2.365%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/19/2011	12/21/2026		350,000,000	LIBOR [2.365%]			(563,734)	7,597,075		7,597,075	6,919,520				4,943,556		0001	

E18.72

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /37473/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 2.4775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7F32TWEFA76	12/19/2011	12/21/2031		115,000,000	2.4775% [LIBOR]			314,602	(4,146,377)		(4,146,377)	(3,818,152)				2,071,597		0001	
Interest Rate Swap /37494/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 2.445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1ONSX8D621K86	12/20/2011	12/22/2026		437,500,000	2.445% [LIBOR]			1,016,087	(6,612,615)		(6,612,615)	(9,400,463)				6,179,446		0001	
Interest Rate Swap /37495/[Semi-Annual] FIXED [2.56375%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1ONSX8D621K86	12/20/2011	12/22/2031		376,000,000	LIBOR [2.56375%]			(1,319,754)	9,283,694		9,283,694	13,428,527				6,773,220		0001	
Interest Rate Swap /37529/[Semi-Annual] FIXED [2.298%]/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	12/22/2011	12/28/2023		58,000,000	LIBOR [2.298%]			(44,947)	910,962		910,962	931,869				647,811		0001	
Interest Rate Swap /37530/[Semi-Annual] FIXED [2.115%]/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	12/22/2011	12/28/2021		90,000,000	LIBOR [2.115%]			94,955	1,320,917		1,320,917	955,948				779,423		0001	
Interest Rate Swap /37531/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 2.473%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	12/22/2011	12/28/2026		113,000,000	2.473% [LIBOR]			285,318	(1,920,617)		(1,920,617)	(2,774,946)				1,598,061		0001	
Interest Rate Swap /37533/[Semi-Annual] FIXED [2.288%]/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBM8K5P83	12/22/2011	12/28/2023		270,000,000	LIBOR [2.288%]			(182,234)	3,660,798		3,660,798	3,818,505				3,015,672		0001	
Interest Rate Swap /37534/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 2.463%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBM8K5P83	12/22/2011	12/28/2026		316,000,000	2.463% [LIBOR]			766,282	(4,428,576)		(4,428,576)	(6,860,917)				4,468,915		0001	
Interest Rate Swap /37536/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 2.683%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBM8K5P83	12/22/2011	12/28/2041		65,000,000	2.683% [LIBOR]			300,621	(1,867,581)		(1,867,581)	(3,588,054)				1,558,645		0001	
Interest Rate Swap /37541/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 2.684%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCJFX09	12/22/2011	12/28/2041		18,000,000	2.684% [LIBOR]			83,429	(504,272)		(504,272)	(981,831)				431,625		0001	
Interest Rate Swap /37701/[Quarterly] LIBOR [2.40825%]/Semi-Annual FIXED 1.92%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV1H4R804	01/03/2012	07/05/2020		8,000,000	1.92% [LIBOR]			(23,323)	(92,900)		(92,900)	(53,792)				49,315		0001	

E18.73

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /37744/[Semi-Annual] FIXED [2.61875%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	.01/05/2012	.01/09/2032		1,500,000	LIBOR [2.61875%]			(6,212)	28,081		28,081	54,627				27,073		0001	
Interest Rate Swap /37745/[Semi-Annual] FIXED [2.10875%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	.01/05/2012	.01/09/2022		5,500,000	LIBOR [2.10875%]			5,275	77,189		77,189	55,427				47,869		0001	
Interest Rate Swap /37749/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 5.33%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	.01/05/2012	.01/09/2022		25,000,000	5.33% [LIBOR]			781,337	1,966,893		1,966,893	(1,031,602)				217,586		0001	
Interest Rate Swap /37820/[Semi-Annual] FIXED [2.729%]/Quarterly LIBOR 2.42519%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	.01/10/2012	.01/12/2037		8,400,000	LIBOR [2.729%]			(44,184)	173,528		173,528	434,040				178,339		0001	
Interest Rate Swap /37956/[Quarterly] LIBOR [2.44881%]/Semi-Annual FIXED 5.45%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	.01/12/2012	.01/17/2022		75,000,000	5.45% [LIBOR]			2,436,249	6,215,517		6,215,517	(3,180,875)				654,909		0001	
Interest Rate Swap /37984/[Semi-Annual] FIXED [1.8925%]/Quarterly LIBOR 2.44881%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	.01/13/2012	.01/17/2021		38,000,000	LIBOR [1.8925%]			117,484	581,765		581,765	274,138				272,039		0001	
Interest Rate Swap /38114/[Semi-Annual] FIXED [2.638%]/Quarterly LIBOR 2.469%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.01/18/2012	.01/20/2037		8,400,000	LIBOR [2.638%]			(36,617)	243,108		243,108	382,831				178,488		0001	
Interest Rate Swap /38140/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 3.935%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI6C71XBUI1	.01/19/2012	.01/23/2042		130,000,000	3.935% [LIBOR]			2,258,345	24,799,823		24,799,823	(7,966,845)				3,121,354		0001	
Interest Rate Swap /38187/[Semi-Annual] FIXED [2.79%]/Quarterly LIBOR 2.48738%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	.01/20/2012	.01/24/2037		8,400,000	LIBOR [2.79%]			(50,062)	58,012		58,012	411,909				178,537		0001	
Interest Rate Swap /38189/[Semi-Annual] FIXED [1.965%]/Quarterly LIBOR 2.48988%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYYJLN8C3868	.01/23/2012	.07/25/2020		35,000,000	LIBOR [1.965%]			79,104	389,832		389,832	250,522				219,972		0001	
Interest Rate Swap /38195/[Semi-Annual] FIXED [2.845%]/Quarterly LIBOR 2.48988%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.01/23/2012	.01/25/2037		8,400,000	LIBOR [2.845%]			(54,935)	(8,665)		(8,665)	402,924				178,537		0001	

E18.74

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /38210/[Semi-Annual] FIXED [2.7475%/Quarterly LIBOR 2.48988%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA	.01/23/2012	.01/25/2032		18,924,000	LIBOR [2.7475%			(105,310)	81,974		81,974	716,328				342,075		0001	
Interest Rate Swap /38215/[Semi-Annual] FIXED [1.715%/Quarterly LIBOR 2.48988%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	.01/23/2012	.01/25/2019		15,000,000	LIBOR [1.715%			71,402	7,804		7,804	(17,917)				19,843		0001	
Interest Rate Swap /38216/[Semi-Annual] FIXED [2.185%/Quarterly LIBOR 2.48988%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	.01/23/2012	.01/25/2022		11,500,000	LIBOR [2.185%			691	135,667		135,667	127,423				100,748		0001	
Interest Rate Swap /38301/[Quarterly] LIBOR [2.50925%/Semi-Annual] FIXED [2.84%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG	.01/25/2012	.01/27/2042		50,000,000	2.84% [LIBOR]			324,276	(145,771)		(145,771)	(2,914,359)				1,201,041		0001	
Interest Rate Swap /38384/[Semi-Annual] FIXED [1.82%/Quarterly LIBOR 2.52663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	.01/27/2012	.07/31/2020		25,000,000	LIBOR [1.82%			92,424	336,655		336,655	145,043				157,123		0001	
Interest Rate Swap /38507/[Semi-Annual] FIXED [1.955%/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	.01/31/2012	.02/02/2022		6,000,000	LIBOR [1.955%			14,265	117,364		117,364	55,714				52,735		0001	
Interest Rate Swap /38508/[Semi-Annual] FIXED [2.7%/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	.01/31/2012	.02/02/2042		2,000,000	LIBOR [2.7%			(10,145)	62,761		62,761	121,245				48,052		0001	
Interest Rate Swap /38604/[Semi-Annual] FIXED [2.66625%/Quarterly LIBOR 2.59238%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	.02/02/2012	.02/06/2037		8,400,000	LIBOR [2.66625%			(40,548)	250,435		250,435	430,288				178,685		0001	
Interest Rate Swap /38704/[Semi-Annual] FIXED [2.804%/Quarterly LIBOR 2.60113%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC	.02/07/2012	.02/09/2037		8,400,000	LIBOR [2.804%			(52,109)	41,906		41,906	400,050				178,735		0001	
Interest Rate Swap /38888/[Semi-Annual] FIXED [2.8325%/Quarterly LIBOR 2.61813%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A.	.02/09/2012	.02/13/2037		8,400,000	LIBOR [2.8325%			(55,406)	29,353		29,353	393,970				178,784		0001	
Interest Rate Swap /38910/[Semi-Annual] FIXED [1.848%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	.02/10/2012	.08/14/2020		25,000,000	LIBOR [1.848%			80,255	332,406		332,406	155,684				159,099		0001	

E18.75

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /38930/[Quarterly] LIBOR [2.61413%]/Semi-Annual FIXED 2.7925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	02/10/2012	02/14/2042		144,000,000	2.7925% [LIBOR]			897,811	(1,904,619)		(1,904,619)	(7,848,356)				3,461,995		0001	
Interest Rate Swap /38931/[Quarterly] LIBOR [2.61413%]/Semi-Annual FIXED 2.793%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM6T61CT2L10CEMIK50	02/10/2012	02/14/2042		77,000,000	2.793% [LIBOR]			480,465	(859,859)		(859,859)	(4,453,364)				1,851,206		0001	
Interest Rate Swap /38932/[Semi-Annual] FIXED [2.674%]/Quarterly LIBOR 2.61413%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJUYJYLN8C3868	02/10/2012	02/14/2032		30,000,000	LIBOR [2.674%]			(151,494)	519,023		519,023	1,226,229				543,530		0001	
Interest Rate Swap /39004/[Semi-Annual] FIXED [2.425%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	02/15/2012	02/17/2027		20,000,000	LIBOR [2.425%]			(53,043)	358,373		358,373	415,432				285,132		0001	
Interest Rate Swap /39208/[Semi-Annual] FIXED [2.8425%]/Quarterly LIBOR 2.67694%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/21/2012	02/23/2037		8,300,000	LIBOR [2.8425%]			(56,171)	(4,451)		(4,451)	399,868				176,802		0001	
Interest Rate Swap /39399/[Semi-Annual] FIXED [1.876%]/Quarterly LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/24/2012	08/28/2020		40,000,000	LIBOR [1.876%]			115,646	522,585		522,585	264,976				257,682		0001	
Interest Rate Swap /39567/[Semi-Annual] FIXED [1.8%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN706T14HNAVLU02	02/28/2012	09/01/2020		40,000,000	LIBOR [1.8%]			145,261	577,749		577,749	239,179				258,457		0001	
Interest Rate Swap /39946/[Semi-Annual] FIXED [2.06375%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	03/07/2012	03/09/2022		22,000,000	LIBOR [2.06375%]			23,073	350,561		350,561	218,547				196,466		0001	
Interest Rate Swap /40084/[Quarterly] LIBOR [2.77594%]/Semi-Annual FIXED 2.865%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/08/2012	03/12/2042		190,000,000	2.865% [LIBOR]			1,321,875	(131,265)		(131,265)	(10,575,241)				4,575,806		0001	
Interest Rate Swap /40131/[Semi-Annual] FIXED [1.867%]/Quarterly LIBOR 2.7775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI6C71XB11	03/12/2012	09/14/2020		25,000,000	LIBOR [1.867%]			77,810	340,941		340,941	164,567				163,459		0001	
Interest Rate Swap /40142/[Quarterly] LIBOR [2.7775%]/Semi-Annual FIXED 2.83%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN706T14HNAVLU02	03/12/2012	03/14/2042		240,000,000	2.83% [LIBOR]			1,564,228	(807,182)		(807,182)	(13,979,790)				5,781,210		0001	
Interest Rate Swap /40187/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.25375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/13/2012	03/16/2042		30,100,000	LIBOR [3.25375%]			321,571	2,022,580		2,022,580	(1,824,956)				725,060		0001	

E18.76

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /40188/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.46625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYLNC3868	03/13/2012	03/15/2042		41,600,000	3.46625% [LIBOR]				4,183,756		4,183,756	(2,269,352)				1,002,077		0001	
Interest Rate Swap /40189/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.5625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	03/13/2012	03/15/2032		26,600,000	3.5625% [LIBOR]				1,035,657		1,035,657	(528,732)				483,396		0001	
Interest Rate Swap /40190/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.58375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	03/13/2012	03/15/2032		33,100,000	3.58375% [LIBOR]				1,937,754		1,937,754	(737,257)				601,519		0001	
Interest Rate Swap /40191/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.401%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	03/13/2012	03/15/2042		35,500,000	3.401% [LIBOR]			432,605	3,427,665		3,427,665	(2,335,810)				855,137		0001	
Interest Rate Swap /40192/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 2.8975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYLNC3868	03/13/2012	03/15/2042		40,000,000	2.8975% [LIBOR]			286,043	112,826		112,826	(2,546,857)				963,535		0001	
Interest Rate Swap /40193/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.1355%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYLNC3868	03/13/2012	03/15/2042		24,600,000	3.1355% [LIBOR]			234,464	1,090,269		1,090,269	(1,647,017)				592,574		0001	
Interest Rate Swap /40243/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 2.945%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E57QDZIZ7FF32WFEA76	03/13/2012	03/15/2042		320,000,000	2.945% [LIBOR]			2,440,341	4,242,808		4,242,808	(18,132,652)				7,708,282		0001	
Interest Rate Swap /40245/[Semi-Annual] FIXED [2.93375%]/Quarterly LIBOR 2.78819%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	03/14/2012	03/16/2037		8,500,000	LIBOR [2.93375%]			(63,609)	(113,405)		(113,405)	436,599				181,361		0001	
Interest Rate Swap /40308/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.045%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	03/14/2012	03/16/2042		160,000,000	3.045% [LIBOR]			1,375,349	5,478,859		5,478,859	(9,770,462)				3,854,141		0001	
Interest Rate Swap /40309/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 3.037%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYLNC3868	03/14/2012	03/16/2042		80,000,000	3.037% [LIBOR]			681,274	2,171,175		2,171,175	(5,246,033)				1,927,070		0001	
Interest Rate Swap /40348/[Semi-Annual] FIXED [3.0875%]/Quarterly LIBOR 2.80363%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U9RH1GC71XBU11	03/15/2012	03/19/2037		8,500,000	LIBOR [3.0875%]			(76,426)	(313,766)		(313,766)	421,315				181,411		0001	
Interest Rate Swap /40389/[Semi-Annual] FIXED [2.346%]/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U9RH1GC71XBU11	03/15/2012	03/19/2022		25,000,000	LIBOR [2.346%]			(39,406)	184,472		184,472	319,897				224,653		0001	

E18.77

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /40409/[Semi-Annual] FIXED [3.1075%]/Quarterly LIBOR 2.792%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	03/16/2012	03/20/2037		8,400,000	LIBOR [3.1075%]			(76,828)	(328,256)		(328,256)	430,760				179,277		0001	
Interest Rate Swap /40424/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 3.10992%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA . KD3XUN7C6T14HNAYL02	03/16/2012	03/20/2042		135,000,000	LIBOR [3.10992%			1,238,011	6,157,260		6,157,260	(8,355,778)				3,252,632		0001	
Interest Rate Swap /40425/[Semi-Annual] FIXED [2.1875%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	03/16/2012	09/20/2020		40,000,000	LIBOR [2.1875%]			2,152	337,380		337,380	386,463				263,059		0001	
Interest Rate Swap /40427/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 3.10259%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL . E58DKGJLJYYJLN8C3868	03/16/2012	03/20/2042		115,000,000	LIBOR [3.10259%			1,046,168	4,436,373		4,436,373	(7,642,454)				2,770,760		0001	
Interest Rate Swap /40459/[Semi-Annual] FIXED [2.98375%]/Quarterly LIBOR 2.78963%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION . 11E8VN30JCEQV1H4R804	03/19/2012	03/21/2032		32,000,000	LIBOR [2.98375%]			(249,541)	(683,025)		(683,025)	1,319,006				581,969		0001	
Interest Rate Swap /40479/[Semi-Annual] FIXED [3.109%]/Quarterly LIBOR 2.78963%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA . ES71P3U3RHI GC71XBU11	03/19/2012	03/21/2037		8,400,000	LIBOR [3.109%]			(76,026)	(336,772)		(336,772)	417,016				179,326		0001	
Interest Rate Swap /40503/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 2.659%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. . KB1H1DSPRFMYMCFXT09	03/19/2012	03/21/2024		175,000,000	LIBOR [2.659%			796,367	690,363		690,363	(3,173,383)				2,001,054		0001	
Interest Rate Swap /40508/[Semi-Annual] FIXED [1.912%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA . ES71P3U3RHI GC71XBU11	03/20/2012	03/22/2019		15,000,000	LIBOR [1.912%			45,113	29,801		29,801	26,220				35,969		0001	
Interest Rate Swap /40543/[Semi-Annual] FIXED [2.6375%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA . ES71P3U3RHI GC71XBU11	03/21/2012	03/23/2024		38,000,000	LIBOR [2.6375%]			(158,282)	(103,707)		(103,707)	676,153				434,930		0001	
Interest Rate Swap /40545/[Semi-Annual] FIXED [3.13%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL . E58DKGJLJYYJLN8C3868	03/21/2012	03/23/2042		10,000,000	LIBOR [3.13%			(90,903)	(432,937)		(432,937)	668,228				240,988		0001	
Interest Rate Swap /40724/[Semi-Annual] FIXED [2.079%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. . 7H6GLXDRUGOFU57RNE97	03/27/2012	09/29/2020		25,000,000	LIBOR [2.079%			34,859	258,136		258,136	213,107				165,359		0001	

E18.78

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /40752/[Semi-Annual] FIXED [1.741%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGUFU57RNE97	03/27/2012	03/29/2019		40,000,000	LIBOR [1.741%			190,974	101,147		101,147	2,622				100,000		0001	
Interest Rate Swap /40951/[Semi-Annual] FIXED [2.051%/Quarterly LIBOR 2.79388%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTIWFZY1ONSX80621K86	04/02/2012	10/04/2020		40,000,000	LIBOR [2.051%			64,454	434,869		434,869	333,310				265,330		0001	
Interest Rate Swap /40957/[Semi-Annual] FIXED [2.981%/Quarterly LIBOR 2.79388%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	04/02/2012	04/04/2037		8,400,000	LIBOR [2.981%			(64,585)	(172,680)		(172,680)	418,815				179,522		0001	
Interest Rate Swap /40983/[Semi-Annual] FIXED [2.9925%/Quarterly LIBOR 2.79388%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	04/02/2012	04/04/2037		8,500,000	LIBOR [2.9925%			(66,331)	(195,556)		(195,556)	415,580				181,660		0001	
Interest Rate Swap /40996/[Semi-Annual] FIXED [1.7475%/Quarterly LIBOR 2.40825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	04/03/2012	04/05/2019		45,000,000	LIBOR [1.7475%			208,816	120,284		120,284	9,908				114,728		0001	
Interest Rate Swap /41031/[Quarterly] LIBOR [2.41425%/Semi-Annual] FIXED 3.083%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	04/04/2012	04/10/2042		86,000,000	3.083% [LIBOR]			755,896	3,599,494		3,599,494	(5,181,639)				2,074,722		0001	
Interest Rate Swap /41036/[Quarterly] LIBOR [2.41425%/Semi-Annual] FIXED 3.0825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L10CEMIK50	04/04/2012	04/10/2042		87,000,000	3.0825% [LIBOR]			764,251	3,424,013		3,424,013	(5,385,157)				2,098,847		0001	
Interest Rate Swap /41065/[Quarterly] LIBOR [2.42044%/Semi-Annual] FIXED 3.5725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV1H4R804	04/05/2012	04/11/2042		6,100,000	3.5725% [LIBOR]			83,588	769,926		769,926	(421,529)				147,161		0001	
Interest Rate Swap /41066/[Quarterly] LIBOR [2.42044%/Semi-Annual] FIXED 3.2925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV1H4R804	04/05/2012	04/11/2042		4,300,000	3.2925% [LIBOR]			46,883	331,528		331,528	(281,065)				103,736		0001	
Interest Rate Swap /41067/[Quarterly] LIBOR [2.42044%/Semi-Annual] FIXED 3.041%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11EBVN30JCEQV1H4R804	04/05/2012	04/11/2042		9,000,000	3.041% [LIBOR]			75,492	296,832		296,832	(558,050)				217,122		0001	
Interest Rate Swap /41068/[Quarterly] LIBOR [0.0%/Semi-Annual] FIXED 3.755%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ES70DZVZ7F32TWEFA76	04/05/2012	04/11/2032		4,100,000	3.755% [LIBOR]				287,852		287,852	(85,227)				74,706		0001	
Interest Rate Swap /41069/[Quarterly] LIBOR [0.0%/Semi-Annual] FIXED 3.72125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ES70DZVZ7F32TWEFA76	04/05/2012	04/11/2032		3,750,000	LIBOR [3.72125%				176,150		176,150	(70,720)				68,328		0001	

E18.79

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /41070/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 3.4075%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.04/05/2012	.04/13/2042		5,200,000	3.4075% [LIBOR]			.62,653	.490,718		.490,718	(325,708)				125,475		0001	
Interest Rate Swap /41071/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.63375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.04/05/2012	.04/11/2042		7,400,000	3.63375% [LIBOR]				.973,053		.973,053	(345,214)				178,523		0001	
Interest Rate Swap /41096/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 5.623%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	.04/05/2012	.04/11/2022		15,000,000	5.623% [LIBOR]			.513,119	1,413,850		1,413,850	(668,108)				135,831		0001	
Interest Rate Swap /41107/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 5.625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.04/05/2012	.04/11/2022		15,000,000	5.625% [LIBOR]			.513,419	1,435,069		1,435,069	(661,538)				135,831		0001	
Interest Rate Swap /41113/[Quarterly] LIBOR [2.42044%]/Semi-Annual FIXED 3.05%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.04/05/2012	.04/11/2042		17,000,000	3.05% [LIBOR]			.144,125	.538,982		.538,982	(985,587)				410,119		0001	
Interest Rate Swap /41159/[Semi-Annual] FIXED [1.9175%]/Quarterly LIBOR 2.42519%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	.04/10/2012	10/12/2020		25,000,000	LIBOR [1.9175%]			.71,375	.331,755		.331,755	174,845				167,239		0001	
Interest Rate Swap /41260/[Semi-Annual] FIXED [2.89054%]/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.04/11/2012	.04/13/2042		242,000,000	LIBOR [2.89054%]			(1,664,721)	(930,399)		(930,399)	13,539,813				5,839,425		0001	
Interest Rate Swap /41412/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.50125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	.04/16/2012	.04/19/2032		7,500,000	3.50125% [LIBOR]				.384,851		.384,851	(167,613)				136,759		0001	
Interest Rate Swap /41413/[Quarterly] LIBOR [2.44456%]/Semi-Annual FIXED 3.3125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	.04/16/2012	.04/18/2042		12,800,000	3.3125% [LIBOR]			.142,634	1,035,040		1,035,040	(837,321)				308,928		0001	
Interest Rate Swap /41414/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 3.03875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	.04/16/2012	.04/22/2042		7,300,000	3.03875% [LIBOR]			.61,398	239,930		239,930	(451,148)				176,224		0001	
Interest Rate Swap /41415/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.465%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPPFMYMCLFXT09	.04/16/2012	.04/18/2032		9,500,000	3.465% [LIBOR]				.307,649		.307,649	(185,121)				173,229		0001	
Interest Rate Swap /41416/[Quarterly] LIBOR [2.44456%]/Semi-Annual FIXED 2.807%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPPFMYMCLFXT09	.04/16/2012	.04/18/2042		11,800,000	2.807% [LIBOR]			.71,842	(75,572)		(75,572)	(668,427)				284,793		0001	

E18.80

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /41417/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	04/16/2012	04/18/2042		2,900,000	3.375% [LIBOR]				264,873		264,873	(138,305)				69,992		0001	
Interest Rate Swap /41418/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 3.151%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	04/16/2012	04/20/2042		10,800,000	3.151% [LIBOR]			102,483	583,404		583,404	(661,070)				260,714		0001	
Interest Rate Swap /41419/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.385%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GCT1XBU11	04/16/2012	04/19/2042		9,100,000	3.385% [LIBOR]				637,984		637,984	(326,415)				219,676		0001	
Interest Rate Swap /41463/[Semi-Annual] FIXED [2.86%]/Quarterly LIBOR 2.44963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	04/17/2012	04/19/2042		5,000,000	LIBOR [2.86%]			(32,996)	(9,271)		(9,271)	285,188				120,701		0001	
Interest Rate Swap /41464/[Semi-Annual] FIXED [2.11%]/Quarterly LIBOR 2.44963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTWIFY1CNSX8D621K86	04/17/2012	04/19/2022		20,000,000	LIBOR [2.114%]			17,217	291,455		291,455	207,905				181,659		0001	
Interest Rate Swap /41520/[Semi-Annual] FIXED [1.6175%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ES8DKGMJYYJLN8C3868	04/20/2012	04/24/2019		25,000,000	LIBOR [1.6175%]			144,131	84,067		84,067	(19,995)				70,711		0001	
Interest Rate Swap /41546/[Semi-Annual] FIXED [1.893%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ES8DKGMJYYJLN8C3868	04/20/2012	10/24/2020		25,000,000	LIBOR [1.893%]			75,256	345,467		345,467	172,259				168,634		0001	
Interest Rate Swap /41643/[Semi-Annual] FIXED [2.08%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ES70DZIZ7FF32TWEFA76	04/24/2012	04/26/2022		150,000,000	LIBOR [2.08%]			170,801	2,376,542		2,376,542	1,492,517				1,366,565		0001	
Interest Rate Swap /41845/[Semi-Annual] FIXED [1.871%]/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXORUGOFU57RNE97	04/27/2012	11/01/2020		35,000,000	LIBOR [1.871%]			111,283	494,167		494,167	233,093				237,382		0001	
Interest Rate Swap /41969/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.46375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ES70DZIZ7FF32TWEFA76	05/01/2012	05/03/2042		10,300,000	LIBOR [3.46375%]				623,567		623,567	(395,104)				248,857		0001	
Interest Rate Swap /41970/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.4925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ES70DZIZ7FF32TWEFA76	05/01/2012	05/03/2042		13,400,000	LIBOR [3.4925%]				1,077,157		1,077,157	(541,662)				323,757		0001	
Interest Rate Swap /41971/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.58125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ES70DZIZ7FF32TWEFA76	05/01/2012	05/03/2032		5,800,000	LIBOR [3.58125%]				219,365		219,365	(109,299)				105,919		0001	

E18.81

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /41972/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.3375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7F32TWEFA76	.05/01/2012	.05/04/2042		7,500,000	3.3375% [LIBOR]				167,397		167,397	(144,131)				181,207		0001	
Interest Rate Swap /41976/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.398%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	.05/01/2012	.05/04/2042		13,900,000	3.398% [LIBOR]				587,322		587,322	(459,281)				335,837		0001	
Interest Rate Swap /41977/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.605%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7F32TWEFA76	.05/01/2012	.05/03/2032		4,700,000	3.605% [LIBOR]				270,662		270,662	(97,790)				85,831		0001	
Interest Rate Swap /41978/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.4675%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	.05/01/2012	.05/03/2042		24,600,000	3.4675% [LIBOR]				2,635,689		2,635,689	(1,178,420)				594,358		0001	
Interest Rate Swap /41981/[Quarterly] LIBOR [2.59238%]/Semi-Annual FIXED 3.11%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	.05/01/2012	.05/06/2042		10,100,000	3.11% [LIBOR]			93,573	473,513		473,513	(614,289)				244,025		0001	
Interest Rate Swap /41990/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.395%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7F32TWEFA76	.05/01/2012	.05/03/2042		20,300,000	3.395% [LIBOR]			244,636	1,876,550		1,876,550	(1,271,832)				490,466		0001	
Interest Rate Swap /41993/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.2275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7F32TWEFA76	.05/01/2012	.05/05/2042		17,400,000	3.2275% [LIBOR]			181,727	1,097,210		1,097,210	(1,052,414)				420,400		0001	
Interest Rate Swap /41996/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.98875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7F32TWEFA76	.05/01/2012	.05/03/2042		14,600,000	2.98875% [LIBOR]			116,633	309,062		309,062	(837,871)				352,749		0001	
Interest Rate Swap /42033/[Semi-Annual] FIXED [1.845%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.05/02/2012	.11/04/2020		20,000,000	LIBOR [1.845%]			68,889	293,910		293,910	129,358				135,647		0001	
Interest Rate Swap /42188/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 2.432%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XBU11	.05/08/2012	.05/10/2027		11,600,000	2.432% [LIBOR]			29,557	(199,432)		(199,432)	(257,368)				167,699		0001	
Interest Rate Swap /42219/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 2.42%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPUBMPPRO8K5P83	.05/09/2012	.05/11/2027		11,600,000	2.42% [LIBOR]			28,262	(213,051)		(213,051)	(257,565)				167,699		0001	
Interest Rate Swap /42318/[Semi-Annual] FIXED [2.4475%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	.05/11/2012	.05/15/2027		35,000,000	LIBOR [2.4475%]			(99,560)	567,418		567,418	791,987				506,594		0001	
Interest Rate Swap /42334/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 2.375%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XBU11	.05/14/2012	.05/16/2027		11,600,000	2.375% [LIBOR]			24,742	(249,972)		(249,972)	(252,397)				167,900		0001	

E1882

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /42342/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 2.37%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	05/14/2012	05/16/2027		11,600,000	2.37% [LIBOR]			24,162	(301,127)		(301,127)	(286,502)				167,900		0001	
Interest Rate Swap /42434/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 2.345%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	05/16/2012	05/18/2027		11,600,000	2.345% [LIBOR]			20,936	(283,009)		(283,009)	(257,085)				167,900		0001	
Interest Rate Swap /42517/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 2.24625%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	05/17/2012	05/21/2027		11,500,000	2.24625% [LIBOR]			9,944	(373,527)		(373,527)	(225,867)				166,552		0001	
Interest Rate Swap /42546/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 2.223%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	05/17/2012	05/21/2027		11,500,000	2.223% [LIBOR]			7,271	(427,136)		(427,136)	(268,454)				166,552		0001	
Interest Rate Swap /42571/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 1.83875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	05/18/2012	05/22/2022		151,000,000	1.83875% [LIBOR]			(487,347)	(3,621,933)		(3,621,933)	(1,194,038)				1,392,151		0001	
Interest Rate Swap /42579/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.215%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	05/18/2012	05/22/2027		11,500,000	2.215% [LIBOR]			6,153	(390,615)		(390,615)	(236,173)				166,651		0001	
Interest Rate Swap /42593/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.242%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	05/21/2012	05/23/2027		11,500,000	2.242% [LIBOR]			8,770	(370,549)		(370,549)	(240,031)				166,651		0001	
Interest Rate Swap /43317/[Quarterly] LIBOR [2.73888%]/Semi-Annual FIXED 2.33%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	05/31/2012	06/06/2042		200,000,000	2.33% [LIBOR]			336,042	(18,295,884)		(18,295,884)	(10,409,234)				4,840,455		0001	
Interest Rate Swap /43568/[Semi-Annual] FIXED [2.38625%]/Quarterly LIBOR 2.77106%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUIISFPUBMPRO8K5P83	06/07/2012	06/11/2032		9,200,000	LIBOR [2.38625%]			(20,086)	426,833		426,833	320,103				168,702		0001	
Interest Rate Swap /43569/[Semi-Annual] FIXED [1.8275%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/07/2012	06/11/2022		32,000,000	LIBOR [1.8275%]			108,937	796,760		796,760	253,298				297,187		0001	
Interest Rate Swap /43570/[Semi-Annual] FIXED [2.4875%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/07/2012	06/11/2042		14,000,000	LIBOR [2.4875%]			(44,740)	940,444		940,444	716,757				338,976		0001	
Interest Rate Swap /43748/[Semi-Annual] FIXED [2.411%]/Quarterly LIBOR 2.779%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	06/11/2012	06/13/2032		9,200,000	LIBOR [2.411%]			(21,714)	444,303		444,303	359,100				168,764		0001	

E18.83

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /43946/[Semi-Annual] FIXED [2.455%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E57ODZIZ7F32TWEFA76	.06/13/2012	.06/15/2042		10,000,000	LIBOR [2.455%			(27,261)	729,573		729,573	507,298				242,178		0001	
Interest Rate Swap /43947/[Semi-Annual] FIXED [1.76875%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL02	.06/13/2012	.06/15/2022		30,000,000	LIBOR [1.76875%			124,093	803,593		803,593	225,184				279,016		0001	
Interest Rate Swap /44091/[Semi-Annual] FIXED [2.31625%/Quarterly LIBOR 2.78963%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL02	.06/19/2012	.06/21/2032		9,100,000	LIBOR [2.31625%			(10,221)	497,748		497,748	313,689				167,054		0001	
Interest Rate Swap /44141/[Semi-Annual] FIXED [2.38875%/Quarterly LIBOR 2.82375%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XB11	.06/20/2012	.06/22/2032		9,100,000	LIBOR [2.38875%			(16,016)	418,409		418,409	321,018				167,054		0001	
Interest Rate Swap /44291/[Semi-Annual] FIXED [1.80625%/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYYJLN8C3868	.06/22/2012	.06/26/2022		21,000,000	LIBOR [1.80625%			86,538	568,938		568,938	180,249				196,156		0001	
Interest Rate Swap /44292/[Semi-Annual] FIXED [2.354%/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYYJLN8C3868	.06/22/2012	.06/26/2032		12,000,000	LIBOR [2.354%			(16,280)	660,966		660,966	460,853				220,372		0001	
Interest Rate Swap /44544/[Semi-Annual] FIXED [2.37%/Quarterly LIBOR 2.80763%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPU8M8PR08K5P83	.06/29/2012	.07/03/2032		9,100,000	LIBOR [2.37%			(14,484)	442,762		442,762	314,941				167,301		0001	
Interest Rate Swap /44587/[Semi-Annual] FIXED [2.34875%/Quarterly LIBOR 2.40825%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E57ODZIZ7F32TWEFA76	.07/02/2012	.07/05/2032		9,100,000	LIBOR [2.34875%			(12,486)	482,878		482,878	300,661				167,301		0001	
Interest Rate Swap /44603/[Semi-Annual] FIXED [1.2975%/Quarterly LIBOR 2.40825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL02	.07/02/2012	.07/05/2019		18,000,000	LIBOR [1.2975%			164,527	132,755		132,755	(52,996)				64,273		0001	
Interest Rate Swap /44607/[Semi-Annual] FIXED [2.33%/Quarterly LIBOR 2.40825%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYJYYJLN8C3868	.07/02/2012	.07/05/2032		9,100,000	LIBOR [2.33%			(10,780)	525,908		525,908	346,442				167,301		0001	
Interest Rate Swap /44623/[Semi-Annual] FIXED [2.345%/Quarterly LIBOR 2.40825%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC G5G8EF7VJP5170UK5573	.07/03/2012	.07/05/2032		9,100,000	LIBOR [2.345%			(12,145)	473,270		473,270	308,764				167,301		0001	

E18.84

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /45169/[Semi-Annual] FIXED [1.643%/Quarterly LIBOR 2.47719%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/19/2012	07/23/2022		45,000,000	LIBOR [1.643%			249,665	1,426,707		1,426,707	273,535				425,125		0001	
Interest Rate Swap /45217/[Quarterly] LIBOR [2.48988%/Semi-Annual] FIXED 2.1275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	07/23/2012	07/25/2032		120,000,000	2.1275% [LIBOR]			(76,215)	(9,729,648)		(9,729,648)	(4,341,390)				2,210,249		0001	
Interest Rate Swap /45218/[Quarterly] LIBOR [2.48988%/Semi-Annual] FIXED 2.266%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	07/23/2012	07/25/2042		25,000,000	2.266% [LIBOR]			18,747	(2,593,841)		(2,593,841)	(1,303,419)				606,862		0001	
Interest Rate Swap /45219/[Quarterly] LIBOR [2.48988%/Semi-Annual] FIXED 1.7525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	07/23/2012	07/25/2024		180,000,000	1.7525% [LIBOR]			(789,323)	(7,805,763)		(7,805,763)	(1,820,762)				2,124,076		0001	
Interest Rate Swap /45367/[Semi-Annual] FIXED [2.40625%/Quarterly] LIBOR 2.52663%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/27/2012	07/31/2042		6,800,000	LIBOR [2.40625%			(14,726)	554,257		554,257	341,184				165,101		0001	
Interest Rate Swap /45424/[Semi-Annual] FIXED [2.375%/Quarterly] LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	07/30/2012	08/01/2042		140,000,000	LIBOR [2.375%			(260,469)	11,737,892		11,737,892	7,381,959				3,399,868		0001	
Interest Rate Swap /45568/[Quarterly] LIBOR [2.59238%/Semi-Annual] FIXED 2.055%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	08/02/2012	08/06/2027		20,000,000	2.055% [LIBOR]			(25,707)	(1,029,933)		(1,029,933)	(445,374)				293,258		0001	
Interest Rate Swap /45591/[Semi-Annual] FIXED [2.29875%/Quarterly] LIBOR 2.59125%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/06/2012	08/08/2032		9,000,000	LIBOR [2.29875%			(10,544)	532,095		532,095	295,907				166,013		0001	
Interest Rate Swap /45592/[Semi-Annual] FIXED [2.35%/Quarterly] LIBOR 2.60113%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/07/2012	08/09/2032		9,000,000	LIBOR [2.35%			(14,971)	478,920		478,920	300,482				166,013		0001	
Interest Rate Swap /45604/[Semi-Annual] FIXED [2.38875%/Quarterly] LIBOR 2.60113%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/07/2012	08/09/2032		9,000,000	LIBOR [2.38875%			(18,458)	438,760		438,760	303,996				166,013		0001	
Interest Rate Swap /45701/[Semi-Annual] FIXED [2.429%/Quarterly] LIBOR 2.61813%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	08/09/2012	08/13/2032		9,000,000	LIBOR [2.429%			(23,049)	420,991		420,991	355,971				166,074		0001	

E18.85

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /45753/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.02375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	08/13/2012	08/15/2042		8,500,000	3.02375% [LIBOR]				68,301		68,301	(334,000)				206,595		0001
Interest Rate Swap /45771/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 2.93625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	08/13/2012	08/15/2042		7,500,000	2.93625% [LIBOR]				(12,554)		(12,554)	(150,628)				182,290		0001
Interest Rate Swap /45772/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.04875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	08/13/2012	08/15/2042		9,500,000	3.04875% [LIBOR]				139,149		139,149	(435,120)				230,901		0001
Interest Rate Swap /45775/[Quarterly] LIBOR [2.61613%]/Semi-Annual FIXED 2.691%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	08/13/2012	08/15/2042		13,400,000	2.691% [LIBOR]			70,746	(361,886)		(361,886)	(746,877)				325,692		0001
Interest Rate Swap /45779/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.13%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	08/13/2012	08/15/2032		11,600,000	3.13% [LIBOR]				226,112		226,112	(255,924)				214,129		0001
Interest Rate Swap /45780/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.1075%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	08/13/2012	08/15/2032		9,200,000	3.1075% [LIBOR]				77,448		77,448	(186,280)				169,827		0001
Interest Rate Swap /45781/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 2.977%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	08/13/2012	08/15/2042		11,500,000	2.977% [LIBOR]				(14,912)		(14,912)	(381,775)				279,512		0001
Interest Rate Swap /45903/[Semi-Annual] FIXED [2.64625%]/Quarterly LIBOR 2.64%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	08/15/2012	08/17/2042		7,000,000	LIBOR [2.64625%]			(34,053)	289,375		289,375	426,526				170,137		0001
Interest Rate Swap /45919/[Semi-Annual] FIXED [2.691%]/Quarterly LIBOR 2.64%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC	08/15/2012	08/17/2042		7,000,000	LIBOR [2.691%]			(37,185)	197,062		197,062	388,896				170,137		0001
Interest Rate Swap /45975/[Semi-Annual] FIXED [2.76%]/Quarterly LIBOR 2.6445%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	08/16/2012	08/20/2042		7,100,000	LIBOR [2.76%]			(42,464)	150,900		150,900	443,963				172,604		0001
Interest Rate Swap /45976/[Semi-Annual] FIXED [2.173%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	08/16/2012	08/20/2024		25,000,000	LIBOR [2.173%]			(2,772)	539,123		539,123	353,820				296,859		0001
Interest Rate Swap /46061/[Semi-Annual] FIXED [2.73625%]/Quarterly LIBOR 2.67694%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA	08/21/2012	08/23/2042		7,100,000	LIBOR [2.73625%]			(40,507)	141,785		141,785	410,253				172,641		0001

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /46192/[Quarterly] LIBOR [2.706%]/Semi-Annual FIXED 2.1925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	08/27/2012	08/29/2027		150,000,000	2.1925% [LIBOR]			38,227	(5,655,180)		(5,655,180)	(3,170,276)				2,208,365		0001	
Interest Rate Swap /46378/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.20625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XB011	08/29/2012	08/31/2027		100,000,000	2.20625% [LIBOR]			52,267	(3,600,124)		(3,600,124)	(2,119,864)				1,472,243		0001	
Interest Rate Swap /46775/[Semi-Annual] FIXED [2.47875%]/Quarterly LIBOR 2.779%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	09/11/2012	09/13/2032		30,000,000	LIBOR [2.47875%]			(91,132)	1,111,513		1,111,513	1,104,133				555,203		0001	
Interest Rate Swap /47112/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 2.68125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RHI GC71XB011	09/20/2012	09/24/2042		18,200,000	2.68125% [LIBOR]			84,009	(523,665)		(523,665)	(996,147)				443,292		0001	
Interest Rate Swap /47113/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 3.04125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGIMJYYJLN8C3868	09/20/2012	09/24/2042		22,800,000	3.04125% [LIBOR]			187,322	642,737		642,737	(1,517,777)				555,333		0001	
Interest Rate Swap /47116/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 2.92%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGIMJYYJLN8C3868	09/20/2012	09/24/2042		13,100,000	2.92% [LIBOR]			91,744	87,866		87,866	(849,809)				319,073		0001	
Interest Rate Swap /47127/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 2.7925%	Portfolio Hedge	Schedule B, D, Exhibit 3	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	09/20/2012	09/24/2042		9,200,000	2.7925% [LIBOR]			52,701	(101,184)		(101,184)	(548,429)				224,082		0001	
Interest Rate Swap /47131/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 3.2375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVLU02	09/20/2012	09/25/2042		26,500,000	3.2375% [LIBOR]			270,341	1,824,736		1,824,736	(1,709,958)				645,589		0001	
Interest Rate Swap /47134/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.3%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WIEFA76	09/20/2012	09/24/2042		18,400,000	3.3% [LIBOR]				525,673		525,673	(586,952)				448,164		0001	
Interest Rate Swap /47135/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.326%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WIEFA76	09/20/2012	09/24/2042		31,400,000	3.326% [LIBOR]				2,416,158		2,416,158	(1,398,221)				764,801		0001	
Interest Rate Swap /47304/[Semi-Annual] FIXED [2.5751%]/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WIEFA76	09/27/2012	10/01/2042		50,000,000	LIBOR [2.5751%]			(181,436)	2,619,593		2,619,593	2,629,444				1,218,349		0001	
Interest Rate Swap /47309/[Semi-Annual] FIXED [2.5811%]/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WIEFA76	09/27/2012	10/01/2042		50,000,000	LIBOR [2.5811%]			(184,436)	2,566,308		2,566,308	2,633,376				1,218,349		0001	

E18.87

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /47342/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 1.715%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	09/28/2012	10/02/2022		14,200,000	1.715% [LIBOR]			(70,669)	(437,802)		(437,802)	(103,606)				137,674		0001	
Interest Rate Swap /47491/[Semi-Annual] FIXED [2.4475%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	10/04/2012	10/09/2032		95,000,000	2.4475% [LIBOR]			(230,707)	4,078,632		4,078,632	3,293,163				1,763,268		0001	
Interest Rate Swap /47492/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.63%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	10/04/2012	10/09/2042		70,000,000	2.63% [LIBOR]			297,744	(2,980,287)		(2,980,287)	(3,736,083)				1,706,766		0001	
Interest Rate Swap /47928/[Semi-Annual] FIXED [2.561%]/Quarterly LIBOR 2.469%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A.	10/18/2012	10/22/2032		9,250,000	LIBOR [2.561%]			(33,607)	274,241		274,241	331,911				171,873		0001	
Interest Rate Swap /47939/[Semi-Annual] FIXED [2.11375%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	10/18/2012	10/22/2024		60,000,000	2.11375% [LIBOR]			50,356	1,533,062		1,533,062	839,818				723,118		0001	
Interest Rate Swap /48154/[Semi-Annual] FIXED [1.82375%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	10/24/2012	10/26/2022		80,000,000	1.82375% [LIBOR]			295,987	2,286,432		2,286,432	743,464				781,793		0001	
Interest Rate Swap /48267/[Semi-Annual] FIXED [1.825%]/Quarterly LIBOR 2.52038%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	10/26/2012	10/30/2022		30,000,000	LIBOR [1.825%]			108,826	814,370		814,370	252,352				293,556		0001	
Interest Rate Swap /48565/[Semi-Annual] FIXED [2.642%]/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	11/02/2012	11/06/2042		14,000,000	LIBOR [2.642%]			(64,185)	565,593		565,593	752,538				341,855		0001	
Interest Rate Swap /48701/[Semi-Annual] FIXED [2.561%]/Quarterly LIBOR 2.60113%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	11/07/2012	11/09/2042		20,000,000	LIBOR [2.561%]			(75,468)	1,001,696		1,001,696	1,083,420				488,467		0001	
Interest Rate Swap /48702/[Semi-Annual] FIXED [2.3975%]/Quarterly LIBOR 2.60113%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	11/07/2012	11/09/2032		15,000,000	LIBOR [2.3975%]			(32,076)	704,298		704,298	543,240				279,218		0001	
Interest Rate Swap /48879/[Semi-Annual] FIXED [1.641%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	11/13/2012	11/15/2022		37,000,000	LIBOR [1.641%]			193,156	1,269,815		1,269,815	240,844				364,408		0001	
Interest Rate Swap /49139/[Semi-Annual] FIXED [2.31875%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	11/16/2012	11/20/2032		21,000,000	LIBOR [2.31875%]			(32,936)	1,173,106		1,173,106	750,804				391,328		0001	

E18.88

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /49140/[Semi-Annual] FIXED [1.628%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	11/16/2012		29,000,000	LIBOR [1.628%]			154,834	1,013,425		1,013,425	186,395				285,985		0001
Interest Rate Swap /49481/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.083%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	E571P3U3RH1GC71XBUI1	11/26/2012		14,700,000	3.083% [LIBOR]				140,919		140,919	(234,772)				359,399		0001
Interest Rate Swap /49482/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.135%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	11/26/2012		23,600,000	3.135% [LIBOR]				292,898		292,898	(736,675)				576,995		0001
Interest Rate Swap /49485/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.191%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	11/26/2012		17,300,000	3.191% [LIBOR]				433,461		433,461	(649,884)				422,966		0001
Interest Rate Swap /49486/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.30375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	E571P3U3RH1GC71XBUI1	11/26/2012		10,000,000	3.30375% [LIBOR]				204,567		204,567	(183,260)				186,481		0001
Interest Rate Swap /49487/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.2225%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	E571P3U3RH1GC71XBUI1	11/26/2012		19,700,000	3.2225% [LIBOR]				865,344		865,344	(726,393)				481,644		0001
Interest Rate Swap /49488/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.3175%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	E571P3U3RH1GC71XBUI1	11/26/2012		15,700,000	3.3175% [LIBOR]				524,066		524,066	(328,595)				292,774		0001
Interest Rate Swap /49489/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.1775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14HNAYLU02	11/26/2012		39,300,000	3.1775% [LIBOR]				2,160,096		2,160,096	(1,842,370)				960,842		0001
Interest Rate Swap /49492/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 2.78625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	KB1H1DSPRFMYMCFXT09	11/26/2012		33,300,000	2.78625% [LIBOR]			206,838	(337,194)		(337,194)	(1,917,063)				814,149		0001
Interest Rate Swap /49495/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.897%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	11E8VN30JCEQV1H4R804	11/26/2012		32,300,000	2.897% [LIBOR]			236,642	254,196		254,196	(1,985,010)				789,700		0001
Interest Rate Swap /49498/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 2.57375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	11E8VN30JCEQV1H4R804	11/26/2012		26,900,000	2.57375% [LIBOR]			109,923	(1,339,227)		(1,339,227)	(1,535,406)				657,676		0001
Interest Rate Swap /49499/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.082%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	7LTFWZY1QNSX80621K86	11/26/2012		36,000,000	3.082% [LIBOR]			330,078	1,492,913		1,492,913	(2,278,962)				880,161		0001
Interest Rate Swap /50747/[Semi-Annual] FIXED [2.52375%]/Quarterly LIBOR 2.80363%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	E58DKGIJYYJLNC3868	12/17/2012		9,200,000	LIBOR [2.52375%]			(30,855)	344,491		344,491	381,085				171,932		0001

E18.89

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /50772/(Semi-Annual) FIXED [2.73%]/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/17/2012	12/19/2042		200,000,000	LIBOR [2.73%]			(1,083,251)	5,007,593		5,007,593	11,033,251				4,895,917		0001	
Interest Rate Swap /50812/(Semi-Annual) FIXED [2.74%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL02	12/18/2012	12/20/2042		180,000,000	LIBOR [2.74%]			(984,818)	3,544,801		3,544,801	10,499,549				4,407,244		0001	
Interest Rate Swap /50853/(Semi-Annual) FIXED [2.64%]/Quarterly LIBOR 2.792%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSPPFMVCMJCFX09	12/18/2012	12/20/2032		9,250,000	LIBOR [2.64%]			(41,451)	173,668		173,668	356,134				172,866		0001	
Interest Rate Swap /51045/(Semi-Annual) FIXED [1.282%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170LK5573	12/21/2012	12/27/2019		60,000,000	LIBOR [1.282%]			562,384	859,028		859,028	(58,319)				298,496		0001	
Interest Rate Swap /51046/(Semi-Annual) FIXED [1.8075%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	12/21/2012	12/27/2022		150,000,000	LIBOR [1.8075%]			617,709	4,340,355		4,340,355	1,273,966				1,498,124		0001	
Interest Rate Swap /51047/(Semi-Annual) FIXED [1.806%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/21/2012	12/27/2022		150,000,000	LIBOR [1.806%]			619,959	4,401,800		4,401,800	1,220,734				1,498,124		0001	
Interest Rate Swap /51216/(Semi-Annual) FIXED [2.755%]/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/24/2012	12/28/2042		100,000,000	LIBOR [2.755%]			(534,494)	1,851,616		1,851,616	5,982,023				2,449,490		0001	
Interest Rate Swap /51219/(Semi-Annual) FIXED [2.755%]/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/24/2012	12/28/2042		100,000,000	LIBOR [2.755%]			(534,494)	1,851,616		1,851,616	5,982,023				2,449,490		0001	
Interest Rate Swap /51222/(Semi-Annual) FIXED [2.755%]/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/24/2012	12/29/2042		100,000,000	LIBOR [2.755%]			(534,494)	1,851,616		1,851,616	5,982,023				2,449,490		0001	
Interest Rate Swap /51225/(Semi-Annual) FIXED [2.755%]/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/24/2012	12/28/2042		50,000,000	LIBOR [2.755%]			(267,247)	925,808		925,808	2,991,011				1,224,744		0001	
Interest Rate Swap /51228/(Semi-Annual) FIXED [2.755%]/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/24/2012	12/28/2042		50,000,000	LIBOR [2.755%]			(267,247)	925,808		925,808	2,991,011				1,224,744		0001	

E18.90

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /51231/[Semi-Annual] FIXED [2.755%/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A.	12/24/2012	12/28/2042		50,000,000	LIBOR [2.755%			(267,247)	925,808		925,808	2,991,011				1,224,744		0001	
Interest Rate Swap /51234/[Semi-Annual] FIXED [2.755%/Quarterly LIBOR 2.81344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A.	12/24/2012	12/28/2042		50,000,000	LIBOR [2.755%			(267,247)	925,808		925,808	2,991,011				1,224,744		0001	
Interest Rate Swap /51335/[Semi-Annual] FIXED [2.7051%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	12/27/2012	12/31/2042		50,000,000	LIBOR [2.7051%			(247,089)	1,459,614		1,459,614	2,740,387				1,224,745		0001	
Interest Rate Swap /51336/[Semi-Annual] FIXED [2.7051%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	12/27/2012	12/31/2042		50,000,000	LIBOR [2.7051%			(247,089)	1,459,614		1,459,614	2,740,387				1,224,745		0001	
Interest Rate Swap /51337/[Semi-Annual] FIXED [2.7051%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	12/27/2012	12/31/2042		50,000,000	LIBOR [2.7051%			(247,089)	1,459,614		1,459,614	2,740,387				1,224,745		0001	
Interest Rate Swap /51338/[Semi-Annual] FIXED [2.7051%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	12/27/2012	12/31/2042		50,000,000	LIBOR [2.7051%			(247,089)	1,459,614		1,459,614	2,740,387				1,224,745		0001	
Interest Rate Swap /51339/[Semi-Annual] FIXED [2.7051%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	12/27/2012	12/31/2042		50,000,000	LIBOR [2.7051%			(247,089)	1,459,614		1,459,614	2,740,387				1,224,745		0001	
Interest Rate Swap /51340/[Semi-Annual] FIXED [2.7051%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	12/27/2012	12/31/2042		50,000,000	LIBOR [2.7051%			(247,089)	1,459,614		1,459,614	2,740,387				1,224,745		0001	
Interest Rate Swap /51509/[Semi-Annual] FIXED [2.6833%/Quarterly LIBOR 2.79388%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	01/02/2013	01/04/2033		9,300,000	LIBOR [2.6833%			(43,818)	175,162		175,162	400,050				174,049		0001	
Interest Rate Swap /51554/[Semi-Annual] FIXED [2.6733%/Quarterly LIBOR 2.79388%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	01/02/2013	01/04/2033		9,300,000	LIBOR [2.6733%			(42,888)	146,257		146,257	368,361				174,049		0001	
Interest Rate Swap /51721/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.791%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	01/04/2013	01/09/2033		6,800,000	3.791% [LIBOR]				455,915		455,915	(179,676)				127,353		0001	
Interest Rate Swap /51737/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.937%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	01/04/2013	01/08/2043		6,800,000	2.937% [LIBOR]			49,735	115,499		115,499	(385,242)				166,635		0001	

E18.91

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /51738/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 3.058%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	01/04/2013	01/08/2043		14,400,000	3.058% [LIBOR]			122,745	557,525		557,525	(826,244)				352,873		0001	
Interest Rate Swap /51739/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 3.32125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJMYJLJN8C3868	01/04/2013	01/08/2043		8,300,000	3.32125% [LIBOR]			92,599	652,600		652,600	(589,246)				203,392		0001	
Interest Rate Swap /51740/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 3.19%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6KMZ0031MB27	01/04/2013	01/08/2043		4,700,000	3.19% [LIBOR]			46,267	279,581		279,581	(309,316)				115,174		0001	
Interest Rate Swap /51831/[Semi-Annual] FIXED [2.7653%]/Quarterly LIBOR 2.40806%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	01/04/2013	01/08/2033		9,300,000	LIBOR [2.7653%]			(52,052)	41,111		41,111	374,487				174,173		0001	
Interest Rate Swap /52113/[Semi-Annual] FIXED [2.6973%]/Quarterly LIBOR 2.43631%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG 7LTFWZY1ONSX80621K86	01/10/2013	01/14/2033		9,300,000	2.6973% [LIBOR]			(46,284)	114,972		114,972	367,859				174,235		0001	
Interest Rate Swap /52301/[Quarterly] LIBOR [2.44881%]/Semi-Annual FIXED 4.325%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	01/15/2013	01/17/2028		60,000,000	4.325% [LIBOR]			1,274,000	7,949,845		7,949,845	(2,541,158)				902,497		0001	
Interest Rate Swap /52417/[Semi-Annual] FIXED [2.8793%]/Quarterly LIBOR 2.469%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	01/17/2013	01/22/2043		7,200,000	LIBOR [2.8793%]			(49,077)	(39,427)		(39,427)	433,968				176,584		0001	
Interest Rate Swap /52675/[Semi-Annual] FIXED [2.83375%]/Quarterly LIBOR 2.48738%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJMYJLJN8C3868	01/22/2013	01/24/2043		7,200,000	2.83375% [LIBOR]			(46,060)	59,892		59,892	462,560				176,620		0001	
Interest Rate Swap /52894/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.533%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJMYJLJN8C3868	01/25/2013	01/29/2028		90,000,000	2.533% [LIBOR]			312,575	(1,475,304)		(1,475,304)	(2,532,396)				1,355,987		0001	
Interest Rate Swap /52895/[Semi-Annual] FIXED [1.45%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WEFA76	01/25/2013	01/29/2020		72,000,000	LIBOR [1.45%]			529,700	967,625		967,625	61,578				374,123		0001	
Interest Rate Swap /52896/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.948%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WEFA76	01/25/2013	01/29/2043		13,000,000	2.948% [LIBOR]			99,100	188,105		188,105	(755,591)				318,964		0001	

E18.92

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /53090/[Semi-Annual] FIXED [2.997%/Quarterly LIBOR 2.52663%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC . G56SEF7VJP5170UK5573	.01/29/2013	.01/31/2043		7,300,000	LIBOR [2.997%			(58,933)	(193,969)		(193,969)	441,151				179,111		0001	
Interest Rate Swap /53193/[Semi-Annual] FIXED [3.037%/Quarterly LIBOR 2.541%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	.01/30/2013	.02/01/2043		9,800,000	LIBOR [3.037%			(83,109)	(327,195)		(327,195)	616,408				240,500		0001	
Interest Rate Swap /53875/[Semi-Annual] FIXED [3.034%/Quarterly LIBOR 2.61613%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	.02/13/2013	.02/15/2043		7,300,000	LIBOR [3.034%			(63,580)	(237,908)		(237,908)	464,825				179,296		0001	
Interest Rate Swap /53962/[Semi-Annual] FIXED [2.0835%/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	.02/14/2013	.02/19/2023		50,000,000	LIBOR [2.0835%			39,384	943,658		943,658	559,186				508,675		0001	
Interest Rate Swap /53963/[Semi-Annual] FIXED [2.852%/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	.02/14/2013	.02/19/2033		14,000,000	LIBOR [2.852%			(96,562)	(88,313)		(88,313)	564,019				263,222		0001	
Interest Rate Swap /54003/[Semi-Annual] FIXED [1.524%/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	.02/14/2013	.02/19/2020		55,000,000	LIBOR [1.524%			351,048	734,511		734,511	108,895				293,620		0001	
Interest Rate Swap /54134/[Semi-Annual] FIXED [3.041%/Quarterly LIBOR 2.64581%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	.02/19/2013	.02/21/2043		7,300,000	LIBOR [3.041%			(64,329)	(249,465)		(249,465)	460,961				179,371		0001	
Interest Rate Swap /55191/[Semi-Annual] FIXED [2.972%/Quarterly LIBOR 2.76575%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	.03/05/2013	.03/07/2043		7,300,000	LIBOR [2.972%			(58,983)	(171,307)		(171,307)	418,641				179,519		0001	
Interest Rate Swap /55272/[Semi-Annual] FIXED [3.0355%/Quarterly LIBOR 2.77106%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	.03/07/2013	.03/11/2043		7,300,000	LIBOR [3.0355%			(63,333)	(254,965)		(254,965)	421,424				179,556		0001	
Interest Rate Swap /55464/[Semi-Annual] FIXED [2.6835%/Quarterly LIBOR 2.77594%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	.03/08/2013	.03/12/2028		30,000,000	LIBOR [2.6835%			(154,267)	14,204		14,204	797,416				454,973		0001	
Interest Rate Swap /55483/[Semi-Annual] FIXED [2.927%/Quarterly LIBOR 2.77594%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	.03/08/2013	.03/12/2033		140,000,000	LIBOR [2.927%			(1,060,813)	(2,057,325)		(2,057,325)	5,945,295				2,638,731		0001	

E18.93

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /55707/[Semi-Annual] FIXED [3.1075%]/Quarterly LIBOR 2.80069%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMIPR08K5P83	03/14/2013	03/18/2043		7,400,000	LIBOR [3.1075%]			(67,964)	(346,775)		(346,775)	467,173				182,091		0001	
Interest Rate Swap /55839/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 3.049%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	03/18/2013	03/20/2043		15,000,000	3.049% [LIBOR]			128,418	528,743		528,743	(960,946)				369,104		0001	
Interest Rate Swap /55840/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 3.475%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	03/18/2013	03/21/2043		15,000,000	3.475% [LIBOR]			190,660	1,682,713		1,682,713	(1,048,383)				369,180		0001	
Interest Rate Swap /55848/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 3.18875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGJYYJLNB8C3868	03/18/2013	03/20/2043		26,700,000	3.18875% [LIBOR]			265,898	1,476,381		1,476,381	(1,860,306)				657,004		0001	
Interest Rate Swap /55856/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 3.33125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6KMZ0031MB27	03/18/2013	03/20/2043		8,600,000	3.33125% [LIBOR]			97,900	733,966		733,966	(586,669)				211,619		0001	
Interest Rate Swap /55859/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.972%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XB11	03/18/2013	03/20/2033		12,200,000	3.972% [LIBOR]				1,024,257		1,024,257	(246,392)				230,108		0001	
Interest Rate Swap /55860/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.957%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/18/2013	03/20/2033		8,200,000	3.957% [LIBOR]				474,534		474,534	(163,028)				154,663		0001	
Interest Rate Swap /55861/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.891%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/18/2013	03/20/2033		2,100,000	3.891% [LIBOR]				63,204		63,204	(28,183)				39,609		0001	
Interest Rate Swap /55862/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 3.69%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/18/2013	03/20/2043		15,900,000	3.69% [LIBOR]			165,290	2,349,050		2,349,050	(1,014,144)				391,250		0001	
Interest Rate Swap /55863/[Quarterly] LIBOR [0.0%]/Semi-Annual FIXED 3.804%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/18/2013	03/20/2043		17,100,000	3.804% [LIBOR]				2,659,389		2,659,389	(778,662)				420,778		0001	
Interest Rate Swap /56347/[Semi-Annual] FIXED [2.01375%]/Quarterly LIBOR 2.80763%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMIPR08K5P83	03/28/2013	04/03/2023		50,000,000	LIBOR [2.01375%]			98,544	1,122,383		1,122,383	528,602				515,994		0001	
Interest Rate Swap /56786/[Semi-Annual] FIXED [2.773%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/05/2013	04/09/2043		50,000,000	LIBOR [2.773%]			(284,175)	872,478		872,478	2,806,248				1,231,868		0001	
Interest Rate Swap /56787/[Semi-Annual] FIXED [2.773%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/05/2013	04/09/2043		50,000,000	LIBOR [2.773%]			(284,175)	872,478		872,478	2,806,248				1,231,868		0001	

E18.94

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /56792/[Semi-Annual] FIXED [1.337%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	04/05/2013	04/09/2020		60,000,000	LIBOR [1.337%			520,590	1,039,887		1,039,887	24,305				339,411		0001	
Interest Rate Swap /57066/[Semi-Annual] FIXED [2.245%/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	04/11/2013	04/15/2025		20,000,000	LIBOR [2.245%			(9,076)	414,712		414,712	317,708				250,799		0001	
Interest Rate Swap /57068/[Semi-Annual] FIXED [2.7525%/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	04/11/2013	04/15/2033		100,000,000	LIBOR [2.7525%			(552,882)	840,629		840,629	3,889,133				1,890,767		0001	
Interest Rate Swap /57159/[Semi-Annual] FIXED [2.444%/Quarterly LIBOR 2.43644%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	04/12/2013	04/16/2028		8,000,000	LIBOR [2.444%			(19,570)	175,252		175,252	187,375				121,984		0001	
Interest Rate Swap /58050/[Semi-Annual] FIXED [2.595%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	05/01/2013	05/03/2033		15,000,000	LIBOR [2.595%			(60,766)	383,902		383,902	597,360				284,011		0001	
Interest Rate Swap /58052/[Semi-Annual] FIXED [2.352%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/01/2013	05/03/2028		25,000,000	LIBOR [2.352%			(40,526)	742,629		742,629	568,364				382,018		0001	
Interest Rate Swap /58055/[Semi-Annual] FIXED [1.82%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A.	05/01/2013	05/03/2023		110,000,000	LIBOR [1.82%			406,885	3,386,093		3,386,093	1,002,516				1,145,797		0001	
Interest Rate Swap /58056/[Semi-Annual] FIXED [2.095%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/01/2013	05/03/2025		32,000,000	LIBOR [2.095%			30,367	963,923		963,923	447,299				403,187		0001	
Interest Rate Swap /58057/[Semi-Annual] FIXED [1.27875%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	05/01/2013	05/03/2020		95,000,000	LIBOR [1.27875%			865,588	1,782,696		1,782,696	10,610				551,900		0001	
Interest Rate Swap /58181/[Quarterly] LIBOR [2.59125%/Semi-Annual] FIXED 2.765%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/03/2013	05/08/2043		50,000,000	2.765% [LIBOR]			291,703	(937,186)		(937,186)	(2,812,806)				1,233,896		0001	
Interest Rate Swap /58671/[Semi-Annual] FIXED [2.982%/Quarterly LIBOR 2.61413%	YA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG	05/10/2013	05/14/2043		7,200,000	LIBOR [2.982%			(58,535)	(171,396)		(171,396)	451,733				177,718		0001	

E18.95

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /58684/[Semi-Annual] FIXED [3.03125%]/Quarterly LIBOR 2.61413%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON	05/10/2013	05/14/2043		7,200,000	LIBOR [3.03125%]			(62,081)	(241,282)		(241,282)	448,424				177,718		0001	
Interest Rate Swap /58708/[Semi-Annual] FIXED [3.068%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	05/13/2013	05/15/2043		100,000,000	LIBOR [3.068%]			(904,957)	(3,909,463)		(3,909,463)	6,462,312				2,468,805		0001	
Interest Rate Swap /58788/[Semi-Annual] FIXED [2.0425%]/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/14/2013	05/16/2023		51,000,000	LIBOR [2.0425%]			60,796	1,111,801		1,111,801	550,194				533,675		0001	
Interest Rate Swap /58789/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 2.6%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/14/2013	05/16/2028		88,000,000	2.6% [LIBOR]			385,697	(803,010)		(803,010)	(2,217,856)				1,347,579		0001	
Interest Rate Swap /58790/[Semi-Annual] FIXED [1.465%]/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/14/2013	05/16/2020		124,000,000	LIBOR [1.465%]			863,918	2,065,135		2,065,135	241,007				728,335		0001	
Interest Rate Swap /58791/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 2.32%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/14/2013	05/16/2025		46,000,000	2.32% [LIBOR]			72,814	(781,852)		(781,852)	(743,988)				580,949		0001	
Interest Rate Swap /58798/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 3.031%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	05/14/2013	05/16/2043		50,000,000	3.031% [LIBOR]			434,646	1,619,841		1,619,841	(3,206,659)				1,234,403		0001	
Interest Rate Swap /58799/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 2.8425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	05/14/2013	05/16/2033		87,000,000	2.8425% [LIBOR]			592,289	378,812		378,812	(3,679,360)				1,649,562		0001	
Interest Rate Swap /58800/[Semi-Annual] FIXED [3.08%]/Quarterly LIBOR 2.629%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA	05/14/2013	05/16/2043		7,300,000	LIBOR [3.08%]			(67,035)	(316,646)		(316,646)	424,500				180,223		0001	
Interest Rate Swap /58850/[Semi-Annual] FIXED [3.111%]/Quarterly LIBOR 2.64%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	UBS AG	05/15/2013	05/17/2043		7,300,000	LIBOR [3.111%]			(69,439)	(344,906)		(344,906)	402,101				180,223		0001	
Interest Rate Swap /59029/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 3.0525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/17/2013	05/21/2043		10,000,000	3.0525% [LIBOR]			89,272	332,905		332,905	(602,061)				246,931		0001	
Interest Rate Swap /59030/[Semi-Annual] FIXED [1.465%]/Quarterly LIBOR 2.64581%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	05/17/2013	05/21/2020		59,000,000	LIBOR [1.465%]			409,919	989,479		989,479	121,285				347,800		0001	

E18.96

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /59031/[Quarterly] LIBOR [2.6458%]/Semi-Annual FIXED 2.612%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMU/SFPUBM8P0R8K5P83	.05/17/2013	.05/21/2028		31,000,000	2.612% [LIBOR]			140,189	(219,798)		(219,798)	(826,706)				474,968		0001	
Interest Rate Swap /59529/[Semi-Annual] FIXED [2.2845%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL 11E8VN30JCEQV1H4R804	.05/28/2013	.05/30/2023		110,000,000	LIBOR [2.2845%]			(132,153)	1,308,000		1,308,000	1,518,096				1,156,309		0001	
Interest Rate Swap /59544/[Semi-Annual] FIXED [2.8125%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBN630	.05/28/2013	.09/03/2022		1,000,000	LIBOR [2.8125%]			(6,465)	(8,099)		(8,099)	17,487				9,592		0001	
Interest Rate Swap /59546/[Semi-Annual] FIXED [1.72375%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	.05/28/2013	.05/30/2020		300,000,000	LIBOR [1.72375%]			1,321,833	4,055,400		4,055,400	1,409,729				1,781,151		0001	
Interest Rate Swap /59890/[Quarterly] LIBOR [2.73613%]/Semi-Annual FIXED 2.2525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL 11E8VN30JCEQV1H4R804	.05/31/2013	.06/04/2023		140,000,000	2.2525% [LIBOR]			122,906	(1,872,407)		(1,872,407)	(1,899,179)				1,473,330		0001	
Interest Rate Swap /60252/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 3.214%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL 11E8VN30JCEQV1H4R804	.06/05/2013	.06/07/2043		300,000,000	3.214% [LIBOR]			3,149,954	19,638,068		19,638,068	(20,073,023)				7,415,524		0001	
Interest Rate Swap /60253/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 3.203%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL 11E8VN30JCEQV1H4R804	.06/05/2013	.06/07/2043		150,000,000	3.203% [LIBOR]			1,558,477	9,519,274		9,519,274	(10,013,709)				3,707,762		0001	
Interest Rate Swap /60254/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 3.2%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL 11E8VN30JCEQV1H4R804	.06/05/2013	.06/07/2043		150,000,000	3.2% [LIBOR]			1,553,977	9,437,521		9,437,521	(10,007,490)				3,707,762		0001	
Interest Rate Swap /60255/[Quarterly] LIBOR [2.76575%]/Semi-Annual FIXED 3.18375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL 11E8VN30JCEQV1H4R804	.06/05/2013	.06/07/2043		150,000,000	3.18375% [LIBOR]			1,529,602	8,994,694		8,994,694	(9,973,804)				3,707,762		0001	
Interest Rate Swap /60332/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 3.164%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZ1Z7F32WEFA76	.06/06/2013	.06/10/2043		150,000,000	3.164% [LIBOR]			1,494,209	8,000,858		8,000,858	(9,279,929)				3,707,762		0001	
Interest Rate Swap /60333/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 3.165%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5G8EF7JP5170UK5573	.06/06/2013	.06/10/2043		150,000,000	3.165% [LIBOR]			1,495,709	8,552,075		8,552,075	(9,539,913)				3,707,762		0001	

E18.97

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /60334/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 3.128%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.06/06/2013	.06/10/2043		100,000,000	3.128% [LIBOR]			960,140	4,681,198		4,681,198	(6,138,503)				2,471,841		0001	
Interest Rate Swap /60335/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 3.129%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.06/06/2013	.06/10/2043		100,000,000	3.129% [LIBOR]			961,140	5,047,557		5,047,557	(6,310,820)				2,471,841		0001	
Interest Rate Swap /60337/[Semi-Annual] FIXED [3.13375%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L1QCEMIK50	.06/06/2013	.06/10/2043		100,000,000	LIBOR [3.13375%]			(965,890)	(5,123,136)		(5,123,136)	5,555,805				2,471,841		0001	
Interest Rate Swap /60338/[Semi-Annual] FIXED [3.135%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L1QCEMIK50	.06/06/2013	.06/10/2043		100,000,000	LIBOR [3.135%]			(967,140)	(5,145,833)		(5,145,833)	5,557,400				2,471,841		0001	
Interest Rate Swap /60417/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 3.235%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.06/07/2013	.06/11/2043		50,000,000	3.235% [LIBOR]			533,537	3,310,490		3,310,490	(3,141,556)				1,236,174		0001	
Interest Rate Swap /60419/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 3.235%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	.06/07/2013	.06/11/2043		50,000,000	3.235% [LIBOR]			533,537	3,550,445		3,550,445	(3,231,513)				1,236,174		0001	
Interest Rate Swap /60420/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 3.238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	.06/07/2013	.06/11/2043		50,000,000	3.238% [LIBOR]			535,037	3,577,693		3,577,693	(3,233,566)				1,236,174		0001	
Interest Rate Swap /60421/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 3.234%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	.06/07/2013	.06/11/2043		50,000,000	3.234% [LIBOR]			533,037	3,541,363		3,541,363	(3,230,828)				1,236,174		0001	
Interest Rate Swap /60422/[Semi-Annual] FIXED [3.24625%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	.06/07/2013	.06/11/2043		50,000,000	LIBOR [3.24625%]			(539,162)	(3,673,134)		(3,673,134)	2,969,678				1,236,174		0001	
Interest Rate Swap /60423/[Semi-Annual] FIXED [3.239%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	.06/07/2013	.06/11/2043		50,000,000	LIBOR [3.239%]			(535,537)	(3,607,202)		(3,607,202)	2,967,527				1,236,174		0001	
Interest Rate Swap /60424/[Semi-Annual] FIXED [3.2425%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	.06/07/2013	.06/11/2043		50,000,000	LIBOR [3.2425%]			(537,287)	(3,639,031)		(3,639,031)	2,968,566				1,236,174		0001	

E18.98

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /60425/[Semi-Annual] FIXED [3.24%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XB011	.06/07/2013	.06/11/2043		.50,000,000	LIBOR [3.24%]			(.536,037)	(.3,616,297)		(.3,616,297)	2,967,824					1,236,174	0001	
Interest Rate Swap /60426/[Semi-Annual] FIXED [3.23%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L1QCEMIK50	.06/07/2013	.06/11/2043		100,000,000	LIBOR [3.23%]			(1,062,073)	(6,870,498)		(6,870,498)	5,680,122					2,472,347	0001	
Interest Rate Swap /60427/[Semi-Annual] FIXED [3.2375%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L1QCEMIK50	.06/07/2013	.06/11/2043		50,000,000	LIBOR [3.2375%]			(.534,787)	(3,457,809)		(3,457,809)	2,841,656					1,236,174	0001	
Interest Rate Swap /60428/[Semi-Annual] FIXED [3.24%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L1QCEMIK50	.06/07/2013	.06/11/2043		50,000,000	LIBOR [3.24%]			(.536,037)	(3,526,044)		(3,526,044)	2,846,441					1,236,174	0001	
Interest Rate Swap /60429/[Semi-Annual] FIXED [3.2325%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM8T61CT2L1QCEMIK50	.06/07/2013	.06/11/2043		50,000,000	LIBOR [3.2325%]			(.532,287)	(3,503,484)		(3,503,484)	2,844,846					1,236,174	0001	
Interest Rate Swap /60431/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 3.2275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. ES70DZIWZ7F32TWEFA76	.06/07/2013	.06/11/2043		50,000,000	3.2275% [LIBOR]			529,787	3,242,494		3,242,494	(3,136,544)					1,236,174	0001	
Interest Rate Swap /60432/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 3.24%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	.06/07/2013	.06/11/2043		50,000,000	3.24% [LIBOR]			536,037	3,595,764		3,595,858	(3,234,935)					1,236,174	0001	
Interest Rate Swap /61304/[Semi-Annual] FIXED [1.793%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBN30	.06/19/2013	.06/21/2020		125,000,000	LIBOR [1.793%]			513,667	1,653,023		1,653,023	655,264					760,345	0001	
Interest Rate Swap /61305/[Semi-Annual] FIXED [3.226%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBN30	.06/19/2013	.06/21/2043		50,000,000	LIBOR [3.226%]			(.511,033)	(3,209,180)		(3,209,180)	3,160,606					1,236,932	0001	
Interest Rate Swap /61306/[Semi-Annual] FIXED [2.361%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBN30	.06/19/2013	.06/21/2023		100,000,000	LIBOR [2.361%]			(.157,067)	917,973		917,973	1,393,224					1,058,301	0001	
Interest Rate Swap /61402/[Semi-Annual] FIXED [3.29375%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBN30	.06/20/2013	.06/24/2033		150,000,000	LIBOR [3.29375%]			(1,611,135)	(8,424,039)		(8,424,039)	6,812,477					2,853,945	0001	

E18.99

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /61403/[Semi-Annual] FIXED [3.29375%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.06/20/2013		125,000,000	LIBOR [3.29375%]			(1,342,612)	(7,020,033)		(7,020,033)	5,677,065				2,378,287		0001	
Interest Rate Swap /61485/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 3.951%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.06/21/2013		200,000,000	3.951% [LIBOR]			3,572,960	10,777,593		10,777,593	(5,728,349)				2,034,699		0001	
Interest Rate Swap /61501/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.674%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.06/21/2013		125,000,000	3.674% [LIBOR]			1,855,131	5,636,004		5,636,004	(3,275,107)				1,302,042		0001	
Interest Rate Swap /61509/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 3.90875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.06/21/2013		50,000,000	3.90875% [LIBOR]			853,056	8,883,731		8,883,731	(3,416,656)				1,186,908		0001	
Interest Rate Swap /61510/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 3.8075%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.06/21/2013		60,000,000	3.8075% [LIBOR]			969,631	6,525,401		6,525,401	(2,755,733)				1,064,049		0001	
Interest Rate Swap /61511/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 3.745%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.06/21/2013		150,000,000	3.745% [LIBOR]			2,358,152	6,832,706		6,832,706	(3,997,757)				1,522,334		0001	
Interest Rate Swap /61532/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.5625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.06/24/2013		200,000,000	5.5625% [LIBOR]			6,742,103	68,300,721		68,300,721	(14,073,868)				3,883,298		0001	
Interest Rate Swap /62329/[Semi-Annual] FIXED [3.572%]/Quarterly LIBOR 2.41425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.07/08/2013		70,000,000	LIBOR [3.572%]			(957,564)	(6,311,481)		(6,311,481)	3,382,344				1,334,138		0001	
Interest Rate Swap /64277/[Semi-Annual] FIXED [2.76%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.08/08/2013		17,000,000	LIBOR [2.76%]			(100,023)	(133,851)		(133,851)	305,721				182,701		0001	
Interest Rate Swap /64328/[Semi-Annual] FIXED [3.61875%]/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.08/12/2013		100,000,000	3.61875% [LIBOR]			(1,449,730)	(13,607,154)		(13,607,154)	6,886,360				2,480,927		0001	
Interest Rate Swap /64329/[Semi-Annual] FIXED [2.75%]/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.08/12/2013		150,000,000	LIBOR [2.75%]			(871,470)	(1,119,096)		(1,119,096)	2,683,518				1,612,064		0001	
Interest Rate Swap /64330/[Semi-Annual] FIXED [2.751%]/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	.08/12/2013		150,000,000	LIBOR [2.751%]			(872,970)	(1,125,628)		(1,125,628)	2,684,933				1,612,064		0001	

E18.100

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /64453/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 3.5825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/14/2013	08/16/2033	36,000,000	3.5825% [LIBOR]			511,485	3,306,624		3,306,624	(1,755,483)				688,485		0001	
Interest Rate Swap /64454/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 3.3865%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/14/2013	08/16/2028	30,000,000	3.3865% [LIBOR]			367,438	1,704,659		1,704,659	(1,014,030)				465,484		0001	
Interest Rate Swap /64491/[Semi-Annual] FIXED [2.9525%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/16/2013	08/20/2023	65,000,000	LIBOR [2.9525%]			(513,883)	(1,062,159)		(1,062,159)	1,289,781				700,071		0001	
Interest Rate Swap /64494/[Semi-Annual] FIXED [2.95125%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/16/2013	08/20/2023	110,000,000	LIBOR [2.95125%]			(868,273)	(1,791,488)		(1,791,488)	2,181,409				1,184,736		0001	
Interest Rate Swap /64498/[Semi-Annual] FIXED [2.95125%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/16/2013	08/20/2023	110,000,000	LIBOR [2.95125%]			(868,273)	(1,791,488)		(1,791,488)	2,181,409				1,184,736		0001	
Interest Rate Swap /64759/[Semi-Annual] FIXED [2.46%]/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/20/2013	08/22/2019	125,000,000	LIBOR [2.46%]			(373,129)	230,524		230,524	1,148,995				500,000		0001	
Interest Rate Swap /64765/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 3.6975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/21/2013	08/23/2033	27,000,000	3.6975% [LIBOR]			413,576	2,861,243		2,861,243	(1,350,461)				516,717		0001	
Interest Rate Swap /64988/[Semi-Annual] FIXED [3.0575%]/Quarterly LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/23/2013	08/28/2023	125,000,000	LIBOR [3.0575%]			(1,115,480)	(2,632,234)		(2,632,234)	2,615,490				1,349,190		0001	
Interest Rate Swap /64989/[Semi-Annual] FIXED [3.051%]/Quarterly LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/23/2013	08/28/2023	30,000,000	LIBOR [3.051%]			(265,765)	(623,167)		(623,167)	625,878				323,805		0001	
Interest Rate Swap /65362/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.345%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/28/2013	08/30/2020	106,000,000	2.345% [LIBOR]			191,477	(589,770)		(589,770)	(1,168,838)				682,857		0001	
Interest Rate Swap /65363/[Semi-Annual] FIXED [3.7175%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/28/2013	08/30/2043	16,000,000	LIBOR [3.7175%]			(248,502)	(2,472,637)		(2,472,637)	1,125,561				397,351		0001	

E18.101

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /65643/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 3.77%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/29/2013		64,000,000	3.77% [LIBOR]			1,026,544	10,484,853		10,484,853	(4,551,663)				1,589,727		0001	
Interest Rate Swap /65645/[Semi-Annual] FIXED [3.2225%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/29/2013		169,000,000	LIBOR [3.2225%]			(1,785,442)	(6,178,795)		(6,178,795)	4,325,915				2,183,961		0001	
Interest Rate Swap /65646/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 3.4492%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/29/2013		124,000,000	3.4492% [LIBOR]			1,591,137	7,713,654		7,713,654	(4,300,273)				1,928,987		0001	
Interest Rate Swap /65647/[Semi-Annual] FIXED [3.65375%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/29/2013		272,000,000	LIBOR [3.65375%]			(4,046,611)	(27,381,567)		(27,381,567)	13,536,062				5,210,770		0001	
Interest Rate Swap /65708/[At Maturity] LIBOR [2.73813%]/At Maturity FIXED 3.585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	08/29/2013		238,907,771	3.585% [LIBOR]			3,809,161	20,390,265		20,390,265	(8,697,097)				3,519,331		0001	
Interest Rate Swap /66513/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 2.47%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	09/12/2013		45,000,000	2.47% [LIBOR]			128,067	(165,197)		(165,197)	(550,673)				294,226		0001	
Interest Rate Swap /67280/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 3.506%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	09/24/2013		60,000,000	3.506% [LIBOR]			772,598	4,959,192		4,959,192	(2,891,099)				1,151,781		0001	
Interest Rate Swap /67511/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.666%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	09/30/2013		137,000,000	3.666% [LIBOR]			1,991,068	20,726,382		20,726,382	(9,162,452)				3,408,520		0001	
Interest Rate Swap /67554/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.6625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	09/30/2013		124,000,000	3.6625% [LIBOR]			1,797,794	18,680,220		18,680,220	(8,287,136)				3,085,084		0001	
Interest Rate Swap /68191/[Quarterly] LIBOR [2.41425%]/Semi-Annual FIXED 2.2%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	10/08/2013		23,000,000	2.2% [LIBOR]			(932)	(191,676)		(191,676)	(220,743)				153,860		0001	
Interest Rate Swap /68355/[Semi-Annual] FIXED [3.536%]/Quarterly LIBOR 2.42044%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	10/09/2013		35,000,000	LIBOR [3.536%]			(466,829)	(3,030,213)		(3,030,213)	1,698,487				672,783		0001	

E18.102

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /68747/[Semi-Annual] LIBOR [3.65213%]/Semi-Annual FIXED 4.09%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	10/16/2013	10/30/2023		60,000,000	4.09% [LIBOR]			455,707	727,434		727,434	(1,056,990)				659,317		0001	
Interest Rate Swap /69314/[Semi-Annual] FIXED [2.7%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /GOLDMAN SACHS/CLEARED THROUGH CME	10/31/2013	11/04/2023		40,000,000	LIBOR [2.7%]			(204,222)	(211,264)		(211,264)	709,492				440,454		0001	
Interest Rate Swap /69642/[Quarterly] LIBOR [2.58925%]/Semi-Annual FIXED 3.901%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	11/05/2013	11/07/2043		37,200,000	3.901% [LIBOR]			639,053	7,021,325		7,021,325	(2,721,266)				927,392		0001	
Interest Rate Swap /69643/[Quarterly] LIBOR [2.58925%]/Semi-Annual FIXED 4.254%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	11/05/2013	11/07/2043		24,200,000	4.254% [LIBOR]			501,154	6,135,612		6,135,612	(1,886,482)				603,304		0001	
Interest Rate Swap /69644/[Quarterly] LIBOR [2.58925%]/Semi-Annual FIXED 4.46%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	11/05/2013	11/07/2043		29,100,000	4.46% [LIBOR]			79,565	8,478,244		8,478,244	(1,706,849)				725,460		0001	
Interest Rate Swap /69645/[Quarterly] LIBOR [0.2377%]/Semi-Annual FIXED 4.545%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /GOLDMAN SACHS/CLEARED THROUGH CME	11/05/2013	11/07/2033		21,500,000	4.545% [LIBOR]				1,144,972		1,144,972	(297,391)				414,259		0001	
Interest Rate Swap /69646/[Quarterly] LIBOR [0.2377%]/Semi-Annual FIXED 4.5225%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /GOLDMAN SACHS/CLEARED THROUGH CME	11/05/2013	11/09/2043		36,600,000	4.5225% [LIBOR]				9,862,826		9,862,826	(1,806,599)				912,434		0001	
Interest Rate Swap /69647/[Quarterly] LIBOR [0.2377%]/Semi-Annual FIXED 4.525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /GOLDMAN SACHS/CLEARED THROUGH CME	11/05/2013	11/07/2043		29,200,000	4.525% [LIBOR]				6,270,858		6,270,858	(1,363,687)				727,953		0001	
Interest Rate Swap /69648/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 4.0915%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /GOLDMAN SACHS/CLEARED THROUGH CME	11/05/2013	11/09/2043		14,000,000	4.0915% [LIBOR]			267,098	3,132,465		3,132,465	(1,059,993)				349,019		0001	
Interest Rate Swap /69649/[Quarterly] LIBOR [0.2377%]/Semi-Annual FIXED 4.4875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /GOLDMAN SACHS/CLEARED THROUGH CME	11/05/2013	11/07/2043		20,500,000	4.4875% [LIBOR]				3,681,412		3,681,412	(891,567)				511,063		0001	

E18.103

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /70059/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 2.87%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/08/2013		27,400,000	2.87% [LIBOR]			191,354	358,607		358,607	(531,153)				302,333		0001	
Interest Rate Swap /70060/[Semi-Annual] FIXED [3.62875%]/Quarterly LIBOR 2.61813%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/08/2013		16,420,000	LIBOR [3.62875%]			(239,259)	(1,615,802)		(1,615,802)	818,119				316,591		0001	
Interest Rate Swap /70401/[Semi-Annual] FIXED [3.36375%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/14/2013		50,000,000	LIBOR [3.36375%]			(596,061)	(2,790,882)		(2,790,882)	1,747,344				795,299		0001	
Interest Rate Swap /70402/[Semi-Annual] FIXED [3.235%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/14/2013		50,000,000	LIBOR [3.235%]			(524,653)	(2,217,217)		(2,217,217)	1,676,697				793,725		0001	
Interest Rate Swap /70465/[Semi-Annual] FIXED [3.068%]/Quarterly LIBOR 2.61613%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/14/2013		100,000,000	LIBOR [3.068%]			(904,957)	(3,551,370)		(3,551,370)	6,098,024				2,468,805		0001	
Interest Rate Swap /70584/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 3.972%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/21/2013		6,000,000	3.972% [LIBOR]			108,470	1,212,285		1,212,285	(445,669)				149,700		0001	
Interest Rate Swap /70585/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 4.174%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/21/2013		11,800,000	4.174% [LIBOR]			237,160	2,822,233		2,822,233	(908,943)				294,409		0001	
Interest Rate Swap /70586/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 4.331%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/21/2013		5,000,000	4.331% [LIBOR]			108,341	928,481		928,481	(286,211)				96,501		0001	
Interest Rate Swap /70587/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 4.35625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/21/2013		16,500,000	LIBOR [4.35625%]			361,693	4,499,009		4,499,009	(1,311,932)				411,674		0001	
Interest Rate Swap /70588/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 4.6255%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/21/2013		16,700,000	4.6255% [LIBOR]			30,190	3,713,157		3,713,157	(591,592)				322,422		0001	
Interest Rate Swap /70589/[Quarterly] LIBOR [0.2376%]/Semi-Annual FIXED 4.852%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/21/2013		8,700,000	4.852% [LIBOR]				709,468		709,468	(90,694)				136,939		0001	
Interest Rate Swap /70591/[Quarterly] LIBOR [0.2376%]/Semi-Annual FIXED 4.732%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	11/21/2013		13,500,000	4.732% [LIBOR]				2,664,661		2,664,661	(364,875)				260,553		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /70656/(Semi-Annual) FIXED [2.805%]/Quarterly LIBOR 2.69119%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	11/25/2013		60,000,000	LIBOR [2.805%]			(388,088)	(610,743)		(610,743)	1,133,027				664,756		0001	
Interest Rate Swap /70763/(Semi-Annual) FIXED [2.7431%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	11/26/2013		100,000,000	LIBOR [2.7431%]			(523,794)	2,316,582		2,316,582	5,593,520				2,449,490		0001	
Interest Rate Swap /70776/(Semi-Annual) FIXED [2.7431%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	11/26/2013		100,000,000	LIBOR [2.7431%]			(523,794)	2,316,582		2,316,582	5,593,520				2,449,490		0001	
Interest Rate Swap /70777/(Semi-Annual) FIXED [1.93375%]/Quarterly LIBOR 2.58925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	11/26/2013		200,000,000	LIBOR [1.93375%]			498,733	3,951,175		3,951,175	1,703,815				1,760,682		0001	
Interest Rate Swap /70778/(Semi-Annual) FIXED [2.0%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	11/26/2013		200,000,000	LIBOR [2.0%]			407,866	3,441,515		3,441,515	1,796,597				1,726,268		0001	
Interest Rate Swap /70780/(Quarterly) LIBOR [2.706%]/Semi-Annual FIXED 2.805%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	11/27/2013		100,000,000	2.805% [LIBOR]			637,985	1,024,079		1,024,079	(1,890,174)				1,107,926		0001	
Interest Rate Swap /71011/(Quarterly) LIBOR [2.797%]/Semi-Annual FIXED 6.2975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIGROUP GLOBAL MARKETS INC. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	12/10/2013		8,000,000	6.2975% [LIBOR]			326,822	3,281,116		3,281,116	(570,378)				148,324		0001	
Interest Rate Swap /71012/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 4.93%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIGROUP GLOBAL MARKETS INC. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	12/10/2013		56,000,000	4.93% [LIBOR]			1,519,086	10,656,380		10,656,380	(2,728,212)				873,851		0001	
Interest Rate Swap /71036/(Quarterly) LIBOR [2.61813%]/Semi-Annual FIXED 4.945%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIGROUP GLOBAL MARKETS INC. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	12/10/2013		200,000,000	4.945% [LIBOR]			5,546,743	38,732,257		38,732,257	(9,862,044)				3,141,656		0001	
Interest Rate Swap /71288/(Semi-Annual) FIXED [3.6715%]/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	12/17/2013		300,000,000	LIBOR [3.6715%]			(4,449,377)	(31,217,642)		(31,217,642)	15,148,749				5,803,663		0001	
Interest Rate Swap /71312/(Semi-Annual) FIXED [3.6875%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	12/18/2013		100,000,000	LIBOR [3.6875%]			(1,494,621)	(10,609,399)		(10,609,399)	5,061,868				1,934,554		0001	
Interest Rate Swap /71313/(Semi-Annual) FIXED [3.474%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBNG30	12/18/2013		57,000,000	LIBOR [3.474%]			(730,239)	(3,720,029)		(3,720,029)	2,026,774				899,896		0001	

E18.105

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /71317/(Semi-Annual) FIXED [2.309%/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/18/2013	12/20/2020		116,000,000	LIBOR [2.309%			(134,700)	790,770		790,770	1,275,025				816,132		0001	
Interest Rate Swap /71318/(Semi-Annual) FIXED [2.941%/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/18/2013	12/20/2023		34,000,000	LIBOR [2.941%			(254,361)	(562,521)		(562,521)	685,659				378,989		0001	
Interest Rate Swap /71319/(Quarterly) LIBOR [2.792%]/Semi-Annual FIXED 3.21%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/18/2013	12/20/2025		77,000,000	3.21% [LIBOR]			783,183	2,828,513		2,828,513	(1,992,032)				1,017,158		0001	
Interest Rate Swap /71321/(Quarterly) LIBOR [2.792%]/Semi-Annual FIXED 3.465%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/18/2013	12/20/2028		82,000,000	3.465% [LIBOR]			1,043,139	5,286,466		5,286,466	(2,908,684)				1,294,588		0001	
Interest Rate Swap /71322/(Quarterly) LIBOR [2.792%]/Semi-Annual FIXED 3.674%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/18/2013	12/20/2033		50,000,000	3.674% [LIBOR]			740,561	5,220,603		5,220,603	(2,523,910)				967,277		0001	
Interest Rate Swap /71323/(Quarterly) LIBOR [2.792%]/Semi-Annual FIXED 3.81875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/18/2013	12/20/2043		57,000,000	3.81875% [LIBOR]			926,747	9,928,586		9,928,586	(4,118,082)				1,424,430		0001	
Interest Rate Swap /71372/(Semi-Annual) FIXED [2.384%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/19/2013	12/23/2020		250,000,000	LIBOR [2.384%			(407,581)	1,360,317		1,360,317	2,919,675				1,758,906		0001	
Interest Rate Swap /71373/(Semi-Annual) FIXED [3.00125%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/19/2013	12/23/2023		87,000,000	LIBOR [3.00125%			(678,846)	(1,684,445)		(1,684,445)	1,802,596				971,716		0001	
Interest Rate Swap /71398/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED 3.467%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	12/20/2013	12/24/2028		44,000,000	3.467% [LIBOR]			548,830	2,844,740		2,844,740	(1,562,354)				695,353		0001	
Interest Rate Swap /71870/(Quarterly) LIBOR [2.47719%]/Semi-Annual FIXED 3.718%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	01/21/2014	01/23/2044		100,000,000	3.718% [LIBOR]			1,520,189	15,608,162		15,608,162	(7,099,992)				2,503,498		0001	
Interest Rate Swap /71898/(Quarterly) LIBOR [2.47719%]/Semi-Annual FIXED 3.717%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BNP PARIBAS LONDON /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	01/21/2014	01/23/2044		100,000,000	3.717% [LIBOR]			1,519,189	15,589,697		15,589,697	(7,098,624)				2,503,498		0001	
Interest Rate Swap /71901/(Quarterly) LIBOR [2.47719%]/Semi-Annual FIXED 3.718%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA /GOLDMAN SACHS/CLEARED THROUGH CME FOR8UP27PHTHYVLBNG30	01/21/2014	01/23/2044		100,000,000	3.718% [LIBOR]			1,520,189	15,608,162		15,608,162	(7,099,992)				2,503,498		0001	

E18.106

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /71937/[Quarterly] LIBOR [2.48738%]/Semi-Annual FIXED 3.722%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/22/2014	01/24/2044		150,000,000	3.722% [LIBOR]			2,291,962	23,523,131		23,523,131	(10,659,096)				3,755,246		0001
Interest Rate Swap /71938/[Quarterly] LIBOR [2.48738%]/Semi-Annual FIXED 3.722%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEAR THROUGH CME	01/22/2014	01/24/2044		150,000,000	3.722% [LIBOR]			2,291,962	23,523,131		23,523,131	(10,659,096)				3,755,246		0001
Interest Rate Swap /71939/[Quarterly] LIBOR [2.48738%]/Semi-Annual FIXED 3.721%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/22/2014	01/24/2044		150,000,000	3.721% [LIBOR]			2,290,462	23,495,433		23,495,433	(10,657,044)				3,755,246		0001
Interest Rate Swap /71979/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.85875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /MORGAN STANLEY/CLEARED THROUGH CME	01/24/2014	01/28/2024		150,000,000	[LIBOR] 2.85875%			1,009,583	1,938,334		1,938,334	(2,926,661)				1,690,414		0001
Interest Rate Swap /71980/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.85875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	01/24/2014	01/28/2024		150,000,000	[LIBOR] 2.85875%			1,009,583	1,938,334		1,938,334	(2,926,661)				1,690,414		0001
Interest Rate Swap /72010/[Semi-Annual] FIXED [3.17%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /GOLDMAN SACHS/CLEARED THROUGH CME	01/24/2014	06/10/2043		300,000,000	LIBOR [3.17%]			(3,006,419)	(16,188,860)		(16,188,860)	18,767,964				7,415,524		0001
Interest Rate Swap /72011/[Semi-Annual] FIXED [2.70147%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/24/2014	12/17/2042		200,000,000	LIBOR [2.70147%]			(1,024,772)	6,107,692		6,107,692	11,081,578				4,894,895		0001
Interest Rate Swap /72034/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 1.7075%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /MORGAN STANLEY/CLEARED THROUGH CME	01/27/2014	01/29/2019		200,000,000	1.7075% [LIBOR]			(956,390)	(125,519)		(125,519)	276,993				282,843		0001
Interest Rate Swap /72042/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 2.331%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	01/28/2014	01/30/2021		70,000,000	2.331% [LIBOR]			100,272	(455,507)		(455,507)	(790,583)				504,777		0001
Interest Rate Swap /72089/[Semi-Annual] FIXED [2.66385%]/Quarterly LIBOR 2.80069%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEAR THROUGH CME	01/28/2014	12/18/2042		200,000,000	LIBOR [2.66385%]			(949,562)	7,459,242		7,459,242	10,988,820				4,895,917		0001
Interest Rate Swap /72341/[Semi-Annual] FIXED [2.2425%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUIS SEC USA/CLEARED THROUGH CME	02/06/2014	10/06/2023		100,000,000	LIBOR [2.2425%]			(33,547)	1,526,662		1,526,662	1,317,887				1,092,016		0001

E18.107

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /72342/(Semi-Annual) FIXED [2.4725%/Quarterly LIBOR 2.67694%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	02/06/2014	08/23/2023		300,000,000	LIBOR [2.4725%]			(920,293)	1,392,031		1,392,031	4,589,565				3,234,579		0001	
Interest Rate Swap /72446/(Quarterly) LIBOR [2.6445%/Semi-Annual FIXED 3.304%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /MORGAN STANLEY/CLEARED THROUGH CME	02/18/2014	02/20/2029		37,000,000	3.304% [LIBOR]			422,573	1,870,256		1,870,256	(1,274,768)				589,102		0001	
Interest Rate Swap /72795/(Semi-Annual) FIXED [2.733%/Quarterly LIBOR 2.75125%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	03/03/2014	03/05/2024		110,000,000	LIBOR [2.733%]			(627,041)	(762,008)		(762,008)	2,054,153				1,251,779		0001	
Interest Rate Swap /72810/(Quarterly) LIBOR [2.75125%/Semi-Annual FIXED 3.206%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	03/03/2014	03/05/2029		12,000,000	3.206% [LIBOR]			125,164	502,505		502,505	(404,641)				191,437		0001	
Interest Rate Swap /72811/(Quarterly) LIBOR [2.75125%/Semi-Annual FIXED 2.721%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME	03/03/2014	03/05/2024		225,000,000	2.721% [LIBOR]			1,255,583	1,427,687		1,427,687	(4,176,279)				2,560,457		0001	
Interest Rate Swap /72813/(Semi-Annual) FIXED [2.166%/Quarterly LIBOR 2.75125%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME	03/03/2014	03/05/2021		30,000,000	LIBOR [2.166%]			(911)	303,481		303,481	300,151				221,472		0001	
Interest Rate Swap /72844/(Quarterly) LIBOR [2.73888%/Semi-Annual FIXED 1.6225%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	03/04/2014	03/06/2019		93,600,000	1.6225% [LIBOR]			(504,952)	(182,059)		(182,059)	125,886				198,556		0001	
Interest Rate Swap /72856/(Quarterly) LIBOR [2.73888%/Semi-Annual FIXED 1.615%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	03/04/2014	03/06/2019		283,200,000	1.615% [LIBOR]			(1,549,045)	(554,635)		(554,635)	401,814				600,758		0001	
Interest Rate Swap /72911/(Semi-Annual) FIXED [3.625%/Quarterly LIBOR 2.76575%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	03/05/2014	03/07/2044		56,000,000	LIBOR [3.625%]			(818,151)	(7,800,884)		(7,800,884)	3,929,461				1,405,310		0001	
Interest Rate Swap /72915/(Semi-Annual) FIXED [4.46%/Quarterly LIBOR 0.2344%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARED THROUGH CME	03/05/2014	03/07/2034		36,800,000	LIBOR [4.46%]				(4,183,292)		(4,183,292)	897,894				717,128		0001	
Interest Rate Swap /72923/(Semi-Annual) FIXED [4.235%/Quarterly LIBOR 0.2344%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEARED THROUGH CME	03/05/2014	03/09/2051		26,400,000	LIBOR [4.235%]				(7,015,274)		(7,015,274)	1,670,342				748,918		0001	
Interest Rate Swap /72986/(Semi-Annual) FIXED [2.917%/Quarterly LIBOR 2.77106%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /GOLDMAN SACHS/CLEARED THROUGH CME	03/07/2014	03/11/2024		120,000,000	LIBOR [2.917%]			(898,888)	(1,905,610)		(1,905,610)	2,449,376				1,368,211		0001	

E18.108

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /73276/[Quarterly] LIBOR [2.80363%]/Semi-Annual FIXED 3.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /CR SUI5 SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	03/17/2014	03/19/2034		75,000,000	3.469% [LIBOR]			960,469	5,973,389		5,973,389	(3,670,338)				1,462,981		0001	
Interest Rate Swap /73319/[Semi-Annual] FIXED [3.476%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZZN70PB21	03/18/2014	03/20/2034		13,000,000	LIBOR [3.476%]			(166,806)	(1,047,253)		(1,047,253)	636,500				253,583		0001	
Interest Rate Swap /73320/[Semi-Annual] FIXED [3.601%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZZN70PB21	03/18/2014	03/20/2044		20,000,000	LIBOR [3.601%]			(281,624)	(2,700,207)		(2,700,207)	1,395,475				502,295		0001	
Interest Rate Swap /73411/[Semi-Annual] FIXED [3.495%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME FORBUP27PHTHYVLBN630	03/21/2014	03/25/2034		75,000,000	LIBOR [3.495%]			(958,240)	(6,222,046)		(6,222,046)	3,687,193				1,463,942		0001	
Interest Rate Swap /73412/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 1.815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/21/2014	03/25/2019		100,000,000	1.815% [LIBOR]			(402,347)	(228,259)		(228,259)	(79,864)				244,949		0001	
Interest Rate Swap /73450/[Semi-Annual] FIXED [3.484%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZZN70PB21	03/24/2014	03/26/2034		9,000,000	LIBOR [3.484%]			(113,910)	(734,193)		(734,193)	441,439				175,673		0001	
Interest Rate Swap /73465/[Semi-Annual] FIXED [2.875%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/25/2014	03/27/2024		25,000,000	LIBOR [2.875%]			(163,924)	(346,474)		(346,474)	497,906				286,138		0001	
Interest Rate Swap /73505/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 3.415%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /CR SUI5 SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	03/27/2014	03/31/2034		200,000,000	3.415% [LIBOR]			2,393,129	14,574,878		14,574,878	(9,653,724)				3,905,125		0001	
Interest Rate Swap /73506/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 2.824%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/27/2014	03/31/2024		155,000,000	2.824% [LIBOR]			938,625	1,768,126		1,768,126	(3,000,927)				1,774,056		0001	
Interest Rate Swap /73577/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.395%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /CR SUI5 SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	03/28/2014	04/01/2034		200,000,000	3.395% [LIBOR]			2,365,546	15,314,833		15,314,833	(9,054,864)				3,906,405		0001	
Interest Rate Swap /73658/[Quarterly] LIBOR [2.79388%]/Semi-Annual FIXED 2.9205%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI5 SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	04/02/2014	04/04/2024		233,000,000	2.9205% [LIBOR]			1,650,490	3,758,278		3,758,278	(4,729,637)				2,671,891		0001	
Interest Rate Swap /73786/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 3.231%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI5 SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	04/10/2014	04/14/2029		160,000,000	3.231% [LIBOR]			1,650,211	7,078,562		7,078,562	(5,447,110)				2,566,242		0001	

E18.109

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /73809/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 3.418%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE BANK OF NEW YORK MELLON /CR SUISS SEC USA/CLEARED THROUGH CME	04/10/2014	04/14/2034		35,000,000	3.418% [LIBOR]			426,434	2,569,285		2,569,285	(1,694,639)				684,293		0001	
Interest Rate Swap /73968/[Semi-Annual] FIXED [2.8275%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	04/22/2014	04/24/2024		75,000,000	LIBOR [2.8275%]			(475,106)	(877,032)		(877,032)	1,467,086				864,942		0001	
Interest Rate Swap /73970/[Semi-Annual] FIXED [1.83%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE BANK OF NEW YORK MELLON /MORGAN STANLEY/CLEARED THROUGH CME	04/22/2014	04/24/2019		110,000,000	LIBOR [1.83%]			399,328	326,569		326,569	158,994				311,127		0001	
Interest Rate Swap /73979/[Quarterly] LIBOR [2.48738%]/Semi-Annual FIXED 3.2425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME	04/22/2014	04/24/2029		20,000,000	3.2425% [LIBOR]			209,695	907,119		907,119	(684,709)				321,248		0001	
Interest Rate Swap /73990/[Quarterly] LIBOR [2.48738%]/Semi-Annual FIXED 3.23%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /CR SUISS SEC USA/CLEARED THROUGH CME	04/22/2014	04/24/2029		225,000,000	3.23% [LIBOR]			2,330,943	9,949,294		9,949,294	(7,676,092)				3,614,035		0001	
Interest Rate Swap /74012/[Quarterly] LIBOR [2.48988%]/Semi-Annual FIXED 2.988%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /CR SUISS SEC USA/CLEARED THROUGH CME	04/23/2014	04/25/2026		150,000,000	2.988% [LIBOR]			1,195,481	3,440,488		3,440,488	(3,661,134)				2,030,548		0001	
Interest Rate Swap /74151/[Quarterly] LIBOR [2.59238%]/Semi-Annual FIXED 3.718%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	05/01/2014	05/06/2044		5,100,000	3.718% [LIBOR]			78,258	802,162		802,162	(365,410)				128,389		0001	
Interest Rate Swap /74152/[Quarterly] LIBOR [2.59125%]/Semi-Annual FIXED 3.826%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	05/01/2014	05/08/2044		6,000,000	3.826% [LIBOR]			98,664	1,064,704		1,064,704	(438,915)				151,076		0001	
Interest Rate Swap /74153/[Quarterly] LIBOR [0.22285%]/Semi-Annual FIXED 3.939%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	05/01/2014	05/07/2044		6,900,000	3.939% [LIBOR]				1,341,704		1,341,704	(360,865)				173,738		0001	
Interest Rate Swap /74154/[Quarterly] LIBOR [0.22285%]/Semi-Annual FIXED 3.949%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	05/01/2014	05/06/2044		5,800,000	3.949% [LIBOR]				654,259		654,259	(239,525)				146,011		0001	
Interest Rate Swap /74155/[Quarterly] LIBOR [0.22285%]/Semi-Annual FIXED 3.892%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	05/01/2014	05/08/2044		7,900,000	3.892% [LIBOR]				671,846		671,846	(264,186)				198,917		0001	

E18.110

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /74156/[Quarterly] LIBOR [0.22285%]/Semi-Annual FIXED 3.9775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEAR THROUGH CME	05/01/2014	05/06/2044		8,600,000	3.9775% [LIBOR]				1,505,554		1,505,554	(410,772)				216,500		0001	
Interest Rate Swap /74157/[Quarterly] LIBOR [0.22285%]/Semi-Annual FIXED 3.975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEAR THROUGH CME	05/01/2014	05/06/2044		6,600,000	3.975% [LIBOR]				897,443		897,443	(295,158)				166,151		0001	
Interest Rate Swap /74160/[Quarterly] LIBOR [0.22285%]/Semi-Annual FIXED 3.795%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEAR THROUGH CME	05/01/2014	05/08/2044		6,300,000	3.795% [LIBOR]				315,541		315,541	(126,732)				158,630		0001	
Interest Rate Swap /74218/[Semi-Annual] FIXED [3.702%]/Quarterly LIBOR 2.60113%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	05/06/2014	05/09/2046		50,000,000	LIBOR [3.702%]			(759,171)	(8,139,841)		(8,139,841)	3,768,394				1,307,670		0001	
Interest Rate Swap /74242/[Semi-Annual] FIXED [2.72%]/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	05/06/2014	05/08/2024		56,000,000	LIBOR [2.72%]			(301,507)	(357,629)		(357,629)	1,045,920				648,247		0001	
Interest Rate Swap /74423/[Quarterly] LIBOR [2.6445%]/Semi-Annual FIXED 3.182%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	05/16/2014	05/20/2034		53,000,000	3.182% [LIBOR]			540,647	2,317,243		2,317,243	(2,452,914)				1,039,597		0001	
Interest Rate Swap /74467/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 2.818%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUIS SEC USA/CLEARED THROUGH CME	05/19/2014	05/21/2026		100,000,000	2.818% [LIBOR]			658,222	1,157,105		1,157,105	(2,304,914)				1,359,228		0001	
Interest Rate Swap /74546/[Semi-Annual] FIXED [3.2195%]/Quarterly LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEAR THROUGH CME	05/21/2014	06/07/2043		300,000,000	LIBOR [3.2195%]			(3,166,454)	(18,872,983)		(18,872,983)	18,972,200				7,415,524		0001	
Interest Rate Swap /74547/[Semi-Annual] FIXED [3.20875%]/Quarterly LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEAR THROUGH CME	05/21/2014	06/07/2043		150,000,000	LIBOR [3.20875%]			(1,567,102)	(9,144,075)		(9,144,075)	9,464,431				3,707,762		0001	
Interest Rate Swap /74548/[Semi-Annual] FIXED [3.206%]/Quarterly LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEAR THROUGH CME	05/21/2014	06/07/2043		150,000,000	LIBOR [3.206%]			(1,562,977)	(9,069,271)		(9,069,271)	9,458,888				3,707,762		0001	
Interest Rate Swap /74549/[Semi-Annual] FIXED [3.18875%]/Quarterly LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEAR THROUGH CME	05/21/2014	06/07/2043		150,000,000	LIBOR [3.18875%]			(1,537,102)	(8,600,044)		(8,600,044)	9,424,118				3,707,762		0001	
Interest Rate Swap /74576/[Semi-Annual] FIXED [2.626%]/Quarterly LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME	05/23/2014	05/28/2024		40,000,000	LIBOR [2.626%]			(185,154)	(72,246)		(72,246)	719,483				465,188		0001	

E18.111

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /74681/(Semi-Annual) FIXED [3.655%]/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /GOLDMAN SACHS/CLEARED THROUGH CME FORBUP27PHTHYVLNBG30	.05/28/2014	.07/01/2030		556,000,000	LIBOR [3.655%]			(8,021,818)	(42,115,570)		(42,115,570)	21,532,736				9,427,439		0001	
Interest Rate Swap /74858/(Monthly) LIBOR [2.54863%]/Semi-Annual FIXED 3.78%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /GOLDMAN SACHS/CLEARED THROUGH CME FORBUP27PHTHYVLNBG30	.05/28/2014	.07/01/2040		444,000,000	3.78% [LIBOR]			7,736,043	64,651,897		64,651,897	(26,738,892)				10,296,110		0001	
Interest Rate Swap /74860/(Semi-Annual) FIXED [2.708%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/05/2014	.06/09/2024		15,000,000	LIBOR [2.708%]			(80,906)	(85,204)		(85,204)	281,751				174,929		0001	
Interest Rate Swap /74861/(Semi-Annual) FIXED [2.232%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/05/2014	.06/09/2021		29,000,000	LIBOR [2.232%]			(18,378)	271,767		271,767	315,018				226,497		0001	
Interest Rate Swap /74864/(Semi-Annual) FIXED [2.2145%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/06/2014	.06/10/2021		110,000,000	LIBOR [2.2145%]			(51,304)	1,076,806		1,076,806	1,178,777				859,127		0001	
Interest Rate Swap /74948/(Semi-Annual) FIXED [2.292%]/Quarterly LIBOR 2.77594%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE BANK OF NEW YORK MELLON /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/10/2014	.06/12/2021		30,000,000	LIBOR [2.292%]			(36,817)	239,802		239,802	343,957				235,266		0001	
Interest Rate Swap /74949/(Semi-Annual) FIXED [3.336%]/Quarterly LIBOR 2.77594%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARED THROUGH CME VYVCKR63DVZZN70PB21	.06/10/2014	.06/12/2034		100,000,000	LIBOR [3.336%]			(1,166,724)	(6,332,536)		(6,332,536)	4,807,912				1,965,324		0001	
Interest Rate Swap /75123/(Semi-Annual) FIXED [2.6875%]/Quarterly LIBOR 2.80069%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/16/2014	.06/18/2024		45,000,000	LIBOR [2.6875%]			(224,294)	(206,825)		(206,825)	836,898				526,231		0001	
Interest Rate Swap /75335/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 3.377%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE BANK OF NEW YORK MELLON /WELLSFARGOSEC/CLEARED THROUGH CME VYVCKR63DVZZN70PB21	.06/23/2014	.06/25/2044		14,800,000	3.377% [LIBOR]			171,629	1,392,221		1,392,221	(993,758)				373,608		0001	
Interest Rate Swap /75336/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 3.789%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARED THROUGH CME VYVCKR63DVZZN70PB21	.06/23/2014	.06/26/2044		15,000,000	3.789% [LIBOR]			235,599	2,565,854		2,565,854	(1,092,795)				378,657		0001	
Interest Rate Swap /75337/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 3.54375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME VYVCKR63DVZZN70PB21	.06/23/2014	.06/25/2044		15,500,000	LIBOR [3.54375%]			205,592	1,940,990		1,940,990	(1,076,555)				391,279		0001	
Interest Rate Swap /75338/(Quarterly) LIBOR [0.2326%]/Semi-Annual FIXED 3.8975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME VYVCKR63DVZZN70PB21	.06/23/2014	.06/25/2044		17,300,000	3.8975% [LIBOR]				3,217,528		3,217,528	(897,386)				436,718		0001	

E18.112

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /75339/[Quarterly] LIBOR [0.2326%]/Semi-Annual FIXED 3.955%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	06/23/2014	06/25/2044		13,900,000	3.955% [LIBOR]				1,843,132		1,843,132	(621,821)					350,889	0001	
Interest Rate Swap /75340/[Quarterly] LIBOR [0.2326%]/Semi-Annual FIXED 3.945%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	06/23/2014	06/25/2044		20,800,000	3.945% [LIBOR]				3,508,096		3,508,096	(994,467)					525,071	0001	
Interest Rate Swap /75341/[Quarterly] LIBOR [0.2326%]/Semi-Annual FIXED 4.0275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /CR SUIS SEC USA/CLEARED THROUGH CME	06/23/2014	06/25/2034		12,500,000	4.0275% [LIBOR]				759,052		759,052	(260,601)					245,983	0001	
Interest Rate Swap /75342/[Quarterly] LIBOR [0.2326%]/Semi-Annual FIXED 4.0275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEARED THROUGH CME	06/23/2014	06/25/2034		7,500,000	4.0275% [LIBOR]				255,525		255,525	(97,958)					147,590	0001	
Interest Rate Swap /75343/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 3.69%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	06/23/2014	06/25/2044		8,800,000	3.69% [LIBOR]			129,593	1,342,448		1,342,448	(629,029)					222,146	0001	
Interest Rate Swap /75359/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 2.8435%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	06/25/2014	06/27/2026		100,000,000	2.8435% [LIBOR]			624,194	1,304,428		1,304,428	(2,342,232)					1,369,306	0001	
Interest Rate Swap /75426/[Semi-Annual] FIXED [2.6265%]/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	06/27/2014	07/01/2024		20,000,000	LIBOR [2.6265%]			(82,855)	108,487		108,487	303,105					234,521	0001	
Interest Rate Swap /75427/[Semi-Annual] FIXED [1.7085%]/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	06/27/2014	07/01/2019		56,000,000	LIBOR [1.7085%]			282,087	422,535		422,535	(98,124)					197,990	0001	
Interest Rate Swap /75428/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.026%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	06/27/2014	07/01/2029		10,000,000	3.026% [LIBOR]			81,377	165,914		165,914	(298,927)					162,096	0001	
Interest Rate Swap /75766/[Semi-Annual] FIXED [2.1985%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	07/18/2014	07/22/2021		53,000,000	LIBOR [2.1985%]			(436)	550,239		550,239	555,716					424,000	0001	
Interest Rate Swap /75767/[Semi-Annual] FIXED [2.6%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	07/18/2014	07/22/2024		15,000,000	LIBOR [2.6%]			(60,348)	(2,229)		(2,229)	266,612					176,847	0001	
Interest Rate Swap /75769/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 2.784%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	07/18/2014	07/22/2026		100,000,000	2.784% [LIBOR]			586,323	903,688		903,688	(2,296,398)					1,374,773	0001	
Interest Rate Swap /75770/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 2.782%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME	07/18/2014	07/22/2026		200,000,000	2.782% [LIBOR]			1,168,647	1,779,816		1,779,816	(4,589,045)					2,749,545	0001	

E18.113

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /75778/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 3.253%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE BANK OF NEW YORK MELLON /WELLSFARGOSEC/CLEAR THROUGH CME	07/18/2014	07/22/2044		14,000,000	3.253% [LIBOR]			147,745	996,405		996,405	(917,348)					353,898	0001	
Interest Rate Swap /75810/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.753%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	07/21/2014	07/23/2026		100,000,000	2.753% [LIBOR]			555,189	690,093		690,093	(2,268,563)					1,374,773	0001	
Interest Rate Swap /75811/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.767%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	07/21/2014	07/23/2026		45,000,000	2.767% [LIBOR]			256,135	353,963		353,963	(1,026,760)					618,648	0001	
Interest Rate Swap /75831/[Semi-Annual] FIXED [2.61%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	07/24/2014	07/28/2024		40,000,000	LIBOR [2.61%]			(169,722)	(26,765)		(26,765)	716,891					472,440	0001	
Interest Rate Swap /75871/[Semi-Annual] FIXED [2.61%]/Quarterly LIBOR 2.52038%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	07/28/2014	07/30/2024		20,000,000	LIBOR [2.61%]			(84,449)	(13,432)		(13,432)	358,663					236,220	0001	
Interest Rate Swap /76070/[Semi-Annual] FIXED [2.2285%]/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	08/04/2014	08/06/2021		25,000,000	LIBOR [2.2285%]			(11,242)	244,641		244,641	272,461					201,556	0001	
Interest Rate Swap /76302/[Semi-Annual] FIXED [2.571%]/Quarterly LIBOR 2.69119%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME	08/22/2014	08/27/2024		33,000,000	LIBOR [2.571%]			(136,229)	50,345		50,345	587,873					392,547	0001	
Interest Rate Swap /76356/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 2.681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME	08/26/2014	08/28/2026		100,000,000	2.681% [LIBOR]			515,884	175,156		175,156	(2,239,522)					1,383,835	0001	
Interest Rate Swap /76464/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 2.6435%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	08/28/2014	09/02/2026		195,000,000	2.6435% [LIBOR]			926,104	(203,384)		(203,384)	(4,306,051)					2,700,240	0001	
Interest Rate Swap /76733/[Semi-Annual] FIXED [3.247%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEAR THROUGH CME	09/11/2014	09/15/2044		35,000,000	LIBOR [3.247%]			(372,612)	(2,456,732)		(2,456,732)	2,304,578					887,338	0001	
Interest Rate Swap /76734/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 1.917%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	09/11/2014	09/15/2019		44,000,000	1.917% [LIBOR]			(116,773)	(261,678)		(261,678)	(182,604)					185,375	0001	
Interest Rate Swap /76941/[Semi-Annual] FIXED [3.3565%]/Quarterly LIBOR 2.80069%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2014	09/18/2044		125,000,000	LIBOR [3.3565%]			(1,459,289)	(11,348,231)		(11,348,231)	8,425,819					3,169,681	0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /76942/[Semi-Annual] FIXED [3.357%/Quarterly LIBOR 2.80069%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2014	09/18/2044		125,000,000	LIBOR [3.357%]			(1,459,914)	(11,359,981)		(11,359,981)	8,426,690					3,169,681	0001	
Interest Rate Swap /76943/[Semi-Annual] FIXED [3.357%/Quarterly LIBOR 2.80069%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2014	09/18/2044		125,000,000	LIBOR [3.357%]			(1,459,914)	(11,359,981)		(11,359,981)	8,426,690					3,169,681	0001	
Interest Rate Swap /76953/[Semi-Annual] FIXED [3.342%/Quarterly LIBOR 2.80363%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEAR THROUGH CME	09/17/2014	09/19/2044		125,000,000	LIBOR [3.342%]			(1,442,032)	(11,007,130)		(11,007,130)	8,397,693					3,169,681	0001	
Interest Rate Swap /76954/[Semi-Annual] FIXED [3.343%/Quarterly LIBOR 2.80363%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEAR THROUGH CME	09/17/2014	09/19/2044		125,000,000	LIBOR [3.343%]			(1,443,282)	(11,030,631)		(11,030,631)	8,399,436					3,169,681	0001	
Interest Rate Swap /76955/[Semi-Annual] FIXED [3.342%/Quarterly LIBOR 2.80363%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/17/2014	09/19/2044		125,000,000	LIBOR [3.342%]			(1,442,032)	(11,007,130)		(11,007,130)	8,397,693					3,169,681	0001	
Interest Rate Swap /76965/[Semi-Annual] FIXED [3.34%/Quarterly LIBOR 2.80363%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	09/17/2014	09/19/2044		125,000,000	LIBOR [3.34%]			(1,439,532)	(10,960,128)		(10,960,128)	8,394,207					3,169,681	0001	
Interest Rate Swap /76966/[Semi-Annual] FIXED [3.34%/Quarterly LIBOR 2.80363%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/17/2014	09/19/2044		125,000,000	LIBOR [3.34%]			(1,439,532)	(10,960,128)		(10,960,128)	8,394,207					3,169,681	0001	
Interest Rate Swap /76967/[Semi-Annual] FIXED [3.342%/Quarterly LIBOR 2.80363%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/17/2014	09/19/2044		125,000,000	LIBOR [3.342%]			(1,442,032)	(11,007,130)		(11,007,130)	8,397,693					3,169,681	0001	
Interest Rate Swap /76968/[Semi-Annual] FIXED [3.343%/Quarterly LIBOR 2.80363%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/17/2014	09/19/2044		125,000,000	LIBOR [3.343%]			(1,443,282)	(11,030,631)		(11,030,631)	8,399,436					3,169,681	0001	
Interest Rate Swap /77001/[Quarterly] LIBOR [2.82375%/Semi-Annual] FIXED 3.58%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2014	09/23/2044		12,200,000	3.58% [LIBOR]			165,802	1,620,373		1,620,373	(859,222)					309,421	0001	
Interest Rate Swap /77002/[Quarterly] LIBOR [0.2331%/Semi-Annual] FIXED 3.76%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2014	09/23/2044		20,500,000	3.76% [LIBOR]				2,802,259		2,802,259	(969,836)					519,929	0001	
Interest Rate Swap /77003/[Quarterly] LIBOR [2.82163%/Semi-Annual] FIXED 3.6525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2014	09/25/2044		13,900,000	3.6525% [LIBOR]			199,486	2,036,031		2,036,031	(993,306)					352,605	0001	

E18.115

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /77004/[Quarterly] LIBOR [0.2331%]/Semi-Annual FIXED 3.724%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2014	09/23/2044		16,300,000	3.724% [LIBOR]				2,495,521		2,495,521	(825,372)				413,407		0001	
Interest Rate Swap /77005/[Quarterly] LIBOR [0.2331%]/Semi-Annual FIXED 3.774%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2014	09/23/2044		16,000,000	3.774% [LIBOR]				1,711,379		1,711,379	(704,684)				405,798		0001	
Interest Rate Swap /77006/[Quarterly] LIBOR [0.2331%]/Semi-Annual FIXED 3.762%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2014	09/23/2044		13,900,000	3.762% [LIBOR]				1,246,546		1,246,546	(561,865)				352,537		0001	
Interest Rate Swap /77007/[Quarterly] LIBOR [0.2331%]/Semi-Annual FIXED 3.725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2014	09/23/2044		19,100,000	3.725% [LIBOR]				1,318,612		1,318,612	(619,242)				484,421		0001	
Interest Rate Swap /77008/[Quarterly] LIBOR [0.2331%]/Semi-Annual FIXED 3.664%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2014	09/23/2044		14,700,000	3.664% [LIBOR]				621,161		621,161	(288,376)				372,827		0001	
Interest Rate Swap /77011/[Semi-Annual] FIXED [1.9585%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /MORGAN STANLEY/CLEARED THROUGH CME	09/22/2014	09/24/2019		28,000,000	LIBOR [1.9585%]			73,125	164,244		164,244	127,391				119,616		0001	
Interest Rate Swap /77027/[Semi-Annual] FIXED [2.685%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE BANK OF NEW YORK MELLON /MORGAN STANLEY/CLEARED THROUGH CME	09/22/2014	09/24/2024		22,000,000	LIBOR [2.685%]			(102,375)	(93,826)		(93,826)	415,374				263,312		0001	
Interest Rate Swap /77055/[Semi-Annual] FIXED [2.662%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME	09/23/2014	09/25/2024		100,000,000	LIBOR [2.662%]			(444,653)	(304,131)		(304,131)	1,866,324				1,197,915		0001	
Interest Rate Swap /77140/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.162%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/29/2014	10/01/2044		60,000,000	3.162% [LIBOR]			569,864	3,630,211		3,630,211	(3,706,386)				1,522,629		0001	
Interest Rate Swap /77141/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 2.774%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	09/29/2014	10/01/2026		115,000,000	2.774% [LIBOR]			646,039	1,627,351		1,627,351	(2,351,362)				1,600,732		0001	
Interest Rate Swap /77250/[Semi-Annual] FIXED [2.5085%]/Quarterly LIBOR 2.41425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /MORGAN STANLEY/CLEARED THROUGH CME	10/08/2014	10/10/2024		53,000,000	LIBOR [2.5085%]			(161,358)	272,359		272,359	912,899				637,103		0001	
Interest Rate Swap /77280/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 2.7765%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	10/09/2014	10/14/2029		150,000,000	2.7765% [LIBOR]			865,322	261,606		261,606	(4,656,359)				2,463,610		0001	
Interest Rate Swap /77390/[Semi-Annual] FIXED [3.27875%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL /MORGAN STANLEY/CLEARED THROUGH CME	10/14/2014	06/21/2019		100,000,000	LIBOR [3.27875%]			(1,074,817)	(237,327)		(237,327)	1,636,905				346,410		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /77438/(Quarterly) LIBOR [2.4488%]/Semi-Annual FIXED 2.66%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	10/15/2014	10/17/2034		130,000,000	2.66% [LIBOR]			595,832	(3,101,479)		(3,101,479)	(5,385,546)				2,583,699		0001	
Interest Rate Swap /77499/(Semi-Annual) FIXED [1.9625%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	10/20/2014	10/22/2021		140,000,000	LIBOR [1.9625%]			329,247	2,442,219		2,442,219	1,184,194				1,173,414		0001	
Interest Rate Swap /77521/(Semi-Annual) FIXED [2.0425%]/Quarterly LIBOR 2.5925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /MORGAN STANLEY/CLEARED THROUGH CME	10/23/2014	10/27/2021		170,000,000	LIBOR [2.0425%]			253,212	2,604,094		2,604,094	1,574,839				1,429,921		0001	
Interest Rate Swap /77549/(Semi-Annual) FIXED [3.0525%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEAR THROUGH CME	10/23/2014	10/27/2044		171,000,000	LIBOR [3.0525%]			(1,472,398)	(5,790,536)		(5,790,536)	10,812,877				4,345,386		0001	
Interest Rate Swap /77612/(Semi-Annual) FIXED [2.752%]/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEAR THROUGH CME	10/28/2014	04/15/2033		100,000,000	LIBOR [2.752%]			(552,382)	907,059		907,059	3,941,701				1,890,767		0001	
Interest Rate Swap /77613/(Semi-Annual) FIXED [2.8825%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /MORGAN STANLEY/CLEARED THROUGH CME	10/28/2014	08/30/2026		24,000,000	LIBOR [2.8825%]			(172,353)	(379,248)		(379,248)	582,721				332,120		0001	
Interest Rate Swap /77615/(Semi-Annual) FIXED [3.17%]/Quarterly LIBOR 2.40825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /MORGAN STANLEY/CLEARED THROUGH CME	10/28/2014	07/05/2019		60,000,000	LIBOR [3.17%]			(575,078)	(124,409)		(124,409)	922,854				214,243		0001	
Interest Rate Swap /77616/(Semi-Annual) FIXED [3.25%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /MORGAN STANLEY/CLEARED THROUGH CME	10/28/2014	06/17/2019		200,000,000	LIBOR [3.25%]			(2,121,832)	(433,550)		(433,550)	3,225,098				678,233		0001	
Interest Rate Swap /77641/(Semi-Annual) FIXED [2.092%]/Quarterly LIBOR 2.52663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME	10/29/2014	10/31/2021		170,000,000	LIBOR [2.092%]			166,084	2,377,490		2,377,490	1,657,876				1,429,921		0001	
Interest Rate Swap /77799/(Semi-Annual) FIXED [2.501%]/Quarterly LIBOR 2.58925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	11/05/2014	11/07/2024		30,000,000	LIBOR [2.501%]			(95,365)	170,777		170,777	521,656				362,802		0001	
Interest Rate Swap /77833/(Semi-Annual) FIXED [2.1985%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /CR SU1S SEC USA/CLEARED THROUGH CME	11/07/2014	11/12/2021		150,000,000	LIBOR [2.1985%]			(40,307)	1,685,809		1,685,809	1,629,937				1,270,581		0001	

E18.117

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /78016/[Semi-Annual] FIXED [3.04%]/Quarterly LIBOR 2.64581%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEARED THROUGH CME	11/19/2014	11/21/2044		32,000,000	LIBOR [3.04%]			(281,671)	(1,009,803)		(1,009,803)	2,024,400				814,115		0001	
Interest Rate Swap /78017/[Semi-Annual] FIXED [3.0015%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	11/20/2014	11/24/2044		32,000,000	LIBOR [3.0015%]			(267,623)	(776,722)		(776,722)	2,008,390				814,273		0001	
Interest Rate Swap /78020/[Semi-Annual] FIXED [3.029%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	11/20/2014	11/24/2044		34,000,000	LIBOR [3.029%]			(293,700)	(1,001,931)		(1,001,931)	2,147,019				865,165		0001	
Interest Rate Swap /78222/[Semi-Annual] FIXED [2.93%]/Quarterly LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	11/26/2014	11/28/2044		34,000,000	LIBOR [2.93%]			(260,061)	(371,675)		(371,675)	2,101,710				865,332		0001	
Interest Rate Swap /78223/[Semi-Annual] FIXED [2.9245%]/Quarterly LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEARED THROUGH CME	11/26/2014	11/28/2044		34,000,000	LIBOR [2.9245%]			(258,191)	(336,323)		(336,323)	2,099,088				865,332		0001	
Interest Rate Swap /78611/[Semi-Annual] FIXED [2.748%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI SEC USA/CLEARED THROUGH CME	12/12/2014	12/16/2044		41,000,000	LIBOR [2.748%]			(230,663)	972,910		972,910	2,429,655				1,044,495		0001	
Interest Rate Swap /78694/[Semi-Annual] FIXED [2.74405%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	12/12/2014	12/16/2044		250,000,000	LIBOR [2.74405%]			(1,396,607)	6,119,257		6,119,257	14,801,103				6,368,870		0001	
Interest Rate Swap /78696/[Semi-Annual] FIXED [2.72505%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	12/12/2014	12/16/2044		250,000,000	LIBOR [2.72505%]			(1,349,107)	7,018,158		7,018,158	14,734,420				6,368,870		0001	
Interest Rate Swap /78698/[Semi-Annual] FIXED [2.71505%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	12/12/2014	12/16/2044		200,000,000	LIBOR [2.71505%]			(1,059,286)	5,993,011		5,993,011	11,759,459				5,095,096		0001	
Interest Rate Swap /78710/[Semi-Annual] FIXED [2.7205%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	12/15/2014	12/17/2044		40,500,000	LIBOR [2.7205%]			(215,223)	1,172,050		1,172,050	2,385,489				1,031,956		0001	
Interest Rate Swap /78712/[Semi-Annual] FIXED [2.7025%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	12/15/2014	12/17/2044		34,000,000	LIBOR [2.7025%]			(174,561)	1,099,786		1,099,786	1,994,039				866,333		0001	

E18.118

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /78733/[Quarterly] LIBOR [2.80069%]/Semi-Annual FIXED 2.56325%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/16/2014	12/18/2034		190,000,000	2.56325% [LIBOR]			710,944	(7,032,447)		(7,032,447)	(7,761,797)				3,796,436		0001	
Interest Rate Swap /78844/[Semi-Annual] FIXED [2.7755%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	12/18/2014	12/22/2044		34,000,000	LIBOR [2.7755%]			(191,334)	632,147		632,147	2,027,728				866,500		0001	
Interest Rate Swap /78845/[Semi-Annual] FIXED [2.776%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/18/2014	12/22/2044		34,000,000	LIBOR [2.776%]			(191,504)	628,928		628,928	2,027,967				866,500		0001	
Interest Rate Swap /78846/[Semi-Annual] FIXED [2.7825%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/18/2014	12/22/2044		34,000,000	LIBOR [2.7825%]			(193,714)	587,086		587,086	2,031,070				866,500		0001	
Interest Rate Swap /78850/[Semi-Annual] FIXED [2.767%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	12/19/2014	12/23/2044		34,000,000	LIBOR [2.767%]			(185,651)	686,710		686,710	2,022,533				866,500		0001	
Interest Rate Swap /79076/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.316%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	01/06/2015	01/08/2030		150,000,000	2.316% [LIBOR]			165,596	(6,486,165)		(6,486,165)	(4,079,277)				2,489,729		0001	
Interest Rate Swap /79078/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.42%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	01/06/2015	01/08/2035		100,000,000	2.42% [LIBOR]			214,397	(5,602,186)		(5,602,186)	(3,924,606)				2,001,250		0001	
Interest Rate Swap /79107/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.4795%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	01/07/2015	01/09/2045		100,000,000	2.4795% [LIBOR]			274,849	(7,468,130)		(7,468,130)	(5,545,681)				2,550,980		0001	
Interest Rate Swap /79108/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.2975%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	01/07/2015	01/09/2030		150,000,000	2.2975% [LIBOR]			139,274	(6,755,447)		(6,755,447)	(4,054,070)				2,490,858		0001	
Interest Rate Swap /79109/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.2925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	01/07/2015	01/09/2030		150,000,000	2.2925% [LIBOR]			131,774	(6,827,711)		(6,827,711)	(4,046,837)				2,490,858		0001	
Interest Rate Swap /79223/[Quarterly] LIBOR [2.43644%]/Semi-Annual FIXED 2.401%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	01/14/2015	01/16/2045		75,000,000	2.401% [LIBOR]			151,218	(6,718,791)		(6,718,791)	(4,079,900)				1,913,603		0001	

E18.119

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /79227/[Quarterly] LIBOR [2.43644%]/Semi-Annual FIXED 2.39%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	01/14/2015	01/16/2045		150,000,000	2.39% [LIBOR]			285,935	(13,750,551)		(13,750,551)	(8,136,578)				3,827,205		0001	
Interest Rate Swap /79228/[Quarterly] LIBOR [2.43644%]/Semi-Annual FIXED 2.39%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	01/14/2015	01/16/2045		150,000,000	2.39% [LIBOR]			285,935	(13,750,551)		(13,750,551)	(8,136,578)				3,827,205		0001	
Interest Rate Swap /79230/[Quarterly] LIBOR [2.43644%]/Semi-Annual FIXED 2.354%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARED THROUGH CME	01/14/2015	01/16/2045		126,000,000	2.354% [LIBOR]			194,826	(12,410,844)		(12,410,844)	(6,770,890)				3,214,852		0001	
Interest Rate Swap /79231/[Quarterly] LIBOR [2.43644%]/Semi-Annual FIXED 2.356%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARED THROUGH CME	01/14/2015	01/16/2045		111,000,000	2.356% [LIBOR]			173,852	(10,891,254)		(10,891,254)	(5,967,956)				2,832,132		0001	
Interest Rate Swap /79306/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.359%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME	01/21/2015	01/23/2045		135,000,000	2.359% [LIBOR]			217,605	(13,171,762)		(13,171,762)	(7,270,612)				3,445,807		0001	
Interest Rate Swap /79310/[Quarterly] LIBOR [2.508%]/Semi-Annual FIXED 2.065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME	01/22/2015	01/26/2025		18,000,000	2.065% [LIBOR]			(23,172)	(552,989)		(552,989)	(243,936)				221,919		0001	
Interest Rate Swap /79435/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 2.2325%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARED THROUGH CME	01/28/2015	01/30/2045		150,000,000	2.2325% [LIBOR]			67,118	(18,241,558)		(18,241,558)	(7,818,899)				3,830,144		0001	
Interest Rate Swap /79437/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 2.215%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEARED THROUGH CME	01/28/2015	01/30/2045		75,000,000	2.215% [LIBOR]			20,434	(9,369,971)		(9,369,971)	(3,890,958)				1,915,072		0001	
Interest Rate Swap /79438/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 2.201%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	01/28/2015	01/30/2045		75,000,000	2.201% [LIBOR]			9,934	(9,569,325)		(9,569,325)	(3,876,165)				1,915,072		0001	
Interest Rate Swap /79501/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.1725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEARED THROUGH CME	01/30/2015	02/03/2045		150,000,000	2.1725% [LIBOR]			(26,093)	(19,966,608)		(19,966,608)	(7,700,501)				3,830,878		0001	
Interest Rate Swap /79505/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.17%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEARED THROUGH CME	01/30/2015	02/03/2045		150,000,000	2.17% [LIBOR]			(29,843)	(20,037,817)		(20,037,817)	(7,695,216)				3,830,878		0001	
Interest Rate Swap /79530/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.1195%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /WELLSFARGOSEC/CLEARED THROUGH CME	02/03/2015	02/05/2030		5,000,000	2.1195% [LIBOR]			(3,180)	(313,672)		(313,672)	(128,051)				83,292		0001	

E18.120

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /79676/[Semi-Annual] FIXED [1.9925%/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUI S SEC USA/CLEARED THROUGH CME	02/17/2015	02/19/2022		250,000,000	LIBOR [1.9925%			424,421	4,540,056		4,540,056	2,286,625				2,215,006		0001	
Interest Rate Swap /80001/[Semi-Annual] FIXED [2.143%/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	02/27/2015	03/03/2025		110,000,000	LIBOR [2.143%			25,328	2,952,569		2,952,569	1,611,656				1,367,278		0001	
Interest Rate Swap /80121/[Semi-Annual] FIXED [2.4485%/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEARED THROUGH CME	03/05/2015	03/09/2030		75,000,000	LIBOR [2.4485%			(209,905)	2,342,120		2,342,120	2,184,801				1,254,990		0001	
Interest Rate Swap /80122/[Semi-Annual] FIXED [1.7275%/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /MORGAN STANLEY/CLEARED THROUGH CME	03/05/2015	03/09/2020		125,000,000	LIBOR [1.7275%			551,409	1,467,408		1,467,408	509,004				681,795		0001	
Interest Rate Swap /80125/[Semi-Annual] FIXED [2.002%/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	03/05/2015	03/09/2022		150,000,000	LIBOR [2.002%			249,940	2,703,614		2,703,614	1,398,287				1,339,543		0001	
Interest Rate Swap /80247/[Quarterly] LIBOR [2.779%/Semi-Annual] FIXED 2.714%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	03/11/2015	03/13/2045		3,000,000	2.714% [LIBOR]			16,171	(90,961)		(90,961)	(177,697)				76,779		0001	
Interest Rate Swap /80248/[Quarterly] LIBOR [0.2699%/Semi-Annual] FIXED 2.79125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	03/11/2015	03/13/2045		8,000,000	2.79125% [LIBOR]				(206,433)		(206,433)	(316,793)				204,744		0001	
Interest Rate Swap /80249/[Quarterly] LIBOR [2.779%/Semi-Annual] FIXED 2.749%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	03/11/2015	03/13/2045		5,600,000	2.749% [LIBOR]			18,624	(132,463)		(132,463)	(321,111)				143,321		0001	
Interest Rate Swap /80252/[Quarterly] LIBOR [0.2699%/Semi-Annual] FIXED 2.782%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	03/11/2015	03/13/2045		6,500,000	2.782% [LIBOR]				(116,371)		(116,371)	(297,944)				166,354		0001	
Interest Rate Swap /80254/[Quarterly] LIBOR [2.779%/Semi-Annual] FIXED 2.65%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	03/11/2015	03/13/2045		11,800,000	2.65% [LIBOR]			56,053	(501,620)		(501,620)	(688,264)				301,997		0001	
Interest Rate Swap /80255/[Quarterly] LIBOR [0.2699%/Semi-Annual] FIXED 2.8365%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	03/11/2015	03/13/2035		3,400,000	2.8365% [LIBOR]				(27,059)		(27,059)	(38,517)				68,424		0001	
Interest Rate Swap /80257/[Quarterly] LIBOR [0.2699%/Semi-Annual] FIXED 2.847%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	03/11/2015	03/13/2035		3,100,000	2.847% [LIBOR]				(39,241)		(39,241)	(59,384)				62,386		0001	
Interest Rate Swap /80258/[Quarterly] LIBOR [0.2699%/Semi-Annual] FIXED 2.793%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	03/11/2015	03/13/2045		8,100,000	2.793% [LIBOR]				(173,591)		(173,591)	(352,190)				207,303		0001	

E18.121

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /80267/[Semi-Annual] FIXED [2.1755%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMAJ20ELI146	03/12/2015	03/16/2025		100,000,000	LIBOR [2.1755%]			9,907	2,520,881		2,520,881	1,490,690				1,245,994		0001	
Interest Rate Swap /80268/[Semi-Annual] FIXED [2.2725%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/12/2015	03/16/2027		50,000,000	LIBOR [2.2725%]			(43,546)	1,496,420		1,496,420	985,994				716,327		0001	
Interest Rate Swap /80362/[Semi-Annual] FIXED [2.1995%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMAJ20ELI146	03/12/2015	03/16/2025		50,000,000	LIBOR [2.1995%]			(7,046)	1,191,431		1,191,431	756,596				622,997		0001	
Interest Rate Swap /80380/[Quarterly] LIBOR [2.78819%/Semi-Annual] FIXED 2.63%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/13/2015	03/17/2020		288,000,000	2.63% [LIBOR]			1,269,838	(359,821)		(359,821)	(3,712,508)				1,584,000		0001	
Interest Rate Swap /80492/[Quarterly] LIBOR [2.80069%/Semi-Annual] FIXED 3.45%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFM6T61CT2L10CEMIK50	03/16/2015	03/18/2045		19,200,000	3.45% [LIBOR]			242,099	2,169,850		2,169,850	(1,402,592)				491,572		0001	
Interest Rate Swap /80522/[Semi-Annual] FIXED [2.164%/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMAJ20ELI146	03/17/2015	03/19/2025		50,000,000	LIBOR [2.164%]			12,187	1,296,518		1,296,518	741,497				623,498		0001	
Interest Rate Swap /80523/[Quarterly] LIBOR [2.80363%/Semi-Annual] FIXED 2.2555%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/17/2015	03/19/2027		45,000,000	2.2555% [LIBOR]			30,207	(1,407,197)		(1,407,197)	(882,086)				645,087		0001	
Interest Rate Swap /80524/[Semi-Annual] FIXED [2.258%/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/17/2015	03/19/2027		40,000,000	LIBOR [2.258%]			(27,850)	1,243,410		1,243,410	785,017				573,411		0001	
Interest Rate Swap /80526/[Semi-Annual] FIXED [2.3535%/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZ7N0PB21	03/17/2015	03/19/2030		55,000,000	LIBOR [2.3535%]			(90,819)	2,236,858		2,236,858	1,552,217				921,147		0001	
Interest Rate Swap /80529/[Quarterly] LIBOR [2.80363%/Semi-Annual] FIXED 2.257%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/17/2015	03/19/2027		65,000,000	2.257% [LIBOR]			44,607	(2,025,372)		(2,025,372)	(1,275,041)				931,793		0001	
Interest Rate Swap /80530/[Quarterly] LIBOR [2.80363%/Semi-Annual] FIXED 2.344%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZ7N0PB21	03/17/2015	03/19/2030		240,000,000	2.344% [LIBOR]			373,501	(9,983,848)		(9,983,848)	(6,751,255)				4,019,552		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /80531/(Quarterly) LIBOR [2.80363%]/Semi-Annual FIXED 2.345%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	03/17/2015	03/19/2030		240,000,000	2.345% [LIBOR]			375,901	(9,960,373)		(9,960,373)	(6,753,577)				4,019,552		0001	
Interest Rate Swap /80532/(Semi-Annual) LIBOR [3.33713%]/Semi-Annual FIXED 3.197%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /CR SUI S SEC USA/CLEARED THROUGH CME	03/17/2015	04/13/2027		23,000,000	3.197% [LIBOR]			42,754	(714,042)		(714,042)	(407,967)				331,112		0001	
Interest Rate Swap /80539/(Semi-Annual) LIBOR [3.39713%]/Semi-Annual FIXED 3.34%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /CR SUI S SEC USA/CLEARED THROUGH CME	03/17/2015	04/13/2030		13,000,000	3.34% [LIBOR]			36,165	(545,785)		(545,785)	(327,519)				218,404		0001	
Interest Rate Swap /80670/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 2.3375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME	03/24/2015	03/26/2045		40,000,000	2.3375% [LIBOR]			47,665	(4,087,453)		(4,087,453)	(2,153,454)				1,024,500		0001	
Interest Rate Swap /80672/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 2.1845%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	03/24/2015	03/26/2030		175,000,000	2.1845% [LIBOR]			(59,214)	(10,037,499)		(10,037,499)	(4,646,201)				2,933,535		0001	
Interest Rate Swap /80673/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 2.185%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	03/24/2015	03/26/2030		225,000,000	2.185% [LIBOR]			(75,008)	(12,894,335)		(12,894,335)	(5,974,775)				3,771,687		0001	
Interest Rate Swap /80975/(Semi-Annual) LIBOR [2.021%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	04/07/2015	04/09/2025		68,000,000	LIBOR [2.021%]			124,883	2,347,614		2,347,614	913,305				852,038		0001	
Interest Rate Swap /80976/(Semi-Annual) LIBOR [2.131%]/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /MORGAN STANLEY/CLEARED THROUGH CME	04/07/2015	04/09/2027		77,000,000	LIBOR [2.131%]			56,711	3,150,087		3,150,087	1,418,058				1,107,837		0001	
Interest Rate Swap /81183/(Semi-Annual) LIBOR [2.3245%]/Quarterly LIBOR 2.469%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	04/16/2015	04/20/2035		8,000,000	LIBOR [2.3245%]			(9,793)	557,751		557,751	309,915				161,543		0001	
Interest Rate Swap /81252/(Semi-Annual) LIBOR [2.335%]/Quarterly LIBOR 2.48738%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	04/22/2015	04/24/2035		44,000,000	LIBOR [2.335%]			(62,029)	3,007,908		3,007,908	1,710,987				888,756		0001	
Interest Rate Swap /81254/(Semi-Annual) LIBOR [2.3495%]/Quarterly LIBOR 2.48738%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUI S SEC USA/CLEARED THROUGH CME	04/22/2015	04/24/2035		44,000,000	LIBOR [2.3495%]			(68,409)	2,922,718		2,922,718	1,717,848				888,756		0001	

E18.123

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /81255/[Semi-Annual] FIXED [2.3475%]/Quarterly LIBOR 2.48738%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	1V8Y6QCX6YMJ20ELI146	04/22/2015	04/24/2035	44,000,000	LIBOR [2.3475%]			(67,529)	2,934,468		2,934,468	1,716,902				888,756	0001	
Interest Rate Swap /81257/[Semi-Annual] FIXED [2.352%]/Quarterly LIBOR 2.48738%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA /CR SUI S SEC USA/CLEARED THROUGH CME	1V8Y6QCX6YMJ20ELI146	04/22/2015	04/24/2035	44,000,000	LIBOR [2.352%]			(69,509)	2,908,029		2,908,029	1,719,031				888,756	0001	
Interest Rate Swap /81304/[Semi-Annual] FIXED [2.002%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	1V8Y6QCX6YMJ20ELI146	04/24/2015	04/28/2025	25,000,000	LIBOR [2.002%]			45,924	897,596		897,596	334,785				314,494	0001	
Interest Rate Swap /81306/[Semi-Annual] FIXED [2.395%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZZN70PB21	04/24/2015	04/28/2045	10,000,000	LIBOR [2.395%]			(20,931)	913,028		913,028	547,659				256,564	0001	
Interest Rate Swap /81308/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED [1.7495%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	17331LVCZKQKX57XV54	04/24/2015	04/28/2022	106,000,000	1.7495% [LIBOR]			(462,367)	(2,820,204)		(2,820,204)	(729,960)				967,159	0001	
Interest Rate Swap /81310/[Semi-Annual] FIXED [2.388%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	1V8Y6QCX6YMJ20ELI146	04/24/2015	04/28/2045	19,000,000	LIBOR [2.388%]			(38,438)	1,760,169		1,760,169	1,038,664				487,471	0001	
Interest Rate Swap /81326/[Semi-Annual] FIXED [2.391%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZZN70PB21	04/24/2015	04/28/2045	29,000,000	LIBOR [2.391%]			(59,539)	2,669,947		2,669,947	1,586,564				744,035	0001	
Interest Rate Swap /81327/[Semi-Annual] FIXED [2.3875%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZZN70PB21	04/24/2015	04/28/2045	38,000,000	LIBOR [2.3875%]			(76,686)	3,523,968		3,523,968	2,077,059				974,943	0001	
Interest Rate Swap /81355/[Semi-Annual] FIXED [2.361%]/Quarterly LIBOR 2.52038%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	GOLDMAN SACHS BANK USA /CR SUI S SEC USA/CLEARED THROUGH CME	1V8Y6QCX6YMJ20ELI146	04/28/2015	04/30/2035	22,000,000	LIBOR [2.361%]			(38,114)	1,426,137		1,426,137	862,652				444,514	0001	
Interest Rate Swap /81356/[Semi-Annual] FIXED [2.359%]/Quarterly LIBOR 2.52038%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BANK OF AMERICA, N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	1V8Y6QCX6YMJ20ELI146	04/28/2015	04/30/2035	22,000,000	LIBOR [2.359%]			(37,674)	1,432,019		1,432,019	862,178				444,514	0001	
Interest Rate Swap /81357/[Semi-Annual] FIXED [2.3605%]/Quarterly LIBOR 2.52038%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC /CR SUI S SEC USA/CLEARED THROUGH CME	1V8Y6QCX6YMJ20ELI146	04/28/2015	04/30/2035	22,000,000	LIBOR [2.3605%]			(38,004)	1,427,607		1,427,607	862,533				444,514	0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /81358/(Semi-Annual) FIXED [2.36%]/Quarterly LIBOR 2.52038%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	WELLS FARGO BANK, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	04/28/2015	04/30/2035		22,000,000	LIBOR [2.36%]			(37,894)	1,429,078		1,429,078	862,415				444,514	0001	
Interest Rate Swap /81361/(Quarterly) LIBOR [2.7775%]/Semi-Annual FIXED 5.22%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /MORGAN STANLEY/CLEARED THROUGH CME	04/28/2015	12/14/2021		33,000,000	5.22% [LIBOR]			1,003,781	2,447,532		2,447,532	(1,314,861)				283,877	0001	
Interest Rate Swap /81373/(Quarterly) LIBOR [2.76713%]/Semi-Annual FIXED 5.082%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /CR SUIS SEC USA/CLEARED THROUGH CME	04/28/2015	03/10/2025		40,000,000	5.082% [LIBOR]			1,165,656	5,662,518		5,662,518	(1,688,731)				497,594	0001	
Interest Rate Swap /81496/(Semi-Annual) FIXED [2.292%]/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUIS SEC USA/CLEARED THROUGH CME	05/06/2015	05/08/2025		100,000,000	LIBOR [2.292%]			(110,406)	1,904,992		1,904,992	1,621,142				1,260,952	0001	
Interest Rate Swap /81497/(Semi-Annual) FIXED [2.632%]/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	05/06/2015	05/08/2035		30,000,000	LIBOR [2.632%]			(135,122)	863,228		863,228	1,266,546				606,712	0001	
Interest Rate Swap /81499/(Semi-Annual) FIXED [1.7355%]/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	05/06/2015	05/08/2020		150,000,000	LIBOR [1.7355%]			669,141	1,947,283		1,947,283	674,281				874,643	0001	
Interest Rate Swap /81500/(Semi-Annual) FIXED [1.737%]/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	05/06/2015	05/08/2020		150,000,000	LIBOR [1.737%]			666,891	1,944,308		1,944,308	676,466				874,643	0001	
Interest Rate Swap /81622/(Semi-Annual) FIXED [1.811%]/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME	05/12/2015	05/14/2020		300,000,000	LIBOR [1.811%]			1,074,060	3,626,023		3,626,023	1,585,216				1,755,705	0001	
Interest Rate Swap /81623/(Semi-Annual) FIXED [2.147%]/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	05/12/2015	05/14/2022		300,000,000	LIBOR [2.147%]			66,060	4,226,050		4,226,050	3,236,986				2,757,716	0001	
Interest Rate Swap /81630/(Semi-Annual) FIXED [2.7205%]/Quarterly LIBOR 2.61413%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	05/12/2015	05/14/2035		7,400,000	LIBOR [2.7205%]			(40,810)	125,379		125,379	319,827				149,701	0001	
Interest Rate Swap /82080/(Semi-Annual) FIXED [1.9225%]/Quarterly LIBOR 2.77594%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /CR SUIS SEC USA/CLEARED THROUGH CME	06/10/2015	06/12/2020		300,000,000	LIBOR [1.9225%]			740,329	3,362,451		3,362,451	1,980,404				1,806,239	0001	
Interest Rate Swap /82081/(Semi-Annual) FIXED [2.276%]/Quarterly LIBOR 2.77594%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME	06/10/2015	06/12/2022		400,000,000	LIBOR [2.276%]			(426,895)	4,082,026		4,082,026	4,863,167				3,714,835	0001	

E18.125

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /82120/[Semi-Annual] FIXED [2.789%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /OR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6Y1MJ20ELI146	.06/11/2015	.06/15/2030		75,000,000	LIBOR [2.789%			(454,955)	(100,058)		(100,058)	2,482,027				1,269,473		0001	
Interest Rate Swap /82121/[Semi-Annual] FIXED [1.909%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/11/2015	.06/15/2020		200,000,000	LIBOR [1.909%			546,787	2,291,720		2,291,720	1,286,249				1,208,305		0001	
Interest Rate Swap /82122/[Semi-Annual] FIXED [2.2575%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/11/2015	.06/15/2022		200,000,000	LIBOR [2.2575%			(150,213)	2,166,932		2,166,932	2,386,474				1,860,108		0001	
Interest Rate Swap /82123/[Semi-Annual] FIXED [2.895%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/11/2015	.06/15/2035		50,000,000	LIBOR [2.895%			(356,303)	(311,863)		(311,863)	2,263,827				1,014,273		0001	
Interest Rate Swap /82354/[Semi-Annual] FIXED [2.932%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/18/2015	.06/22/2045		116,500,000	LIBOR [2.932%			(837,924)	(1,306,440)		(1,306,440)	7,301,105				2,997,471		0001	
Interest Rate Swap /82420/[Semi-Annual] FIXED [2.846%/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/23/2015	.06/25/2035		125,000,000	LIBOR [2.846%			(785,816)	52,461		52,461	5,587,311				2,537,993		0001	
Interest Rate Swap /82529/[Quarterly] LIBOR [2.803%/Semi-Annual] FIXED 2.839%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/26/2015	.06/30/2030		45,000,000	2.839% [LIBOR]			282,803	285,355		285,355	(1,510,164)				762,680		0001	
Interest Rate Swap /82530/[Semi-Annual] FIXED [2.948%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/26/2015	.06/30/2035		150,000,000	LIBOR [2.948%			(1,106,630)	(2,016,279)		(2,016,279)	6,873,203				3,046,514		0001	
Interest Rate Swap /82531/[Semi-Annual] FIXED [2.9475%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6Y1MJ20ELI146	.06/26/2015	.06/30/2035		75,000,000	LIBOR [2.9475%			(552,939)	(1,003,087)		(1,003,087)	3,436,195				1,523,257		0001	
Interest Rate Swap /82537/[Semi-Annual] FIXED [2.236%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6Y1MJ20ELI146	.06/26/2015	.06/30/2022		250,000,000	LIBOR [2.236%			(59,439)	2,905,743		2,905,743	2,911,654				2,338,536		0001	
Interest Rate Swap /82538/[Semi-Annual] FIXED [2.235%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6Y1MJ20ELI146	.06/26/2015	.06/30/2022		250,000,000	LIBOR [2.235%			(56,932)	2,914,088		2,914,088	2,909,270				2,338,536		0001	
Interest Rate Swap /82540/[Semi-Annual] FIXED [2.5775%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/26/2015	.06/30/2025		120,000,000	LIBOR [2.5775%			(439,469)	319,376		319,376	2,287,123				1,529,706		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /82566/(Semi-Annual) FIXED [1.805%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQX5T7XV54	.06/29/2015	.07/01/2020		300,000,000	LIBOR [1.805%]			1,221,681	4,810,560		4,810,560	771,418				1,837,117		0001	
Interest Rate Swap /82567/(Semi-Annual) FIXED [2.164%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI'S SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	.06/29/2015	.07/01/2022		400,000,000	LIBOR [2.164%]			192,908	7,454,050		7,454,050	3,263,744				3,741,657		0001	
Interest Rate Swap /82573/(Semi-Annual) FIXED [2.768%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/29/2015	.07/01/2030		150,000,000	LIBOR [2.768%]			(833,659)	1,269,291		1,269,291	4,513,284				2,543,374		0001	
Interest Rate Swap /82574/(Semi-Annual) FIXED [2.7675%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/29/2015	.07/01/2030		150,000,000	LIBOR [2.7675%]			(832,909)	1,276,412		1,276,412	4,512,553				2,543,374		0001	
Interest Rate Swap /82575/(Semi-Annual) FIXED [2.774%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/29/2015	.07/01/2030		175,000,000	LIBOR [2.774%]			(983,103)	1,381,156		1,381,156	5,275,725				2,967,269		0001	
Interest Rate Swap /82588/(Semi-Annual) FIXED [2.867%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/30/2015	.07/02/2035		200,000,000	LIBOR [2.867%]			(1,308,668)	1,145,458		1,145,458	8,444,368				4,063,250		0001	
Interest Rate Swap /82590/(Semi-Annual) FIXED [2.156%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /CR SUI'S SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	.06/30/2015	.07/02/2022		300,000,000	LIBOR [2.156%]			169,997	5,686,292		5,686,292	2,446,809				2,810,249		0001	
Interest Rate Swap /82591/(Semi-Annual) FIXED [2.741%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.06/30/2015	.07/02/2030		200,000,000	LIBOR [2.741%]			(1,056,668)	2,218,021		2,218,021	5,979,212				3,392,639		0001	
Interest Rate Swap /82738/(Quarterly) LIBOR [2.40806%]/Semi-Annual FIXED 1.6505%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQX5T7XV54	.07/07/2015	.07/09/2020		240,500,000	1.6505% [LIBOR]			(1,332,733)	(3,762,600)		(3,762,600)	(933,417)				1,487,410		0001	
Interest Rate Swap /82739/(Quarterly) LIBOR [2.40806%]/Semi-Annual FIXED 2.3325%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQX5T7XV54	.07/07/2015	.07/09/2025		171,000,000	2.3325% [LIBOR]			218,622	(2,979,564)		(2,979,564)	(2,864,489)				2,184,855		0001	
Interest Rate Swap /82741/(Semi-Annual) FIXED [2.8515%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	.07/07/2015	.07/09/2045		466,000,000	LIBOR [2.8515%]			(3,014,318)	1,932,882		1,932,882	28,662,736				12,001,196		0001	

E18.127

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /82942/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 5.205%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7V54	07/16/2015	12/09/2021		75,000,000	5.205% [LIBOR]			2,277,280	5,504,417		5,504,417	(2,979,327)				642,991		0001	
Interest Rate Swap /82945/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 5.14%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7V54	07/16/2015	12/02/2021		75,000,000	5.14% [LIBOR]			2,228,569	5,331,336		5,331,336	(2,933,322)				640,800		0001	
Interest Rate Swap /82948/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 5.33%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	07/16/2015	01/09/2022		50,000,000	5.33% [LIBOR]			1,562,675	3,959,128		3,959,128	(2,038,116)				435,172		0001	
Interest Rate Swap /83014/[Semi-Annual] FIXED [2.8005%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZZN70PB21	07/24/2015	07/28/2045		29,000,000	LIBOR [2.8005%]			(178,293)	402,649		402,649	1,766,582				747,559		0001	
Interest Rate Swap /83033/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 2.789%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZZN70PB21	07/28/2015	07/30/2045		130,000,000	2.789% [LIBOR]			781,619	(2,097,185)		(2,097,185)	(7,899,928)				3,351,127		0001	
Interest Rate Swap /83078/[Semi-Annual] FIXED [2.347%]/Quarterly LIBOR 2.52663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7V54	07/29/2015	07/31/2025		375,000,000	LIBOR [2.347%]			(589,888)	6,267,421		6,267,421	6,397,115				4,809,658		0001	
Interest Rate Swap /83079/[Semi-Annual] FIXED [2.064%]/Quarterly LIBOR 2.52663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	07/29/2015	07/31/2022		275,000,000	LIBOR [2.064%]			345,665	4,832,773		4,832,773	2,779,489				2,601,622		0001	
Interest Rate Swap /83081/[Semi-Annual] FIXED [2.481%]/Quarterly LIBOR 2.52663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	07/29/2015	07/31/2027		90,000,000	LIBOR [2.481%]			(262,173)	1,428,574		1,428,574	2,025,901				1,318,124		0001	
Interest Rate Swap /83083/[Semi-Annual] FIXED [2.35%]/Quarterly LIBOR 2.52663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	07/29/2015	07/31/2025		75,000,000	LIBOR [2.35%]			(120,228)	1,239,828		1,239,828	1,281,531				961,932		0001	
Interest Rate Swap /83145/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.7625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZZN70PB21	07/31/2015	08/04/2045		163,000,000	2.7625% [LIBOR]			934,079	(3,472,055)		(3,472,055)	(9,855,867)				4,202,588		0001	
Interest Rate Swap /83147/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 4.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZZN70PB21	07/31/2015	08/04/2045		90,000,000	4.0% [LIBOR]			1,629,499	19,514,221		19,514,221	(7,034,348)				2,320,448		0001	
Interest Rate Swap /83166/[Semi-Annual] FIXED [2.707%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZZN70PB21	08/03/2015	08/05/2045		28,800,000	LIBOR [2.707%]			(150,885)	921,039		921,039	1,718,641				742,683		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Undiscounted Premium (Received) Paid	Current Year Initial Cost of Undiscounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /83171/(Quarterly) LIBOR [2.5815%]/Semi-Annual FIXED 2.354% ...	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	08/03/2015	08/05/2027		113,000,000	2.354% [LIBOR]			193,125	(2,928,696)		(2,928,696)	(2,417,352)					1,656,905	0001	
Interest Rate Swap /83179/(Semi-Annual) FIXED [2.2565%]/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUIJ SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMAJ20ELI146	08/04/2015	08/06/2025		33,000,000	LIBOR [2.2565%]			(24,079)	738,150		738,150	537,518					423,893	0001	
Interest Rate Swap /83225/(Semi-Annual) FIXED [2.493%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZN70PB21	08/07/2015	08/11/2030		4,200,000	LIBOR [2.493%]			(13,299)	121,008		121,008	128,546					71,585	0001	
Interest Rate Swap /83252/(Semi-Annual) FIXED [2.614%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZN70PB21	08/11/2015	08/13/2045		29,400,000	LIBOR [2.614%]			(129,684)	1,466,371		1,466,371	1,717,114					758,440	0001	
Interest Rate Swap /83313/(Semi-Annual) FIXED [2.2575%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUIJ SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMAJ20ELI146	08/13/2015	08/17/2025		90,000,000	LIBOR [2.2575%]			(87,944)	2,016,610		2,016,610	1,475,371					1,158,695	0001	
Interest Rate Swap /83433/(Quarterly) LIBOR [2.64581%]/Semi-Annual FIXED 2.2305%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	08/19/2015	08/21/2025		10,000,000	2.2305% [LIBOR]			7,072	(241,027)		(241,027)	(161,460)					128,841	0001	
Interest Rate Swap /83694/(Semi-Annual) FIXED [2.2485%]/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /CR SUIJ SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMAJ20ELI146	08/28/2015	09/02/2025		90,000,000	LIBOR [2.2485%]			(71,933)	2,094,927		2,094,927	1,479,693					1,162,185	0001	
Interest Rate Swap /83769/(Quarterly) LIBOR [2.73613%]/Semi-Annual FIXED 1.611%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	09/02/2015	09/04/2020		40,000,000	1.611% [LIBOR]			(221,484)	(705,629)		(705,629)	(159,647)					259,230	0001	
Interest Rate Swap /83770/(Quarterly) LIBOR [2.73613%]/Semi-Annual FIXED 2.248%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	09/02/2015	09/04/2025		25,000,000	2.248% [LIBOR]			20,822	(583,381)		(583,381)	(411,795)					323,071	0001	
Interest Rate Swap /83876/(Quarterly) LIBOR [2.76713%]/Semi-Annual FIXED 5.6235%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZN70PB21	09/08/2015	09/10/2030		87,000,000	5.6235% [LIBOR]			3,006,406	25,060,724		25,060,724	(5,341,363)					1,487,293	0001	
Interest Rate Swap /84158/(Semi-Annual) FIXED [2.77%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZN70PB21	09/15/2015	09/17/2045		100,000,000	LIBOR [2.77%]			(580,916)	1,995,676		1,995,676	6,079,579					2,584,570	0001	
Interest Rate Swap /84160/(Semi-Annual) FIXED [2.679%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /CR SUIJ SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMAJ20ELI146	09/15/2015	09/17/2035		148,000,000	LIBOR [2.679%]			(725,075)	3,456,427		3,456,427	6,420,481					3,024,962	0001	

E18.129

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /84166/[Semi-Annual] FIXED [2.556%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	09/15/2015	09/17/2030		125,000,000	LIBOR [2.556%			(458,645)	2,868,133		2,868,133	3,934,664				2,138,742		0001	
Interest Rate Swap /84167/[Semi-Annual] FIXED [2.556%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/15/2015	09/17/2030		125,000,000	LIBOR [2.556%			(458,645)	2,868,133		2,868,133	3,934,664				2,138,742		0001	
Interest Rate Swap /84195/[Semi-Annual] FIXED [2.276%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUIS SEC USA/CLEARED THROUGH CME	09/15/2015	09/17/2025		325,000,000	LIBOR [2.276%			(282,476)	7,088,044		7,088,044	5,426,811				4,209,346		0001	
Interest Rate Swap /84181/[Quarterly] LIBOR [2.80069%/Semi-Annual] FIXED 2.801%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2015	09/18/2045		26,100,000	2.801% [LIBOR]			159,714	(365,399)		(365,399)	(1,599,185)				674,573		0001	
Interest Rate Swap /84182/[Quarterly] LIBOR [0.3396%/Semi-Annual] FIXED 3.137%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2015	09/18/2045		8,500,000	3.137% [LIBOR]			369,221			369,221	(402,482)				219,688		0001	
Interest Rate Swap /84183/[Quarterly] LIBOR [0.3396%/Semi-Annual] FIXED 3.174%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2015	09/18/2045		14,600,000	3.174% [LIBOR]			355,591			355,591	(605,532)				377,347		0001	
Interest Rate Swap /84184/[Quarterly] LIBOR [0.3396%/Semi-Annual] FIXED 3.223%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2015	09/20/2035		8,100,000	3.223% [LIBOR]			74,986			74,986	(156,916)				165,605		0001	
Interest Rate Swap /84185/[Quarterly] LIBOR [2.80069%/Semi-Annual] FIXED 2.996%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2015	09/18/2045		4,400,000	2.996% [LIBOR]			35,505			104,034	(281,906)				113,721		0001	
Interest Rate Swap /84186/[Quarterly] LIBOR [2.80069%/Semi-Annual] FIXED 3.059%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2015	09/18/2045		7,200,000	3.059% [LIBOR]			12,638			257,804	(403,441)				186,089		0001	
Interest Rate Swap /84188/[Quarterly] LIBOR [0.3396%/Semi-Annual] FIXED 3.17%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2015	09/19/2045		10,900,000	3.17% [LIBOR]			397,268			397,268	(498,373)				281,718		0001	
Interest Rate Swap /84212/[Quarterly] LIBOR [2.80069%/Semi-Annual] FIXED 2.726%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEAR THROUGH CME	09/16/2015	09/18/2035		23,300,000	2.726% [LIBOR]			125,105			(395,840)	(1,023,516)				476,370		0001	
Interest Rate Swap /84227/[Semi-Annual] FIXED [2.5615%/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/17/2015	09/21/2030		100,000,000	LIBOR [2.5615%			(357,567)	2,244,292		2,244,292	3,149,069				1,712,454		0001	

E18.130

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /84228/[Semi-Annual] FIXED [2.7995%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	09/17/2015	09/21/2045		120,000,000	LIBOR [2.7995%]			(714,680)	1,710,715		1,710,715	7,337,931				3,102,064		0001	
Interest Rate Swap /84242/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 1.7%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	09/18/2015	09/22/2021		396,000,000	1.7% [LIBOR]			(2,030,496)	(9,541,823)		(9,541,823)	(2,351,768)				3,271,497		0001	
Interest Rate Swap /84251/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 2.451%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEARED THROUGH CME	09/18/2015	09/22/2030		110,000,000	2.451% [LIBOR]			262,073	(3,711,852)		(3,711,852)	(3,349,583)				1,883,700		0001	
Interest Rate Swap /84281/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 2.665%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME	09/22/2015	09/24/2045		19,000,000	2.665% [LIBOR]			84,615	(765,767)		(765,767)	(1,125,587)				491,252		0001	
Interest Rate Swap /84524/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.459%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	10/02/2015	10/06/2045		184,000,000	2.459% [LIBOR]			460,087	(14,733,979)		(14,733,979)	(10,351,259)				4,760,055		0001	
Interest Rate Swap /84584/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.0605%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME	10/07/2015	10/09/2025		15,000,000	2.0605% [LIBOR]			(21,623)	(532,286)		(532,286)	(219,611)				195,288		0001	
Interest Rate Swap /84586/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 2.3515%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	10/07/2015	10/09/2030		10,000,000	2.3515% [LIBOR]			14,685	(440,043)		(440,043)	(294,957)				171,610		0001	
Interest Rate Swap /84610/[Semi-Annual] FIXED [2.0785%]/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUI S SEC USA/CLEARED THROUGH CME	10/08/2015	10/13/2025		75,000,000	LIBOR [2.0785%]			93,104	2,582,530		2,582,530	1,113,888				977,161		0001	
Interest Rate Swap /84742/[Semi-Annual] FIXED [2.041%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	10/20/2015	10/22/2025		97,000,000	LIBOR [2.041%]			151,976	3,578,233		3,578,233	1,411,470				1,265,655		0001	
Interest Rate Swap /84777/[Quarterly] LIBOR [2.508%]/Semi-Annual FIXED 2.293%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	10/22/2015	10/26/2030		158,000,000	2.293% [LIBOR]			156,840	(7,930,043)		(7,930,043)	(4,594,994)				2,717,187		0001	
Interest Rate Swap /84832/[Semi-Annual] FIXED [2.387%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	10/27/2015	10/29/2035		17,000,000	LIBOR [2.387%]			(34,222)	1,076,378		1,076,378	685,212				348,707		0001	
Interest Rate Swap /84862/[Semi-Annual] FIXED [2.4025%]/Quarterly LIBOR 2.52038%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /CR SUI S SEC USA/CLEARED THROUGH CME	10/28/2015	10/30/2035		15,000,000	LIBOR [2.4025%]			(32,212)	918,049		918,049	607,351				307,683		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /84864/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 1.695%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME	10/28/2015	10/30/2022		15,000,000	1.695% [LIBOR]			(73,913)	(481,979)		(481,979)	(102,713)				146,778		0001	
Interest Rate Swap /85109/[Semi-Annual] FIXED [2.4075%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME	11/09/2015	11/12/2027		100,000,000	LIBOR [2.4075%]			(235,872)	2,313,607		2,313,607	2,259,805				1,489,127		0001	
Interest Rate Swap /85116/[Semi-Annual] FIXED [2.27%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUI S SEC USA/CLEARED THROUGH CME	11/09/2015	11/12/2025		110,000,000	LIBOR [2.27%]			(108,209)	2,514,385		2,514,385	1,859,045				1,441,588		0001	
Interest Rate Swap /85121/[Semi-Annual] FIXED [2.636%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	11/09/2015	11/12/2035		125,000,000	LIBOR [2.636%]			(580,464)	3,686,571		3,686,571	5,396,067				2,567,069		0001	
Interest Rate Swap /85211/[At Maturity] FIXED [2.0275%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	11/17/2015	11/19/2045		25,000,000	Inflation to Maturity				313,517		313,517	(1,244,294)				648,195		0001	
Interest Rate Swap /85213/[At Maturity] FIXED [2.04%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A.	11/18/2015	11/20/2045		50,000,000	Inflation to Maturity				410,793		410,793	(2,363,461)				1,296,389		0001	
Interest Rate Swap /85244/[Quarterly] LIBOR [2.6445%]/Semi-Annual FIXED 1.62771%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME	11/18/2015	11/20/2020		625,000,000	1.62771% [LIBOR]			(3,338,754)	(11,918,444)		(11,918,444)	(2,723,119)				4,296,165		0001	
Interest Rate Swap /85246/[At Maturity] FIXED [2.0425%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	11/18/2015	11/20/2045		25,000,000	Inflation to Maturity				185,727		185,727	(1,173,842)				648,195		0001	
Interest Rate Swap /85248/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.254%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME	11/19/2015	11/23/2027		250,000,000	2.254% [LIBOR]			220,660	(8,873,337)		(8,873,337)	(5,304,337)				3,729,108		0001	
Interest Rate Swap /85249/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.133%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME	11/19/2015	11/23/2025		180,000,000	2.133% [LIBOR]			(58,925)	(5,698,073)		(5,698,073)	(2,820,046)				2,364,107		0001	
Interest Rate Swap /85250/[Semi-Annual] FIXED [2.2565%]/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME	11/19/2015	11/23/2027		75,000,000	LIBOR [2.2565%]			(68,073)	2,647,039		2,647,039	1,593,070				1,118,733		0001	
Interest Rate Swap /85279/[At Maturity] FIXED [2.055%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	11/19/2015	11/23/2045		25,000,000	Inflation to Maturity				108,174		108,174	(1,167,659)				648,315		0001	

E18.132

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /85290/[At Maturity] FIXED [2.0775%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	11/20/2015	11/24/2045		25,000,000	[2.0775%] Inflation to Maturity				(42,713)		(42,713)	(1,154,908)				648,315		0001	
Interest Rate Swap /85291/[Quarterly] LIBOR [2.797%]/Semi-Annual FIXED 3.25%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /MORGAN STANLEY/CLEARED THROUGH CME	11/20/2015	07/01/2022		150,000,000	3.25% (LIBOR)		1,556,659		1,832,559		1,832,559	(2,777,323)				1,403,122		0001	
Interest Rate Swap /85505/[At Maturity] FIXED [2.0725%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	12/02/2015	12/04/2045		25,000,000	[2.0725%] Inflation to Maturity				9,748		9,748	(1,161,029)				648,677		0001	
Interest Rate Swap /85529/[At Maturity] FIXED [2.1%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	12/03/2015	12/07/2045		25,000,000	[2.1%] Inflation to Maturity				(166,222)		(166,222)	(1,167,149)				648,797		0001	
Interest Rate Swap /85539/[At Maturity] FIXED [2.1425%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	12/04/2015	12/08/2045		25,000,000	[2.1425%] Inflation to Maturity				(470,500)		(470,500)	(1,119,893)				648,797		0001	
Interest Rate Swap /85556/[At Maturity] FIXED [2.065%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	12/07/2015	12/09/2045		25,000,000	[2.065%] Inflation to Maturity				63,147		63,147	(1,165,953)				648,917		0001	
Interest Rate Swap /85599/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 1.917%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME	12/09/2015	12/11/2022		309,000,000	1.917% (LIBOR)		(775,363)		(7,659,590)		(7,659,590)	(2,856,017)				3,070,627		0001	
Interest Rate Swap /85614/[Semi-Annual] FIXED [2.6675%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	12/09/2015	12/11/2045		134,000,000	LIBOR [2.6675%]			(669,428)	5,353,272		5,353,272	8,008,243				3,478,197		0001	
Interest Rate Swap /85615/[Semi-Annual] FIXED [1.915%]/Quarterly LIBOR 2.77106%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /CR SUIS SEC USA/CLEARED THROUGH CME	12/09/2015	12/11/2022		212,000,000	LIBOR [1.915%]		536,204		5,271,019		5,271,019	1,955,450				2,106,708		0001	
Interest Rate Swap /85616/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 2.655%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	12/09/2015	12/11/2045		66,000,000	2.655% (LIBOR)		321,468		(2,796,897)		(2,796,897)	(3,932,444)				1,713,142		0001	
Interest Rate Swap /85636/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 2.1445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME	12/09/2015	12/11/2025		13,000,000	2.1445% (LIBOR)		(3,045)		(406,871)		(406,871)	(207,536)				171,359		0001	
Interest Rate Swap /85638/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 2.4035%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	12/09/2015	12/11/2030		25,000,000	2.4035% (LIBOR)		58,893		(990,034)		(990,034)	(766,671)				432,110		0001	
Interest Rate Swap /86158/[At Maturity] FIXED [1.965%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	12/21/2015	12/23/2045		25,000,000	[1.965%] Inflation to Maturity				739,581		739,581	(1,225,687)				649,399		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /86421/[At Maturity] FIXED [1.9625%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	01/08/2016	01/12/2046		25,000,000	[1.9625%] Inflation to Maturity				768,835		768,835	(1,230,694)				649,880		0001	
Interest Rate Swap /86482/[At Maturity] FIXED [1.87%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14#NAYLU02	01/12/2016	01/14/2046		25,000,000	[1.87%] Inflation to Maturity				1,386,116		1,386,116	(1,304,962)				650,000		0001	
Interest Rate Swap /86590/[At Maturity] FIXED [1.86%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7C6T14#NAYLU02	01/15/2016	01/19/2046		25,000,000	[1.86%] Inflation to Maturity				1,454,904		1,454,904	(1,311,693)				650,120		0001	
Interest Rate Swap /86595/[At Maturity] FIXED [1.83%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H2G7GRS05BHJ91	01/15/2016	01/19/2046		25,000,000	[1.83%] Inflation to Maturity				1,552,150		1,552,150	(1,505,297)				650,120		0001	
Interest Rate Swap /86604/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 1.925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	01/19/2016	01/21/2026		100,000,000	1.925% [LIBOR]			(272,677)	(4,614,608)		(4,614,608)	(1,391,428)				1,328,533		0001	
Interest Rate Swap /86619/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 1.968%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	01/20/2016	01/22/2028		100,000,000	1.968% [LIBOR]			(229,677)	(5,981,411)		(5,981,411)	(1,884,531)				1,505,822		0001	
Interest Rate Swap /86700/[At Maturity] FIXED [1.79%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJFFPUB8MPR08K5P83	01/21/2016	01/25/2046		25,000,000	[1.79%] Inflation to Maturity				1,822,335		1,822,335	(1,373,520)				650,360		0001	
Interest Rate Swap /86722/[Semi-Annual] FIXED [2.1725%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	01/25/2016	01/27/2031		110,000,000	LIBOR [2.1725%]			20,843	7,068,991		7,068,991	3,140,784				1,911,596		0001	
Interest Rate Swap /86723/[Semi-Annual] FIXED [1.928%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /CR SUI SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	01/25/2016	01/27/2026		75,000,000	LIBOR [1.928%]			197,586	3,454,779		3,454,779	1,050,275				997,810		0001	
Interest Rate Swap /86725/[At Maturity] FIXED [1.82%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. 023V05H2G7GRS05BHJ91	01/25/2016	01/27/2046		25,000,000	[1.82%] Inflation to Maturity				1,622,322		1,622,322	(1,511,920)				650,481		0001	
Interest Rate Swap /86746/[Semi-Annual] FIXED [1.4315%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	01/25/2016	01/27/2021		60,000,000	LIBOR [1.4315%]			455,969	1,474,682		1,474,682	157,063				432,666		0001	
Interest Rate Swap /86881/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.042%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VYVVKR63DVZLN70PB21	02/02/2016	02/04/2031		125,000,000	2.042% [LIBOR]			(184,306)	(9,762,460)		(9,762,460)	(3,422,812)				2,173,167		0001	
Interest Rate Swap /86882/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.0395%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	02/02/2016	02/04/2031		125,000,000	2.0395% [LIBOR]			(187,431)	(9,795,054)		(9,795,054)	(3,419,747)				2,173,167		0001	

E18.134

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /86883/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 1.906%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	02/02/2016	02/04/2028		250,000,000	1.906% [LIBOR]			(708,613)	(16,292,127)		(16,292,127)	(4,605,045)					3,768,703	0001	
Interest Rate Swap /86904/[Semi-Annual] FIXED [2.0215%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	02/03/2016	02/05/2031		90,000,000	LIBOR [2.0215%]			145,434	7,222,850		7,222,850	2,446,042					1,565,327	0001	
Interest Rate Swap /87889/[Semi-Annual] FIXED [2.144%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /CR SUIS SEC USA/CLEARED THROUGH CME	02/03/2016	02/05/2036		18,000,000	LIBOR [2.144%]			7,037	1,768,412		1,768,412	686,315					372,169	0001	
Interest Rate Swap /86947/[At Maturity] FIXED [1.8725%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	02/04/2016	02/08/2046		25,000,000	[1.8725%] Inflation to Maturity				1,315,685		1,315,685	(1,330,758)					650,841	0001	
Interest Rate Swap /86989/[At Maturity] FIXED [1.785%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	02/08/2016	02/10/2046		25,000,000	[1.785%] Inflation to Maturity				1,874,097		1,874,097	(1,378,459)					650,961	0001	
Interest Rate Swap /87005/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 1.802%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	02/09/2016	02/11/2028		260,000,000	1.802% [LIBOR]			(973,341)	(19,190,564)		(19,190,564)	(4,553,531)					3,923,761	0001	
Interest Rate Swap /87006/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 1.941%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	02/09/2016	02/11/2031		215,000,000	1.941% [LIBOR]			(506,028)	(19,088,797)		(19,088,797)	(5,690,169)					3,740,938	0001	
Interest Rate Swap /87008/[At Maturity] FIXED [1.725%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	02/09/2016	02/11/2046		25,000,000	[1.725%] Inflation to Maturity				2,327,968		2,327,968	(1,391,065)					650,961	0001	
Interest Rate Swap /87053/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 1.713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /CR SUIS SEC USA/CLEARED THROUGH CME	02/10/2016	02/12/2028		25,000,000	1.713% [LIBOR]			(114,657)	(2,028,550)		(2,028,550)	(417,107)					377,492	0001	
Interest Rate Swap /87058/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 1.685%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	02/11/2016	02/16/2031		175,000,000	1.685% [LIBOR]			(834,240)	(20,238,555)		(20,238,555)	(4,193,274)					3,047,463	0001	
Interest Rate Swap /87062/[Quarterly] LIBOR [2.629%]/Semi-Annual FIXED 1.675%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME	02/11/2016	02/16/2031		175,000,000	1.675% [LIBOR]			(851,740)	(20,421,579)		(20,421,579)	(4,176,095)					3,047,463	0001	
Interest Rate Swap /87136/[Semi-Annual] FIXED [1.1675%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /MORGAN STANLEY/CLEARED THROUGH CME	02/17/2016	02/19/2021		200,000,000	LIBOR [1.1675%]			1,989,537	6,134,724		6,134,724	48,624					1,462,874	0001	
Interest Rate Swap /87137/[Semi-Annual] FIXED [2.0655%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /CR SUIS SEC USA/CLEARED THROUGH CME	02/17/2016	02/19/2036		120,000,000	LIBOR [2.0655%]			116,122	13,116,212		13,116,212	4,484,481					2,484,029	0001	

E18.135

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /87139/[Semi-Annual] FIXED [1.654%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	02/17/2016	02/19/2026		215,000,000	LIBOR [1.654%]			1,092,777	13,865,933		13,865,933	2,504,164				2,872,484		0001	
Interest Rate Swap /87140/[Semi-Annual] FIXED [2.059%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	02/17/2016	02/19/2036		180,000,000	LIBOR [2.059%]			185,883	19,836,734		19,836,734	6,713,874				3,726,043		0001	
Interest Rate Swap /87364/[At Maturity] FIXED [1.815%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	02/26/2016	03/01/2046		25,000,000	[1.815%] Inflation to Maturity				1,722,396		1,722,396	(1,362,753)				651,561		0001	
Interest Rate Swap /87447/[At Maturity] FIXED [1.902%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC.	03/02/2016	03/04/2046		25,000,000	[1.902%] Inflation to Maturity				1,144,946		1,144,946	(1,475,437)				651,681		0001	
Interest Rate Swap /87448/[At Maturity] FIXED [1.9%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	03/02/2016	03/04/2046		50,000,000	[1.9%] Inflation to Maturity				2,363,456		2,363,456	(2,633,786)				1,303,361		0001	
Interest Rate Swap /87468/[At Maturity] FIXED [1.915%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	03/03/2016	03/07/2046		100,000,000	[1.915%] Inflation to Maturity				4,354,311		4,354,311	(5,238,177)				2,607,202		0001	
Interest Rate Swap /87469/[At Maturity] FIXED [1.896%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC.	03/03/2016	03/07/2046		25,000,000	[1.896%] Inflation to Maturity				1,187,283		1,187,283	(1,479,447)				651,800		0001	
Interest Rate Swap /87503/[At Maturity] FIXED [1.905%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	03/04/2016	03/08/2046		100,000,000	[1.905%] Inflation to Maturity				4,618,807		4,618,807	(5,261,905)				2,607,202		0001	
Interest Rate Swap /87515/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 3.65%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /CR SUI S SEC USA/CLEARED THROUGH CME	03/04/2016	03/08/2026		17,200,000	3.65% [LIBOR]			255,303	1,141,252		1,141,252	(525,171)				230,602		0001	
Interest Rate Swap /87528/[At Maturity] FIXED [1.8925%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	03/07/2016	03/09/2046		100,000,000	[1.8925%] Inflation to Maturity				4,947,131		4,947,131	(5,291,142)				2,607,202		0001	
Interest Rate Swap /87549/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 3.15%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	03/07/2016	03/09/2026		80,000,000	3.15% [LIBOR]			785,099	2,676,896		2,676,896	(2,065,162)				1,072,567		0001	
Interest Rate Swap /87698/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 1.408%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	03/11/2016	03/15/2021		100,000,000	1.408% [LIBOR]			(774,394)	(2,640,208)		(2,640,208)	(265,033)				743,303		0001	
Interest Rate Swap /87857/[At Maturity] FIXED [1.87%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	03/16/2016	03/18/2046		45,000,000	[1.87%] Inflation to Maturity				2,661,153		2,661,153	(2,459,077)				1,173,888		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /87907/(Semi-Annual) FIXED [1.284%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/18/2016	03/22/2021		75,000,000	LIBOR [1.284%]			696,564	2,199,017		2,199,017	106,356				559,994		0001	
Interest Rate Swap /87913/(Semi-Annual) FIXED [1.491%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /CR SUI S SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	03/18/2016	03/22/2023		80,000,000	LIBOR [1.491%]			577,401	3,477,228		3,477,228	433,075				822,679		0001	
Interest Rate Swap /87915/(Semi-Annual) FIXED [1.723%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /CR SUI S SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	03/18/2016	03/22/2026		75,000,000	LIBOR [1.723%]			367,314	4,567,976		4,567,976	931,082				1,008,325		0001	
Interest Rate Swap /87975/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED [1.877%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	03/22/2016	03/24/2028		275,000,000	1.877% [LIBOR]			(942,316)	(18,926,696)		(18,926,696)	(5,069,948)				4,177,376		0001	
Interest Rate Swap /88045/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED [3.265%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DZZN70PB21	03/24/2016	03/30/2046		75,000,000	3.265% [LIBOR]			784,924	5,760,320		5,760,320	(5,151,604)				1,957,557		0001	
Interest Rate Swap /88095/(Semi-Annual) FIXED [1.316%/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	03/29/2016	03/31/2021		50,000,000	LIBOR [1.316%]			451,218	1,443,793		1,443,793	82,144				375,000		0001	
Interest Rate Swap /88249/(Semi-Annual) FIXED [1.613%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI S SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	04/05/2016	04/07/2026		170,000,000	LIBOR [1.613%]			1,007,425	11,657,308		11,657,308	1,931,955				2,291,850		0001	
Interest Rate Swap /88359/(Quarterly) LIBOR [2.43631%]/Semi-Annual FIXED [1.1905%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	04/12/2016	04/15/2021		720,000,000	1.1905% [LIBOR]			(7,265,652)	(23,073,977)		(23,073,977)	(370,687)				5,447,789		0001	
Interest Rate Swap /88377/(At Maturity) FIXED [1.935%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL E58DKGMJYYJLN8C3868	04/13/2016	04/15/2046		50,000,000	Inflation to Maturity [1.935%]				2,212,617		2,212,617	(2,672,234)				1,305,996		0001	
Interest Rate Swap /88388/(At Maturity) FIXED [1.9225%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUWISFPUBMIPRO8K5P83	04/14/2016	04/18/2046		50,000,000	Inflation to Maturity [1.9225%]				2,218,724		2,218,724	(2,633,278)				1,306,235		0001	
Interest Rate Swap /88428/(Semi-Annual) FIXED [1.6535%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	04/18/2016	04/20/2026		150,000,000	LIBOR [1.6535%]			822,877	9,928,426		9,928,426	1,776,616				2,027,776		0001	
Interest Rate Swap /88433/(Semi-Annual) FIXED [1.215%/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	04/19/2016	04/21/2021		50,000,000	LIBOR [1.215%]			491,338	1,583,655		1,583,655	39,072				379,967		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /88467/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 1.287%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /MORGAN STANLEY/CLEARED THROUGH CME	04/20/2016	04/22/2021		40,000,000	1.287% [LIBOR]			(364,271)	(1,203,962)		(1,203,962)	(59,120)					303,974	0001	
Interest Rate Swap /88469/[At Maturity] FIXED [1.975%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	04/21/2016	04/25/2046		100,000,000	[1.975%] Inflation to Maturity				3,393,104		3,393,104	(5,021,542)					2,613,427	0001	
Interest Rate Swap /88510/[At Maturity] FIXED [2.01%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	04/25/2016	04/27/2046		50,000,000	[2.01%] Inflation to Maturity				1,279,759		1,279,759	(2,589,382)					1,306,953	0001	
Interest Rate Swap /88515/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 1.922%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /CR SUI SEC USA/CLEARED THROUGH CME	04/26/2016	04/28/2028		300,000,000	1.922% [LIBOR]			(791,085)	(19,753,435)		(19,753,435)	(5,727,642)					4,581,757	0001	
Interest Rate Swap /88520/[Semi-Annual] FIXED [1.8245%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI SEC USA/CLEARED THROUGH CME	04/26/2016	04/28/2026		300,000,000	LIBOR [2.01%] [1.8245%]			1,083,585	16,484,986		16,484,986	4,055,379					4,061,096	0001	
Interest Rate Swap /88556/[Semi-Annual] FIXED [1.522%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /CR SUI SEC USA/CLEARED THROUGH CME	04/28/2016	05/03/2023		40,000,000	LIBOR [1.522%]			267,158	1,728,274		1,728,274	234,517					416,653	0001	
Interest Rate Swap /88557/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 1.8895%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /CR SUI SEC USA/CLEARED THROUGH CME	04/28/2016	05/03/2028		45,000,000	1.8895% [LIBOR]			(135,178)	(3,090,460)		(3,090,460)	(848,851)					687,632	0001	
Interest Rate Swap /88559/[Semi-Annual] FIXED [2.171%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI SEC USA/CLEARED THROUGH CME	04/28/2016	05/03/2036		72,000,000	LIBOR [2.171%]			13,605	6,890,986		6,890,986	2,793,870					1,499,520	0001	
Interest Rate Swap /88567/[Semi-Annual] FIXED [1.7625%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /CR SUI SEC USA/CLEARED THROUGH CME	04/28/2016	05/03/2026		200,000,000	LIBOR [1.7625%]			854,791	11,856,425		11,856,425	2,603,784					2,711,088	0001	
Interest Rate Swap /88584/[Semi-Annual] FIXED [1.297%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /MORGAN STANLEY/CLEARED THROUGH CME	04/29/2016	05/04/2021		50,000,000	LIBOR [1.297%]			446,223	1,511,815		1,511,815	84,678					382,426	0001	
Interest Rate Swap /88703/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 2.222%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEARED THROUGH CME	05/03/2016	05/05/2046		20,000,000	2.222% [LIBOR]			7,781	(2,552,993)		(2,552,993)	(1,075,015)					522,972	0001	
Interest Rate Swap /88704/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 1.83%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /CR SUI SEC USA/CLEARED THROUGH CME	05/03/2016	05/05/2028		200,000,000	1.83% [LIBOR]			(706,186)	(14,740,615)		(14,740,615)	(3,663,863)					3,057,777	0001	

E18.138

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /88706/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 1.8255%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /CR SUI SEC USA/CLEARED THROUGH CME	05/03/2016	05/05/2028		200,000,000	1.8255% [LIBOR]			(715,186)	(14,815,655)		(14,815,655)	(3,655,344)				3,057,777		0001	
Interest Rate Swap /88725/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 1.897%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI SEC USA/CLEARED THROUGH CME	05/05/2016	05/09/2031		300,000,000	1.897% [LIBOR]			(859,973)	(28,599,046)		(28,599,046)	(7,964,688)				5,273,519		0001	
Interest Rate Swap /88773/[Semi-Annual] FIXED [2.035%]/Quarterly LIBOR 2.61813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI SEC USA/CLEARED THROUGH CME	05/10/2016	05/12/2036		120,000,000	LIBOR [2.035%]			163,954	13,784,055		13,784,055	4,483,068				2,500,640		0001	
Interest Rate Swap /88791/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 1.7605%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI SEC USA/CLEARED THROUGH CME	05/11/2016	05/13/2028		40,000,000	1.7605% [LIBOR]			(164,960)	(3,190,046)		(3,190,046)	(710,393)				612,536		0001	
Interest Rate Swap /88942/[At Maturity] FIXED [2.01%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	05/18/2016	05/20/2046		100,000,000	[2.01%] Inflation to Maturity				2,242,967		2,242,967	(5,097,667)				2,616,773		0001	
Interest Rate Swap /89347/[Semi-Annual] FIXED [1.9775%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME	05/24/2016	05/26/2031		67,000,000	LIBOR [1.9775%]			120,395	5,842,401		5,842,401	1,845,979				1,180,132		0001	
Interest Rate Swap /89348/[Semi-Annual] FIXED [2.1045%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUI SEC USA/CLEARED THROUGH CME	05/24/2016	05/26/2036		25,000,000	LIBOR [2.1045%]			13,174	2,633,384		2,633,384	955,918				521,566		0001	
Interest Rate Swap /89350/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 1.854%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUI SEC USA/CLEARED THROUGH CME	05/24/2016	05/26/2028		325,000,000	1.854% [LIBOR]			(985,383)	(23,472,524)		(23,472,524)	(6,099,539)				4,984,805		0001	
Interest Rate Swap /89351/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 1.9775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /CR SUI SEC USA/CLEARED THROUGH CME	05/24/2016	05/26/2031		275,000,000	1.9775% [LIBOR]			(494,160)	(23,980,006)		(23,980,006)	(7,576,781)				4,843,827		0001	
Interest Rate Swap /89650/[Semi-Annual] FIXED [2.1095%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /CR SUI SEC USA/CLEARED THROUGH CME	06/06/2016	06/08/2046		42,000,000	LIBOR [2.1095%]			23,596	6,304,204		6,304,204	2,198,115				1,100,047		0001	
Interest Rate Swap /89651/[Semi-Annual] FIXED [1.749%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /MORGAN STANLEY/CLEARED THROUGH CME	06/06/2016	06/08/2028		36,000,000	LIBOR [1.749%]			150,005	2,933,866		2,933,866	644,772				553,042		0001	
Interest Rate Swap /89652/[Semi-Annual] FIXED [1.251%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /MORGAN STANLEY/CLEARED THROUGH CME	06/06/2016	06/08/2021		54,000,000	LIBOR [1.251%]			493,928	1,752,813		1,752,813	79,556				421,753		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /89913/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 1.72%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	.06/14/2016	.06/16/2031		225,000,000	1.72% [LIBOR]			(1,047,166)	(25,939,923)		(25,939,923)	(5,643,453)				3,971,107		0001	
Interest Rate Swap /89914/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 1.5925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	.06/14/2016	.06/16/2028		80,000,000	1.5925% [LIBOR]			(474,326)	(7,592,522)		(7,592,522)	(1,310,398)				1,230,285		0001	
Interest Rate Swap /90073/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 1.7155%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	.06/17/2016	.06/21/2031		185,000,000	1.7155% [LIBOR]			(903,601)	(21,451,246)		(21,451,246)	(4,627,258)				3,267,752		0001	
Interest Rate Swap /90074/[Semi-Annual] FIXED [1.7445%]/Quarterly LIBOR 2.78963%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63VZVZN70PB21	.06/17/2016	.06/21/2031		70,000,000	LIBOR [1.7445%]			321,603	7,899,224		7,899,224	1,770,901				1,236,447		0001	
Interest Rate Swap /90152/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 1.1965%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/22/2016	.06/24/2021		43,000,000	1.1965% [LIBOR]			(439,959)	(1,475,841)		(1,475,841)	(35,681)				338,582		0001	
Interest Rate Swap /90204/[Semi-Annual] FIXED [1.7515%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/23/2016	.06/27/2028		22,000,000	LIBOR [1.7515%]			102,917	1,801,068		1,801,068	393,774				338,864		0001	
Interest Rate Swap /90205/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 1.875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	.06/23/2016	.06/27/2031		82,000,000	1.875% [LIBOR]			(282,331)	(8,119,629)		(8,119,629)	(2,182,688)				1,448,989		0001	
Interest Rate Swap /90207/[Semi-Annual] FIXED [2.009%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	.06/23/2016	.06/27/2036		75,000,000	LIBOR [2.009%]			157,729	8,956,305		8,956,305	2,788,796				1,568,289		0001	
Interest Rate Swap /90214/[Semi-Annual] FIXED [1.408%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	.06/23/2016	.06/27/2023		180,000,000	LIBOR [1.408%]			1,460,351	8,939,732		8,939,732	893,580				1,907,066		0001	
Interest Rate Swap /90215/[Semi-Annual] FIXED [1.743%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /MORGAN STANLEY/CLEARED THROUGH CME 17331LVCZKQKX5T7XV54	.06/23/2016	.06/27/2028		55,000,000	LIBOR [1.743%]			261,968	4,542,185		4,542,185	980,006				847,161		0001	
Interest Rate Swap /90216/[Semi-Annual] FIXED [2.068%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /CR SUIS SEC USA/CLEARED THROUGH CME 1V8Y6QCX6YMJ20ELI146	.06/23/2016	.06/27/2041		35,000,000	LIBOR [2.068%]			52,957	4,797,407		4,797,407	1,570,816				829,913		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /90496/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 1.547%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /CR SUI5 SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	07/05/2016	07/07/2031		200,000,000	1.547% [LIBOR]			(1,317,206)	(26,883,641)		(26,883,641)	(4,674,415)				3,538,361		0001	
Interest Rate Swap /90497/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 1.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /CR SUI5 SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	07/05/2016	07/07/2031		250,000,000	1.541% [LIBOR]			(1,661,507)	(33,765,660)		(33,765,660)	(5,828,196)				4,422,952		0001	
Interest Rate Swap /90529/[Quarterly] LIBOR [2.42519%]/Semi-Annual FIXED 1.4145%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /CR SUI5 SEC USA/CLEARED THROUGH CME 1V8Y6QCX6VMJ20ELI146	07/08/2016	07/12/2028		110,000,000	1.4145% [LIBOR]			(867,350)	(12,185,523)		(12,185,523)	(1,620,306)				1,697,888		0001	
Interest Rate Swap /90572/[Quarterly] LIBOR [2.43631%]/Semi-Annual FIXED 1.3215%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZLN70PB21	07/11/2016	07/13/2026		5,000,000	1.3215% [LIBOR]			(44,057)	(457,160)		(457,160)	(45,940)				68,648		0001	
Interest Rate Swap /90642/[At Maturity] FIXED [1.845%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	07/13/2016	07/15/2044		50,000,000	[1.845%] Inflation to Maturity				2,922,832		2,922,832	(2,539,948)				1,263,428		0001	
Interest Rate Swap /90764/[Semi-Annual] FIXED [1.32%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZLN70PB21	07/22/2016	07/26/2023		100,000,000	LIBOR [1.32%]			873,734	5,417,104		5,417,104	421,339				1,068,878		0001	
Interest Rate Swap /90765/[Semi-Annual] FIXED [1.594%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZLN70PB21	07/22/2016	07/26/2028		100,000,000	LIBOR [1.594%]			599,734	9,593,648		9,593,648	1,656,794				1,546,771		0001	
Interest Rate Swap /90766/[Semi-Annual] FIXED [1.895%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZLN70PB21	07/22/2016	07/26/2046		35,000,000	LIBOR [1.895%]			104,557	6,747,155		6,747,155	1,720,106				918,875		0001	
Interest Rate Swap /90767/[Semi-Annual] FIXED [1.7255%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZLN70PB21	07/22/2016	07/26/2031		400,000,000	LIBOR [1.7255%]			1,872,937	46,290,892		46,290,892	10,119,071				7,093,659		0001	
Interest Rate Swap /90841/[At Maturity] FIXED [1.8275%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/01/2016	08/03/2041		50,000,000	[1.8275%] Inflation to Maturity				2,865,578		2,865,578	(2,263,113)				1,188,486		0001	
Interest Rate Swap /90932/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 1.1205%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZLN70PB21	08/02/2016	08/04/2021		55,000,000	1.1205% [LIBOR]			(587,920)	(2,060,126)		(2,060,126)	(14,721)				442,571		0001	
Interest Rate Swap /90933/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 1.55%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEARED THROUGH CME VVVVCKR63DVZLN70PB21	08/02/2016	08/04/2028		30,000,000	1.55% [LIBOR]			(191,834)	(3,001,410)		(3,001,410)	(489,028)				464,516		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /90934/[Semi-Annual] FIXED [1.7705%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	08/02/2016	08/04/2036		90,000,000	LIBOR [1.7705%]			377,051	13,840,181		13,840,181	3,126,342				1,887,320		0001	
Interest Rate Swap /90935/[Semi-Annual] FIXED [1.857%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/02/2016	08/04/2046		72,000,000	LIBOR [1.857%]			239,361	14,436,026		14,436,026	3,507,216				1,891,285		0001	
Interest Rate Swap /90984/[At Maturity] FIXED [1.865%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	08/05/2016	08/09/2041		55,000,000	[1.865%] Inflation to Maturity				2,687,112		2,687,112	(2,457,404)				1,307,624		0001	
Interest Rate Swap /90985/[At Maturity] FIXED [1.897%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	08/05/2016	08/09/2046		50,000,000	[1.897%] Inflation to Maturity				2,605,841		2,605,841	(2,630,288)				1,313,630		0001	
Interest Rate Swap /91023/[At Maturity] FIXED [1.8875%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	08/09/2016	08/11/2044		100,000,000	[1.8875%] Inflation to Maturity				4,684,181		4,684,181	(4,978,201)				2,530,316		0001	
Interest Rate Swap /91053/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 1.141%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	08/15/2016	08/17/2021		10,000,000	1.141% [LIBOR]			(101,878)	(373,309)		(373,309)	(5,425)				81,086		0001	
Interest Rate Swap /91060/[Semi-Annual] FIXED [1.0445%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	08/16/2016	08/18/2019		50,000,000	LIBOR [1.0445%]			560,010	531,296		531,296	(236,719)				200,000		0001	
Interest Rate Swap /91061/[Semi-Annual] FIXED [1.4695%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	08/16/2016	08/18/2026		125,000,000	LIBOR [1.4695%]			868,775	10,302,721		10,302,721	1,364,574				1,726,403		0001	
Interest Rate Swap /91062/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 1.74125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	08/16/2016	08/18/2036		130,000,000	LIBOR [1.74125%]			(550,251)	(20,562,437)		(20,562,437)	(4,485,188)				2,729,226		0001	
Interest Rate Swap /91064/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 1.74%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	08/16/2016	08/18/2036		170,000,000	LIBOR [1.74%]			(721,684)	(26,919,511)		(26,919,511)	(5,862,882)				3,568,988		0001	
Interest Rate Swap /91065/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 1.6425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	08/16/2016	08/18/2031		250,000,000	LIBOR [1.6425%]			(1,305,050)	(31,326,173)		(31,326,173)	(6,182,883)				4,442,339		0001	
Interest Rate Swap /91158/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 4.4%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	08/22/2016	08/24/2046		68,000,000	LIBOR [4.4%]			1,519,680	20,528,937		20,528,937	(5,868,738)				1,787,832		0001	
Interest Rate Swap /91165/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 1.653%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/23/2016	08/25/2036		325,000,000	LIBOR [1.653%]			(1,661,310)	(55,548,084)		(55,548,084)	(10,915,661)				6,826,934		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /91339/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 1.592%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/30/2016	09/01/2031		300,000,000	1.592% [LIBOR]			(1,713,457)	(39,394,446)		(39,394,446)	(7,321,866)					5,339,242		0001
Interest Rate Swap /91409/[Semi-Annual] FIXED [1.141%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	09/07/2016	09/09/2021		200,000,000	LIBOR [1.141%]			2,055,254	7,647,015		7,647,015	130,149					1,640,122		0001
Interest Rate Swap /91416/[Semi-Annual] FIXED [1.038%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	09/07/2016	09/09/2019		150,000,000	LIBOR [1.038%]			1,695,940	1,759,709		1,759,709	(674,110)					622,997		0001
Interest Rate Swap /91464/[Semi-Annual] FIXED [1.407%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	09/07/2016	09/09/2026		200,000,000	LIBOR [1.407%]			1,523,254	17,526,635		17,526,635	2,101,498					2,773,085		0001
Interest Rate Swap /91468/[Semi-Annual] FIXED [1.565%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	09/07/2016	09/09/2031		150,000,000	LIBOR [1.565%]			905,440	20,168,024		20,168,024	3,621,863					2,671,727		0001
Interest Rate Swap /91759/[Quarterly] LIBOR [2.78819%]/Semi-Annual FIXED 1.748%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	09/14/2016	09/16/2031		36,000,000	1.748% [LIBOR]			(157,467)	(4,131,666)		(4,131,666)	(933,621)					641,720		0001
Interest Rate Swap /91783/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 1.724%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	09/16/2016	09/20/2031		30,000,000	1.724% [LIBOR]			(140,664)	(3,526,267)		(3,526,267)	(771,165)					535,187		0001
Interest Rate Swap /91852/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 1.925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	09/16/2016	09/20/2046		150,000,000	1.925% [LIBOR]			(401,818)	(28,151,566)		(28,151,566)	(7,476,577)					3,948,734		0001
Interest Rate Swap /91915/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 1.716%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	09/21/2016	09/23/2031		16,000,000	1.716% [LIBOR]			(80,795)	(1,895,968)		(1,895,968)	(409,413)					285,433		0001
Interest Rate Swap /91986/[Quarterly] LIBOR [2.81344%]/Semi-Annual FIXED 4.1%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	09/26/2016	09/28/2036		18,000,000	4.1% [LIBOR]			338,309	3,193,228		3,193,228	(1,095,190)					379,177		0001
Interest Rate Swap /91998/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.8425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	09/26/2016	01/27/2042		50,000,000	2.8425% [LIBOR]	(435,000)		325,526	(247,364)		(247,364)	(2,785,117)					1,201,041		0001
Interest Rate Swap /92044/[Semi-Annual] FIXED [2.81%]/Quarterly LIBOR 2.49631%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2016	10/13/2031		9,600,000	LIBOR [2.81%]	40,318		(58,307)	(6,393)		(6,393)	350,844					171,663		0001

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /92045/[Semi-Annual] FIXED [2.9525%/Quarterly LIBOR 2.43631%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	10/14/2036		8,300,000	LIBOR [2.9525%]	49,925	(62,489)	(113,894)			(113,894)	399,344				175,040		0001	
Interest Rate Swap /92049/[Semi-Annual] FIXED [3.0%/Quarterly LIBOR 2.508%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	10/26/2036		8,300,000	LIBOR [3.0%]	50,213	(66,920)	(170,938)			(170,938)	404,297				175,236		0001	
Interest Rate Swap /92050/[Quarterly] LIBOR [2.508%/Semi-Annual] FIXED 3.045%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	10/26/2041		146,400,000	3.045% [LIBOR]	(1,331,480)	1,246,253	4,414,346			4,414,346	(8,470,123)				3,497,550		0001	
Interest Rate Swap /92053/[Semi-Annual] FIXED [2.9225%/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	10/27/2031		20,000,000	LIBOR [2.9225%]	84,791	(146,210)	(259,752)			(259,752)	755,802				358,190		0001	
Interest Rate Swap /92054/[Semi-Annual] FIXED [2.77125%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	11/03/2041		40,000,000	LIBOR [2.77125%]	306,742	(232,542)	687,566			687,566	2,177,816				955,824		0001	
Interest Rate Swap /92057/[Semi-Annual] FIXED [2.75875%/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	11/16/2031		15,000,000	LIBOR [2.75875%]	63,358	(89,556)	76,227			76,227	545,165				269,165		0001	
Interest Rate Swap /92058/[Semi-Annual] FIXED [2.67375%/Quarterly LIBOR 2.81344%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	12/28/2036		8,400,000	LIBOR [2.67375%]	50,136	(38,073)	223,052			223,052	380,765				178,191		0001	
Interest Rate Swap /92059/[Semi-Annual] FIXED [2.71%/Quarterly LIBOR 2.803%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	12/29/2036		8,400,000	LIBOR [2.71%]	50,184	(41,924)	177,968			177,968	384,507				178,191		0001	
Interest Rate Swap /92060/[Semi-Annual] FIXED [2.7275%/Quarterly LIBOR 2.48738%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	01/24/2037		8,400,000	LIBOR [2.7275%]	50,494	(44,812)	158,316			158,316	387,088				178,537		0001	
Interest Rate Swap /92061/[Semi-Annual] FIXED [2.78375%/Quarterly LIBOR 2.58925%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	02/07/2037		8,400,000	LIBOR [2.78375%]	50,835	(50,453)	90,785			90,785	393,580				178,735		0001	
Interest Rate Swap /92062/[Semi-Annual] FIXED [1.6195%/Quarterly LIBOR 2.70681%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	02/28/2019		50,000,000	LIBOR [1.6195%]	(581)	272,808	90,070			90,070	(75,037)				100,000		0001	
Interest Rate Swap /92063/[Quarterly] LIBOR [2.779%/Semi-Annual] FIXED 2.892%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME VVVKR63DVZZN70PB21	09/28/2016	03/13/2042		232,000,000	LIBOR [2.892%]	(2,291,074)	1,663,498	843,192			843,192	(13,152,961)				5,587,300		0001	

E18.144

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /92067/[Semi-Annual] FIXED [2.98625%]/Quarterly LIBOR 2.78963%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	03/21/2032		32,000,000	LIBOR [2.98625%]	140,893	(250,341)	(628,044)			(628,044)	1,260,823				581,969		0001	
Interest Rate Swap /92068/[Semi-Annual] FIXED [2.07%]/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	05/01/2022		75,000,000	LIBOR [2.07%]	50,554	89,213	1,234,479			1,234,479	747,668				685,338		0001	
Interest Rate Swap /92069/[Semi-Annual] FIXED [2.835%]/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	05/01/2042		5,000,000	LIBOR [2.835%]	39,473	(32,302)	31,612			31,612	280,317				120,779		0001	
Interest Rate Swap /92070/[Semi-Annual] FIXED [2.0675%]/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	05/01/2022		110,000,000	LIBOR [2.0675%]	74,144	133,596	1,819,347			1,819,347	1,093,960				1,005,162		0001	
Interest Rate Swap /92071/[Semi-Annual] FIXED [2.47375%]/Quarterly LIBOR 2.706%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	05/29/2032		10,000,000	LIBOR [2.47375%]	43,369	(30,673)	386,747			386,747	348,145				183,098		0001	
Interest Rate Swap /92072/[Semi-Annual] FIXED [2.59125%]/Quarterly LIBOR 2.706%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	05/29/2042		20,000,000	LIBOR [2.59125%]	154,853	(84,847)	980,738			980,738	1,062,667				483,839		0001	
Interest Rate Swap /92073/[Semi-Annual] FIXED [2.30625%]/Quarterly LIBOR 2.58925%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	08/07/2032		9,100,000	LIBOR [2.30625%]	39,827	(11,205)	536,253			536,253	304,745				167,857		0001	
Interest Rate Swap /92074/[Quarterly] LIBOR [2.61613%]/Semi-Annual FIXED 2.58875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	08/15/2042		16,800,000	LIBOR [2.58875%]	(163,359)	71,519	(840,526)			(840,526)	(896,597)				408,330		0001	
Interest Rate Swap /92077/[Quarterly] LIBOR [2.61613%]/Semi-Annual FIXED 2.94875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	08/15/2042		27,400,000	LIBOR [2.94875%]	(275,014)	215,284	374,927			374,927	(1,591,816)				665,966		0001	
Interest Rate Swap /92080/[Quarterly] LIBOR [0.83769%]/Semi-Annual FIXED 3.0225%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	08/15/2042		32,700,000	LIBOR [3.0225%]	(323,042)		819,131			819,131	(1,454,966)				794,785		0001	
Interest Rate Swap /92083/[Quarterly] LIBOR [2.64%]/Semi-Annual FIXED 2.79375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	08/17/2042		23,500,000	LIBOR [2.79375%]	(233,326)	148,982	(322,968)			(322,968)	(1,318,343)				571,176		0001	

E18.145

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /92086/[Quarterly] LIBOR [0.83769%/Semi-Annual] FIXED 3.37375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	09/26/2042		12,800,000	3.37375% [LIBOR]	(118,065)			779,568		779,568	(526,536)				311,831		0001	
Interest Rate Swap /92089/[Quarterly] LIBOR [0.83769%/Semi-Annual] FIXED 3.45375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	09/26/2032		9,400,000	3.45375% [LIBOR]	(44,227)			399,269		399,269	(205,838)				174,217		0001	
Interest Rate Swap /92090/[Quarterly] LIBOR [0.83769%/Semi-Annual] FIXED 3.2725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	09/24/2042		7,800,000	3.2725% [LIBOR]	(34,964)			145,453		145,453	(148,116)				189,982		0001	
Interest Rate Swap /92091/[Quarterly] LIBOR [0.83769%/Semi-Annual] FIXED 3.445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	09/24/2032		11,600,000	3.445% [LIBOR]	(43,525)			320,146		320,146	(223,001)				214,913		0001	
Interest Rate Swap /92092/[Semi-Annual] FIXED [2.6%]/Quarterly LIBOR 2.792%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	12/20/2032		9,200,000	LIBOR [2.6%]	42,163	(37,455)		242,326		242,326	342,557				171,932		0001	
Interest Rate Swap /92093/[Quarterly] LIBOR [2.40806%/Semi-Annual] FIXED 3.53%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	01/08/2043		8,800,000	3.53% [LIBOR]	(94,875)		112,817	1,036,602		1,036,602	(580,258)				215,645		0001	
Interest Rate Swap /92094/[Quarterly] LIBOR [0.83769%/Semi-Annual] FIXED 3.64375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	01/08/2043		9,700,000	3.64375% [LIBOR]	(102,811)			1,253,323		1,253,323	(445,234)				237,699		0001	
Interest Rate Swap /92095/[Semi-Annual] FIXED [2.93375%]/Quarterly LIBOR 2.60113%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	05/09/2043		7,200,000	LIBOR [2.93375%]	60,225	(54,007)		(80,674)		(80,674)	425,666				177,681		0001	
Interest Rate Swap /92100/[Semi-Annual] FIXED [3.9925%]/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	11/22/2040		100,000,000	3.9925% [LIBOR]	814,180	(1,831,003)		(18,811,534)		(18,811,534)	6,821,668				2,339,338		0001	
Interest Rate Swap /92101/[Semi-Annual] FIXED [3.97%]/Quarterly LIBOR 2.41425%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	01/10/2031		150,000,000	LIBOR [3.97%]	625,120	(2,648,923)		(18,390,576)		(18,390,576)	6,897,717				2,601,322		0001	
Interest Rate Swap /92102/[Quarterly] LIBOR [2.803%]/Semi-Annual] FIXED 4.99125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	03/30/2041		24,100,000	4.99125% [LIBOR]	(272,834)		668,248	8,664,462		8,664,462	(1,960,988)				568,397		0001	

E18.146

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /92103/[Quarterly] LIBOR [0.83769%]/Semi-Annual FIXED 5.099%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	03/30/2031		15,900,000	5.099% [LIBOR]	(71,889)			2,252,527		2,252,527	(289,982)				278,250		0001	
Interest Rate Swap /92104/[Semi-Annual] FIXED [4.23%]/Quarterly LIBOR 2.706%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	05/29/2042		36,000,000	LIBOR [4.23%]	323,211		(742,674)	(8,612,805)		(8,612,805)	2,682,710				870,910		0001	
Interest Rate Swap /92107/[Semi-Annual] FIXED [4.025%]/Quarterly LIBOR 2.779%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	12/13/2041		48,000,000	LIBOR [4.025%]	413,789		(888,012)	(9,600,071)		(9,600,071)	3,401,148				1,149,748		0001	
Interest Rate Swap /92110/[Semi-Annual] FIXED [3.38%]/Quarterly LIBOR 2.64%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	08/17/2041		8,000,000	LIBOR [3.38%]	64,193		(97,617)	(699,914)		(699,914)	495,400				190,326		0001	
Interest Rate Swap /92111/[Semi-Annual] FIXED [2.8025%]/Quarterly LIBOR 2.43631%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	10/13/2031		9,600,000	LIBOR [2.8025%]	40,302		(57,587)	1,480		1,480	350,129				171,663		0001	
Interest Rate Swap /92113/[Semi-Annual] FIXED [4.48%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	11/05/2038		6,000,000	LIBOR [4.48%]	45,419		(137,814)	(1,508,129)		(1,508,129)	418,174				133,660		0001	
Interest Rate Swap /92114/[Semi-Annual] FIXED [4.07835%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	11/18/2038		50,000,000	LIBOR [4.07835%]	368,178		(956,915)	(9,458,979)		(9,458,979)	3,253,504				1,114,675		0001	
Interest Rate Swap /92115/[Semi-Annual] FIXED [4.01533%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	11/19/2038		50,000,000	LIBOR [4.01533%]	366,521		(926,531)	(8,968,984)		(8,968,984)	3,216,464				1,114,955		0001	
Interest Rate Swap /92117/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 5.785%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	07/27/2037		150,000,000	5.785% [LIBOR]	(1,462,803)		5,390,328	64,890,193		64,890,193	(12,266,379)				3,232,839		0001	
Interest Rate Swap /92118/[Quarterly] LIBOR [2.52663%]/Semi-Annual FIXED 5.725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	07/31/2037		100,000,000	5.725% [LIBOR]	(972,429)		3,535,304	42,405,175		42,405,175	(8,112,866)				2,155,226		0001	
Interest Rate Swap /92119/[Semi-Annual] FIXED [4.76%]/Quarterly LIBOR 2.75125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEARING THROUGH CME	09/28/2016	06/05/2027		60,000,000	LIBOR [4.76%]	171,250		(1,558,222)	(9,477,421)		(9,477,421)	2,626,695				871,551		0001	

E18.147

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /92122/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 5.1375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2016	08/21/2031		40,000,000	6.1375% [LIBOR]	(254,004)		1,591,089	14,453,663		14,453,663	(2,771,128)				711,056		0001
Interest Rate Swap /92128/[Quarterly] LIBOR [2.52663%]/Semi-Annual FIXED 5.7325%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2016	07/31/2037		100,000,000	5.7325% [LIBOR]	(972,538)		3,542,804	42,516,133		42,516,133	(8,121,422)				2,155,226		0001
Interest Rate Swap /92149/[Quarterly] LIBOR [0.83769%]/Semi-Annual FIXED 3.7775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2016	01/08/2033		5,500,000	3.7775% [LIBOR]	(21,130)			260,468		260,468	(108,625)				103,006		0001
Interest Rate Swap /92151/[At Maturity] LIBOR [2.803%]/At Maturity FIXED 4.245%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2016	09/30/2026		68,500,107	4.245% [LIBOR]	(246,315)		1,691,386	9,380,313		9,380,313	(2,773,394)				953,481		0001
Interest Rate Swap /92200/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 5.19%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	COMMERZBANK AG /WELLSFARGOSEC/CLEA RED THROUGH LCH	09/30/2016	03/11/2025		35,000,000	5.19% [LIBOR]	28,000		1,057,726	5,201,799		5,201,799	(1,526,096)				435,746		0001
Interest Rate Swap /92201/[Quarterly] LIBOR [2.508%]/Semi-Annual FIXED 5.42%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	COMMERZBANK AG /WELLSFARGOSEC/CLEA RED THROUGH LCH	09/30/2016	01/26/2037		50,000,000	5.42% [LIBOR]	87,000		1,613,133	18,801,256		18,801,256	(3,823,408)				1,062,721		0001
Interest Rate Swap /92358/[Quarterly] LIBOR [2.40806%]/Semi-Annual FIXED 1.13996%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	10/05/2016	10/07/2019		587,000,000	1.13996% [LIBOR]			(6,255,323)	(7,169,879)		(7,169,879)	1,983,548				2,575,452		0001
Interest Rate Swap /92512/[Quarterly] LIBOR [2.44881%]/Semi-Annual FIXED 1.687%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/13/2016	10/17/2028		25,000,000	1.687% [LIBOR]			(128,667)	(2,264,019)		(2,264,019)	(450,599)				391,312		0001
Interest Rate Swap /92518/[Semi-Annual] FIXED [1.919%]/Quarterly LIBOR [2.4456%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	10/14/2016	10/18/2036		30,000,000	LIBOR [1.919%]			83,750	4,023,370		4,023,370	1,097,727				633,028		0001
Interest Rate Swap /92772/[Semi-Annual] FIXED [1.726%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	10/31/2016	11/02/2026		100,000,000	LIBOR [1.726%]			466,746	6,672,512		6,672,512	1,367,690				1,400,000		0001
Interest Rate Swap /92804/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 1.1595%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/01/2016	11/03/2019		245,000,000	1.1595% [LIBOR]			(2,524,469)	(3,226,742)		(3,226,742)	683,454				1,122,731		0001
Interest Rate Swap /92811/[Semi-Annual] FIXED [1.6815%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/02/2016	11/04/2026		65,000,000	LIBOR [1.6815%]			330,164	4,549,643		4,549,643	866,585				910,000		0001

E18.148

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /92920/[Semi-Annual] FIXED [2.001%/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/04/2016	11/08/2036		18,000,000	LIBOR [2.001%			32,507	2,209,082		2,209,082	678,290				380,350		0001	
Interest Rate Swap /92923/[Semi-Annual] FIXED [1.479%/Quarterly LIBOR 2.59125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/04/2016	11/08/2023		45,000,000	LIBOR [1.479%			316,167	2,267,996		2,267,996	280,784				496,022		0001	
Interest Rate Swap /93000/[Semi-Annual] FIXED [2.126%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /WELLSFARGOSEC/CLEA RED THROUGH CME	11/09/2016	11/14/2036		300,000,000	LIBOR [2.126%			129,060	31,451,618		31,451,618	11,735,248				6,340,938		0001	
Interest Rate Swap /93001/[Semi-Annual] FIXED [1.83625%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	11/09/2016	11/14/2026		300,000,000	LIBOR [1.83625%			998,310	17,768,146		17,768,146	4,462,841				4,210,701		0001	
Interest Rate Swap /93012/[Semi-Annual] FIXED [1.954%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/09/2016	11/14/2026		300,000,000	LIBOR [1.954%			645,060	15,241,853		15,241,853	4,794,396				4,210,701		0001	
Interest Rate Swap /93013/[Semi-Annual] FIXED [2.2725%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	11/09/2016	11/14/2036		300,000,000	LIBOR [2.2725%			(310,440)	25,145,411		25,145,411	12,227,188				6,340,938		0001	
Interest Rate Swap /93019/[Semi-Annual] FIXED [1.6275%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/10/2016	11/14/2021		500,000,000	LIBOR [1.6275%			2,707,600	13,498,704		13,498,704	2,706,939				4,242,641		0001	
Interest Rate Swap /93053/[Semi-Annual] FIXED [2.2085%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/10/2016	11/14/2031		100,000,000	LIBOR [2.2085%			(39,480)	6,560,054		6,560,054	3,088,040				1,793,739		0001	
Interest Rate Swap /93055/[Semi-Annual] FIXED [2.022%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	11/10/2016	11/14/2026		200,000,000	LIBOR [2.022%			294,040	9,188,622		9,188,622	3,323,912				2,807,134		0001	
Interest Rate Swap /93056/[Semi-Annual] FIXED [2.207%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/10/2016	11/14/2031		35,000,000	LIBOR [2.207%			(13,293)	2,301,791		2,301,791	1,080,292				627,809		0001	
Interest Rate Swap /93057/[Semi-Annual] FIXED [2.0074%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/10/2016	11/14/2026		350,000,000	LIBOR [2.0074%			565,670	16,445,533		16,445,533	5,768,884				4,912,484		0001	

E18.149

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /93060/(Semi-Annual) FIXED [1.828%/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME	11/10/2016	11/14/2023		500,000,000	LIBOR [1.828%			1,705,100	17,291,049		17,291,049	4,786,679				5,517,019		0001	
Interest Rate Swap /93086/(Semi-Annual) FIXED [2.346%/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME	11/14/2016	11/16/2031		90,000,000	LIBOR [2.346%			(165,862)	4,543,788		4,543,788	2,901,321				1,614,992		0001	
Interest Rate Swap /93087/(Semi-Annual) FIXED [2.472%/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	11/14/2016	11/16/2036		400,000,000	LIBOR [2.472%			(1,241,166)	22,070,919		22,070,919	17,189,029				8,456,950		0001	
Interest Rate Swap /93088/(Semi-Annual) FIXED [2.165%/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEARED THROUGH CME	11/14/2016	11/16/2026		400,000,000	LIBOR [2.165%			(13,166)	14,271,138		14,271,138	7,172,567				5,614,268		0001	
Interest Rate Swap /93220/(Semi-Annual) FIXED [1.813%/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY/CLEARED THROUGH CME	11/21/2016	11/23/2021		300,000,000	LIBOR [1.813%			1,058,207	6,597,423		6,597,423	2,159,095				2,554,408		0001	
Interest Rate Swap /93221/(Semi-Annual) FIXED [2.018%/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /CR SUIS SEC USA/CLEARED THROUGH CME	11/21/2016	11/23/2023		300,000,000	LIBOR [2.018%			443,208	7,806,128		7,806,128	3,418,306				3,320,392		0001	
Interest Rate Swap /93222/(Semi-Annual) FIXED [2.294%/Quarterly LIBOR 2.67694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	11/21/2016	11/23/2028		200,000,000	LIBOR [2.294%			(256,528)	7,678,201		7,678,201	4,832,946				3,146,427		0001	
Interest Rate Swap /93241/(Semi-Annual) FIXED [2.84375%/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARED THROUGH CME	11/21/2016	03/20/2033		175,000,000	LIBOR [2.84375%	1,092,000		(1,139,024)	(358,026)		(358,026)	7,047,293				3,300,734		0001	
Interest Rate Swap /93513/(Semi-Annual) FIXED [1.865%/Quarterly LIBOR 2.75125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /CR SUIS SEC USA/CLEARED THROUGH CME	12/01/2016	12/05/2021		200,000,000	LIBOR [1.865%			595,926	4,166,610		4,166,610	1,569,918				1,711,724		0001	
Interest Rate Swap /93516/(Semi-Annual) FIXED [2.4575%/Quarterly LIBOR 2.75125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME	12/01/2016	12/05/2031		260,000,000	LIBOR [2.4575%			(765,796)	10,022,718		10,022,718	8,737,729				4,674,580		0001	
Interest Rate Swap /93556/(Semi-Annual) FIXED [2.6171%/Quarterly LIBOR 2.75125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEARED THROUGH CME	12/01/2016	12/05/2046		125,000,000	LIBOR [2.6171%			(567,671)	6,356,250		6,356,250	7,564,500				3,303,053		0001	

E18.150

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /93557/[Semi-Annual] FIXED [2.6181%]/Quarterly LIBOR 2.75125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		125,000,000	LIBOR [2.6181%]			(568,921)	6,331,373		6,331,373	7,566,357				3,303,053		0001	
Interest Rate Swap /93566/[Quarterly] LIBOR [2.75125%]/Semi-Annual FIXED 2.623%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		4,000,000	2.623% [LIBOR]			18,401	(198,703)		(198,703)	(242,415)				105,698		0001	
Interest Rate Swap /93567/[Quarterly] LIBOR [0.94167%]/Semi-Annual FIXED 2.826%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		3,300,000	2.826% [LIBOR]				(67,311)		(67,311)	(146,669)				87,201		0001	
Interest Rate Swap /93568/[Quarterly] LIBOR [0.94167%]/Semi-Annual FIXED 2.783%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		2,400,000	2.783% [LIBOR]				(43,538)		(43,538)	(118,727)				63,419		0001	
Interest Rate Swap /93569/[Quarterly] LIBOR [2.75125%]/Semi-Annual FIXED 2.755%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		2,500,000	2.755% [LIBOR]			(184)	(58,516)		(58,516)	(135,471)				66,061		0001	
Interest Rate Swap /93570/[Quarterly] LIBOR [0.94167%]/Semi-Annual FIXED 2.818%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		2,700,000	2.818% [LIBOR]				(45,516)		(45,516)	(125,665)				71,346		0001	
Interest Rate Swap /93571/[Quarterly] LIBOR [0.94167%]/Semi-Annual FIXED 2.814%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		1,600,000	2.814% [LIBOR]				(35,568)		(35,568)	(62,630)				42,279		0001	
Interest Rate Swap /93572/[Quarterly] LIBOR [0.94167%]/Semi-Annual FIXED 2.866%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2036		3,100,000	2.866% [LIBOR]				(32,275)		(32,275)	(55,181)				65,633		0001	
Interest Rate Swap /93576/[Semi-Annual] FIXED [2.6051%]/Quarterly LIBOR 2.75125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		125,000,000	LIBOR [2.6051%]			(552,671)	6,654,767		6,654,767	7,542,217				3,303,053		0001	
Interest Rate Swap /93578/[Semi-Annual] FIXED [2.6052%]/Quarterly LIBOR 2.75125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/01/2016	12/05/2046		125,000,000	LIBOR [2.6052%]			(552,796)	6,652,279		6,652,279	7,542,402				3,303,053		0001	
Interest Rate Swap /93600/[Semi-Annual] FIXED [2.5551%]/Quarterly LIBOR 2.73888%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	12/02/2016	12/06/2046		125,000,000	LIBOR [2.5551%]			(491,401)	7,895,468		7,895,468	7,444,397				3,303,053		0001	

E18.151

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /93606/[Semi-Annual] FIXED [2.552%/Quarterly LIBOR 2.73888%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	12/02/2016	12/06/2046		125,000,000	LIBOR [2.552%			(487,526)	7,972,590		7,972,590	7,438,640				3,303,053		0001	
Interest Rate Swap /93609/[Semi-Annual] FIXED [2.5518%/Quarterly LIBOR 2.73888%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	12/02/2016	12/06/2046		125,000,000	LIBOR [2.5518%			(487,276)	7,977,566		7,977,566	7,438,269				3,303,053		0001	
Interest Rate Swap /93821/[Quarterly] LIBOR [2.76713%/Semi-Annual] FIXED 1.829%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	12/07/2016	12/09/2021		46,000,000	1.829% [LIBOR]			(156,228)	(1,006,962)		(1,006,962)	(343,229)				394,368		0001	
Interest Rate Swap /93902/[Quarterly] LIBOR [2.77594%/Semi-Annual] FIXED 1.855%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEAR THROUGH CME	12/08/2016	12/12/2021		24,000,000	1.855% [LIBOR]			(75,426)	(509,570)		(509,570)	(185,580)				206,107		0001	
Interest Rate Swap /93975/[Quarterly] LIBOR [2.779%/Semi-Annual] FIXED 1.873%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	12/09/2016	12/13/2021		41,500,000	1.873% [LIBOR]			(125,320)	(860,033)		(860,033)	(327,175)				356,393		0001	
Interest Rate Swap /94002/[Semi-Annual] FIXED [2.37%/Quarterly] LIBOR 2.779%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /MORGAN STANLEY/CLEARED THROUGH CME	12/09/2016	12/13/2026		400,000,000	LIBOR [2.37%			(780,099)	8,600,571		8,600,571	8,045,321				5,642,694		0001	
Interest Rate Swap /94224/[Semi-Annual] FIXED [2.5985%/Quarterly] LIBOR 2.7775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /OR SUI SEC USA/CLEARED THROUGH CME	12/12/2016	12/14/2031		80,000,000	LIBOR [2.5985%			(336,209)	1,846,314		1,846,314	2,799,507				1,440,000		0001	
Interest Rate Swap /94225/[Semi-Annual] FIXED [2.1805%/Quarterly] LIBOR 2.7775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /OR SUI SEC USA/CLEARED THROUGH CME	12/12/2016	12/14/2023		300,000,000	LIBOR [2.1805%			(6,784)	5,660,799		5,660,799	3,915,353				3,340,659		0001	
Interest Rate Swap /94226/[Semi-Annual] FIXED [2.176%/Quarterly] LIBOR 2.7775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /OR SUI SEC USA/CLEARED THROUGH CME	12/12/2016	12/14/2023		300,000,000	LIBOR [2.176%			6,716	5,723,600		5,723,600	3,902,643				3,340,659		0001	
Interest Rate Swap /94238/[Quarterly] LIBOR [2.7775%/Semi-Annual] FIXED 2.375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	12/12/2016	12/14/2026		50,000,000	2.375% [LIBOR]			98,381	(1,056,620)		(1,056,620)	(1,006,890)				705,337		0001	
Interest Rate Swap /94290/[Quarterly] LIBOR [2.78819%/Semi-Annual] FIXED 1.914%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	12/13/2016	12/15/2021		25,000,000	1.914% [LIBOR]			(67,098)	(489,961)		(489,961)	(206,179)				215,058		0001	
Interest Rate Swap /94315/[Quarterly] LIBOR [2.79819%/Semi-Annual] FIXED 1.9235%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /WELLSFARGOSEC/CLEAR THROUGH CME	12/13/2016	12/15/2021		26,000,000	1.9235% [LIBOR]			(67,312)	(502,550)		(502,550)	(216,786)				223,660		0001	

E18.152

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /94350/[Semi-Annual] FIXED [2.335%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	12/14/2016	12/16/2026		50,000,000	LIBOR [2.335%]			(74,796)	1,202,464		1,202,464	986,678				705,337		0001	
Interest Rate Swap /94409/[Semi-Annual] FIXED [2.7285%]/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /CR SUI S SEC USA/CLEARED THROUGH CME	12/15/2016	12/19/2036		125,000,000	LIBOR [2.7285%]			(675,157)	2,327,989		2,327,989	5,753,919				2,649,440		0001	
Interest Rate Swap /94447/[Semi-Annual] FIXED [2.789%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME	12/16/2016	12/20/2046		125,000,000	LIBOR [2.789%]			(745,151)	2,080,875		2,080,875	7,872,676				3,305,417		0001	
Interest Rate Swap /94448/[Semi-Annual] FIXED [2.753%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /CR SUI S SEC USA/CLEARED THROUGH CME	12/16/2016	12/20/2036		300,000,000	LIBOR [2.753%]			(1,680,363)	4,522,191		4,522,191	13,881,045				6,360,425		0001	
Interest Rate Swap /94449/[Semi-Annual] FIXED [2.6769%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	12/16/2016	12/20/2031		190,000,000	LIBOR [2.6769%]			(919,640)	2,748,831		2,748,831	6,792,776				3,422,638		0001	
Interest Rate Swap /94450/[Semi-Annual] FIXED [2.79125%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARED THROUGH CME	12/16/2016	12/20/2046		175,000,000	LIBOR [2.79125%]			(1,047,149)	2,834,784		2,834,784	11,027,602				4,627,584		0001	
Interest Rate Swap /94452/[Semi-Annual] FIXED [2.327%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /CR SUI S SEC USA/CLEARED THROUGH CME	12/16/2016	12/20/2023		500,000,000	LIBOR [2.327%]			(670,605)	6,054,813		6,054,813	7,193,108				5,573,374		0001	
Interest Rate Swap /94481/[Semi-Annual] FIXED [2.813%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	12/16/2016	12/20/2046		200,000,000	LIBOR [2.813%]			(1,240,242)	2,373,155		2,373,155	12,667,667				5,288,667		0001	
Interest Rate Swap /94482/[Semi-Annual] FIXED [2.8125%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARED THROUGH CME	12/16/2016	12/20/2046		200,000,000	LIBOR [2.8125%]			(1,239,242)	2,393,077		2,393,077	12,666,180				5,288,667		0001	
Interest Rate Swap /94648/[Semi-Annual] FIXED [2.9025%]/Quarterly LIBOR 0.99622%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	12/20/2016	12/23/2056		10,000,000	LIBOR [2.9025%]				33,994		33,994	526,717				308,180		0001	
Interest Rate Swap /95206/[Quarterly] LIBOR [2.469%]/Semi-Annual FIXED 2.303%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /MORGAN STANLEY/CLEARED THROUGH CME	01/18/2017	01/20/2027		100,000,000	2.303% [LIBOR]			100,915	(2,684,742)		(2,684,742)	(1,955,109)				1,419,507		0001	
Interest Rate Swap /95272/[Quarterly] LIBOR [2.508%]/Semi-Annual FIXED 2.62%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARED THROUGH CME	01/24/2017	01/26/2047		250,000,000	2.62% [LIBOR]			1,065,664	(12,587,696)		(12,587,696)	(15,137,126)				6,623,821		0001	

E18.153

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /95273/[Quarterly] LIBOR [2.508%]/Semi-Annual FIXED 2.609%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/24/2017	01/26/2047		250,000,000	2.609% [LIBOR]			1,038,164	(13,136,942)		(13,136,942)	(15,096,103)				6,623,821		0001	
Interest Rate Swap /95297/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.1515%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEAR THROUGH CME	01/25/2017	01/27/2023		90,000,000	2.1515% [LIBOR]			(35,953)	(1,476,839)		(1,476,839)	(1,029,293)				908,955		0001	
Interest Rate Swap /95298/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.041%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/25/2017	01/27/2022		90,000,000	2.041% [LIBOR]			(135,403)	(1,475,699)		(1,475,699)	(851,399)				789,747		0001	
Interest Rate Swap /95303/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.3255%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEAR THROUGH CME	01/25/2017	01/27/2025		95,000,000	2.3255% [LIBOR]			127,349	(1,526,077)		(1,526,077)	(1,522,632)				1,171,239		0001	
Interest Rate Swap /95305/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 2.2475%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NATIXIS /WELLSFARGOSEC/CLEAR THROUGH CME	01/25/2017	01/27/2024		90,000,000	2.2475% [LIBOR]			50,447	(1,457,019)		(1,457,019)	(1,238,733)				1,014,248		0001	
Interest Rate Swap /95453/[Semi-Annual] FIXED [1.7185%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/31/2017	02/02/2020		375,000,000	LIBOR [1.7185%]			1,778,423	4,096,831		4,096,831	1,320,387				1,957,557		0001	
Interest Rate Swap /95456/[Semi-Annual] FIXED [2.425%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/31/2017	02/02/2027		90,000,000	LIBOR [2.425%]			(209,029)	1,631,213		1,631,213	1,872,538				1,279,932		0001	
Interest Rate Swap /95457/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 2.0215%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/31/2017	02/02/2022		135,000,000	2.0215% [LIBOR]			(231,182)	(2,303,462)		(2,303,462)	(1,252,957)				1,186,542		0001	
Interest Rate Swap /95458/[Semi-Annual] FIXED [2.6755%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	01/31/2017	02/02/2037		31,000,000	LIBOR [2.6755%]			(149,654)	819,641		819,641	1,411,744				659,251		0001	
Interest Rate Swap /95459/[Quarterly] LIBOR [2.5585%]/Semi-Annual FIXED 2.71%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	01/31/2017	02/02/2047		255,000,000	2.71% [LIBOR]			1,318,998	(8,274,165)		(8,274,165)	(15,796,849)				6,757,500		0001	
Interest Rate Swap /95460/[Semi-Annual] FIXED [2.71625%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	01/31/2017	02/02/2047		148,000,000	LIBOR [2.71625%]			(774,786)	4,617,453		4,617,453	9,182,174				3,922,000		0001	
Interest Rate Swap /95463/[Semi-Annual] FIXED [2.6%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	01/31/2017	02/02/2032		600,000,000	LIBOR [2.6%]			(2,443,524)	14,018,824		14,018,824	21,125,017				10,854,031		0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /95678/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 2.281%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	02/08/2017	02/10/2027		200,000,000	2.281% [LIBOR]			207,603	(5,762,460)		(5,762,460)	(3,915,857)					2,847,806		0001
Interest Rate Swap /95681/[Quarterly] LIBOR [2.61813%]/Semi-Annual FIXED 2.317%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	02/09/2017	02/13/2027		245,000,000	2.317% [LIBOR]			353,047	(6,432,184)		(6,432,184)	(4,890,736)					3,492,861		0001
Interest Rate Swap /95792/[At Maturity] FIXED [2.341%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WEFA76	02/14/2017	02/16/2042		75,000,000	[2.341%] Inflation to Maturity				(4,543,774)		(4,543,774)	(2,758,463)					1,803,512		0001
Interest Rate Swap /95855/[At Maturity] FIXED [2.387%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA SECURITIES XPSKD1VTEOPKCHBEK095	02/16/2017	02/21/2042		40,000,000	[2.387%] Inflation to Maturity				(2,988,793)		(2,988,793)	(1,758,143)					962,081		0001
Interest Rate Swap /96138/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 1.9485%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	02/24/2017	02/28/2022		100,000,000	1.9485% [LIBOR]			(216,616)	(1,954,853)		(1,954,853)	(879,914)					888,819		0001
Interest Rate Swap /96151/[At Maturity] FIXED [2.329%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA SECURITIES XPSKD1VTEOPKCHBEK095	02/24/2017	02/28/2042		39,320,000	[2.329%] Inflation to Maturity				(2,401,934)		(2,401,934)	(1,763,223)					946,134		0001
Interest Rate Swap /96316/[Semi-Annual] FIXED [2.485%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	03/07/2017	03/09/2027		11,000,000	LIBOR [2.485%]			(34,801)	154,678		154,678	239,156					157,400		0001
Interest Rate Swap /96318/[Semi-Annual] FIXED [2.307%]/Quarterly LIBOR 2.76713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	03/07/2017	03/09/2024		65,000,000	LIBOR [2.307%]			(89,943)	896,095		896,095	951,642					741,114		0001
Interest Rate Swap /96449/[Semi-Annual] FIXED [2.8285%]/Quarterly LIBOR 2.7775%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	03/10/2017	03/14/2037		25,000,000	LIBOR [2.8285%]			(162,565)	108,100		108,100	1,189,415					533,415		0001
Interest Rate Swap /96580/[Semi-Annual] FIXED [2.7915%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	03/15/2017	03/17/2037		5,000,000	LIBOR [2.7915%]			(30,121)	48,594		48,594	235,683					106,683		0001
Interest Rate Swap /96581/[Semi-Annual] FIXED [2.224%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	03/15/2017	03/17/2022		20,000,000	LIBOR [2.224%]			(6,983)	226,126		226,126	228,016					179,165		0001
Interest Rate Swap /96674/[Semi-Annual] FIXED [2.474%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	03/20/2017	03/22/2027		86,000,000	LIBOR [2.474%]			(224,674)	1,298,571		1,298,571	1,859,458					1,233,583		0001

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /96675/(Semi-Annual) FIXED [2.29%]/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	03/20/2017	03/22/2024		225,000,000	LIBOR [2.29%]			(173,809)	3,329,382		3,329,382	3,245,813					2,572,784	0001	
Interest Rate Swap /96677/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED 2.7525%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	03/20/2017	03/22/2047		440,000,000	2.7525% [LIBOR]			2,374,893	(10,578,571)		(10,578,571)	(27,642,764)					11,689,020	0001	
Interest Rate Swap /96680/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED 2.564%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	03/20/2017	03/22/2029		100,000,000	2.564% [LIBOR]			351,248	(1,609,130)		(1,609,130)	(2,756,456)					1,599,219	0001	
Interest Rate Swap /96727/(Quarterly) LIBOR [2.81344%]/Semi-Annual FIXED 2.0645%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	03/24/2017	03/28/2022		100,000,000	2.0645% [LIBOR]			(156,006)	(1,635,158)		(1,635,158)	(978,201)					900,000	0001	
Interest Rate Swap /96772/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED 2.6275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	03/27/2017	03/29/2047		325,000,000	2.6275% [LIBOR]			1,329,460	(15,913,466)		(15,913,466)	(19,782,896)					8,636,993	0001	
Interest Rate Swap /97083/(Semi-Annual) FIXED [2.3795%]/Quarterly LIBOR 2.42519%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	04/10/2017	04/12/2027		31,000,000	LIBOR [2.3795%]			(54,715)	692,663		692,663	643,550					446,012	0001	
Interest Rate Swap /97084/(Semi-Annual) FIXED [2.4645%]/Quarterly LIBOR 2.42519%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	04/10/2017	04/12/2029		95,000,000	LIBOR [2.4645%]			(248,425)	2,401,318		2,401,318	2,532,403					1,522,966	0001	
Interest Rate Swap /97096/(Quarterly) LIBOR [2.43631%]/Semi-Annual FIXED 2.0035%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	04/10/2017	04/13/2022		482,000,000	2.0035% [LIBOR]			(959,848)	(8,871,665)		(8,871,665)	(4,451,589)					4,371,344	0001	
Interest Rate Swap /97117/(Quarterly) LIBOR [2.44456%]/Semi-Annual FIXED 2.572%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	04/12/2017	04/18/2047		225,000,000	2.572% [LIBOR]			841,122	(13,549,054)		(13,549,054)	(13,532,527)					5,984,746	0001	
Interest Rate Swap /97118/(Semi-Annual) FIXED [2.5315%]/Quarterly LIBOR 2.44456%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	04/12/2017	04/18/2037		19,000,000	LIBOR [2.5315%]			(63,333)	908,115		908,115	840,182					406,507	0001	
Interest Rate Swap /97191/(Quarterly) LIBOR [2.469%]/Semi-Annual FIXED 2.468%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	04/19/2017	04/21/2047		100,000,000	2.468% [LIBOR]			270,323	(8,110,616)		(8,110,616)	(5,860,911)					2,660,357	0001	
Interest Rate Swap /97192/(Quarterly) LIBOR [2.469%]/Semi-Annual FIXED 2.1825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	04/19/2017	04/21/2027		250,000,000	2.1825% [LIBOR]			(37,942)	(9,305,339)		(9,305,339)	(4,751,865)					3,603,384	0001	

E18.156

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /97196/[Semi-Annual] FIXED [2.4035%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	04/20/2017	04/24/2032		40,000,000	LIBOR [2.4035%]			(83,790)	1,853,641		1,853,641	1,350,391				729,932		0001
Interest Rate Swap /97244/[Semi-Annual] FIXED [2.3785%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL /WELLSFARGOSEC/CLEA RED THROUGH CME	04/24/2017	04/26/2029		23,000,000	LIBOR [2.3785%]			(42,496)	764,166		764,166	597,413				369,435		0001
Interest Rate Swap /97245/[Semi-Annual] FIXED [2.556%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	04/24/2017	04/26/2047		21,000,000	LIBOR [2.556%]			(76,076)	1,331,690		1,331,690	1,258,799				558,774		0001
Interest Rate Swap /97304/[Semi-Annual] FIXED [2.5585%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	04/26/2017	04/28/2037		21,000,000	LIBOR [2.5585%]			(78,289)	921,158		921,158	936,513				449,542		0001
Interest Rate Swap /97456/[Semi-Annual] FIXED [2.4395%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	05/03/2017	05/05/2032		25,000,000	LIBOR [2.4395%]			(64,102)	1,059,493		1,059,493	855,968				456,721		0001
Interest Rate Swap /97457/[Semi-Annual] FIXED [2.116%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	05/03/2017	05/05/2024		60,000,000	LIBOR [2.116%]			40,256	1,431,082		1,431,082	779,272				693,902		0001
Interest Rate Swap /97603/[At Maturity] FIXED [2.16%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7FF32WIEFA76	05/16/2017	05/18/2042		100,000,000	[2.16%] Inflation to Maturity			(1,806,931)			(1,806,931)	(3,941,896)				2,418,160		0001
Interest Rate Swap /97630/[Semi-Annual] FIXED [2.468%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	05/17/2017	05/19/2047		55,000,000	LIBOR [2.468%]			(168,152)	4,465,551		4,465,551	3,235,813				1,465,262		0001
Interest Rate Swap /97794/[Semi-Annual] FIXED [2.283%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL /WELLSFARGOSEC/CLEA RED THROUGH CME	05/23/2017	05/25/2029		28,000,000	LIBOR [2.283%]			(33,272)	1,187,484		1,187,484	712,040				451,486		0001
Interest Rate Swap /97835/[Semi-Annual] FIXED [1.8655%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NATIXIS /WELLSFARGOSEC/CLEA RED THROUGH CME	05/23/2017	05/25/2022		42,000,000	LIBOR [1.8655%]			125,442	979,700		979,700	343,674				387,221		0001
Interest Rate Swap /97836/[Semi-Annual] FIXED [2.4715%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	05/23/2017	05/25/2047		31,000,000	LIBOR [2.4715%]			(95,272)	2,497,211		2,497,211	1,827,589				826,166		0001
Interest Rate Swap /97837/[Semi-Annual] FIXED [2.3645%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	05/23/2017	05/25/2032		23,000,000	LIBOR [2.3645%]			(46,075)	1,176,011		1,176,011	774,840				420,969		0001

E18.157

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /97838/[Semi-Annual] FIXED [2.199%/Quarterly LIBOR 2.68925%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	05/23/2017	05/25/2027		33,000,000	LIBOR [2.199%]			(11,493)	1,206,345		1,206,345	644,808					478,215	0001	
Interest Rate Swap /97839/[Semi-Annual] FIXED [2.435%/Quarterly LIBOR 2.68925%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	05/23/2017	05/25/2037		25,000,000	LIBOR [2.435%]			(67,707)	1,554,606		1,554,606	1,086,143					536,190	0001	
Interest Rate Swap /97868/[Semi-Annual] FIXED [2.491%/Quarterly LIBOR 2.68925%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	05/23/2017	05/25/2037		45,000,000	LIBOR [2.491%]			(147,073)	2,428,328		2,428,328	1,983,666					965,142	0001	
Interest Rate Swap /97869/[Semi-Annual] FIXED [2.5285%/Quarterly LIBOR 2.68925%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	05/23/2017	05/25/2047		35,000,000	LIBOR [2.5285%]			(127,515)	2,417,784		2,417,784	2,093,453					932,768	0001	
Interest Rate Swap /98231/[At Maturity] FIXED [2.105%/At Maturity 0.0%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E570DZIZ7F23TIEFA76	06/07/2017	06/09/2042		25,000,000	LIBOR [2.105%] Inflation to Maturity				(96,215)		(96,215)	(1,010,606)					605,186	0001	
Interest Rate Swap /98472/[Quarterly] LIBOR [2.78819%/Semi-Annual] FIXED 2.23%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/14/2017	06/16/2029		135,000,000	2.23% [LIBOR]			60,200	(6,452,411)		(6,452,411)	(3,379,589)					2,184,123	0001	
Interest Rate Swap /98473/[Quarterly] LIBOR [2.78819%/Semi-Annual] FIXED 2.1315%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	06/14/2017	06/16/2027		260,000,000	2.1315% [LIBOR]			(140,158)	(10,971,229)		(10,971,229)	(4,937,010)					3,781,190	0001	
Interest Rate Swap /98475/[Quarterly] LIBOR [2.78819%/Semi-Annual] FIXED 2.4435%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/14/2017	06/16/2047		260,000,000	2.4435% [LIBOR]			671,042	(22,457,912)		(22,457,912)	(15,221,217)					6,935,229	0001	
Interest Rate Swap /98594/[Quarterly] LIBOR [2.78963%/Semi-Annual] FIXED 2.0105%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	06/19/2017	06/21/2024		650,500,000	2.0105% [LIBOR]			(1,258,283)	(19,489,775)		(19,489,775)	(6,792,931)					7,613,907	0001	
Interest Rate Swap /98742/[Semi-Annual] FIXED [3.15905%/Quarterly LIBOR 2.76713%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	09/08/2044		150,000,000	LIBOR [3.15905%]			(1,490,053)	(8,045,979)		(8,045,979)	9,698,511					3,801,398	0001	
Interest Rate Swap /98751/[Semi-Annual] FIXED [3.05205%/Quarterly LIBOR 2.5815%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	LIBOR [3.05205%]			(1,078,256)	(4,214,980)		(4,214,980)	7,914,973					3,177,066	0001	
Interest Rate Swap /98757/[Semi-Annual] FIXED [3.05305%/Quarterly LIBOR 2.5815%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	LIBOR [3.05305%]			(1,079,506)	(4,238,560)		(4,238,560)	7,916,723					3,177,066	0001	

E18.158

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /98776/[Semi-Annual] FIXED [3.06105%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	LIBOR [3.06105%			(1,089,506)	(4,427,203)		(4,427,203)	7,930,716				3,177,066		0001	
Interest Rate Swap /98783/[Semi-Annual] FIXED [3.06205%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	LIBOR [3.06205%			(1,090,756)	(4,450,783)		(4,450,783)	7,932,465				3,177,066		0001	
Interest Rate Swap /98785/[Semi-Annual] FIXED [3.06505%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	LIBOR [3.06505%			(1,094,506)	(4,521,524)		(4,521,524)	7,937,713				3,177,066		0001	
Interest Rate Swap /98787/[Semi-Annual] FIXED [3.07105%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	LIBOR [3.07105%			(1,102,006)	(4,663,005)		(4,663,005)	7,948,208				3,177,066		0001	
Interest Rate Swap /98789/[Semi-Annual] FIXED [3.07005%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	LIBOR [3.07005%			(1,100,756)	(4,639,425)		(4,639,425)	7,946,459				3,177,066		0001	
Interest Rate Swap /98791/[Semi-Annual] FIXED [3.07205%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		75,000,000	LIBOR [3.07205%			(661,954)	(2,811,951)		(2,811,951)	4,769,974				1,906,240		0001	
Interest Rate Swap /98794/[Semi-Annual] FIXED [2.29105%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	02/05/2045		125,000,000	LIBOR [2.29105%			(134,946)	13,829,481		13,829,481	6,627,892				3,193,010		0001	
Interest Rate Swap /98796/[Semi-Annual] FIXED [2.29005%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	02/05/2045		125,000,000	LIBOR [2.29005%			(133,696)	14,022,940		14,022,940	6,613,820				3,193,010		0001	
Interest Rate Swap /98797/[Semi-Annual] FIXED [2.28305%/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	02/05/2045		125,000,000	LIBOR [2.28305%			(124,946)	13,849,699		13,849,699	6,626,106				3,193,010		0001	
Interest Rate Swap /98929/[Semi-Annual] FIXED [2.046%/Quarterly LIBOR 2.42044%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	07/07/2017	07/11/2022		500,000,000	LIBOR [2.046%			781,021	9,024,639		9,024,639	4,912,218				4,697,074		0001	
Interest Rate Swap /98930/[Semi-Annual] FIXED [1.8155%/Quarterly LIBOR 2.42044%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	07/07/2017	07/11/2020		500,000,000	LIBOR [1.8155%			1,933,521	6,631,202		6,631,202	2,750,921				3,102,418		0001	

E18.159

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /98931/[Semi-Annual] FIXED [2.216%]/Quarterly LIBOR 2.42044%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	07/07/2017	07/11/2024		200,000,000	LIBOR [2.216%]			(27,591)	3,933,635		3,933,635	2,818,486				2,351,595		0001	
Interest Rate Swap /99003/[Semi-Annual] FIXED [2.463%]/Quarterly LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	07/12/2017	07/14/2032		30,000,000	LIBOR [2.463%]			(79,015)	1,216,852		1,216,852	1,044,413				551,951		0001	
Interest Rate Swap /99214/[Semi-Annual] FIXED [2.4845%]/Quarterly LIBOR 2.48988%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	07/21/2017	07/25/2037		105,000,000	LIBOR [2.4845%]			(308,162)	5,817,728		5,817,728	4,632,853				2,262,988		0001	
Interest Rate Swap /99217/[Semi-Annual] FIXED [2.2265%]/Quarterly LIBOR 2.48988%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	07/21/2017	07/25/2027		20,000,000	LIBOR [2.2265%]			(7,097)	710,968		710,968	401,264				292,746		0001	
Interest Rate Swap /99218/[Quarterly] LIBOR [1.31444%]/Semi-Annual FIXED 2.713%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	07/21/2017	07/25/2047		8,100,000	2.713% [LIBOR]				(296,059)		(296,059)	(376,141)				216,476		0001	
Interest Rate Swap /99238/[Semi-Annual] FIXED [1.9295%]/Quarterly LIBOR 2.52663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	07/27/2017	07/31/2022		140,000,000	LIBOR [1.9295%]			364,275	3,102,746		3,102,746	1,236,059				1,324,462		0001	
Interest Rate Swap /99239/[Semi-Annual] FIXED [1.73%]/Quarterly LIBOR 2.52663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	07/27/2017	07/31/2020		225,000,000	LIBOR [1.73%]			1,034,317	3,352,082		3,352,082	1,084,852				1,414,103		0001	
Interest Rate Swap /99426/[Quarterly] LIBOR [2.59125%]/Semi-Annual FIXED 2.5305%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/04/2017	08/08/2047		160,000,000	2.5305% [LIBOR]			558,249	(11,040,318)		(11,040,318)	(9,606,693)				4,279,065		0001	
Interest Rate Swap /99480/[Semi-Annual] FIXED [2.4685%]/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	08/10/2017	08/14/2037		24,000,000	LIBOR [2.4685%]			(71,875)	1,390,813		1,390,813	1,058,617				517,811		0001	
Interest Rate Swap /99481/[Semi-Annual] FIXED [2.2115%]/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/10/2017	08/14/2027		40,000,000	LIBOR [2.2115%]			(16,992)	1,484,099		1,484,099	806,229				587,537		0001	
Interest Rate Swap /99488/[Semi-Annual] FIXED [2.0325%]/Quarterly LIBOR 2.61413%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/10/2017	08/14/2024		50,000,000	LIBOR [2.0325%]			68,260	1,483,484		1,483,484	632,367				592,663		0001	

E18.160

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /99569/[Quarterly] LIBOR [2.64581%]/Semi-Annual FIXED 2.3915%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	08/17/2017	08/21/2032		55,000,000	2.3915% [LIBOR]			127,447	(2,708,822)		(2,708,822)	(1,895,550)					1,016,012	0001	
Interest Rate Swap /99594/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/18/2017	08/22/2027		450,000,000	2.163% [LIBOR]			6,766	(18,459,096)		(18,459,096)	(8,904,853)					6,617,449	0001	
Interest Rate Swap /99595/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.4585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	08/18/2017	08/22/2047		175,000,000	2.4585% [LIBOR]			519,756	(14,635,902)		(14,635,902)	(10,336,745)					4,682,681	0001	
Interest Rate Swap /99596/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.152%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/18/2017	08/22/2027		450,000,000	2.152% [LIBOR]			(42,734)	(18,844,126)		(18,844,126)	(8,858,230)					6,617,449	0001	
Interest Rate Swap /99615/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.162%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/18/2017	08/22/2027		250,000,000	2.162% [LIBOR]			1,259	(10,274,499)		(10,274,499)	(4,944,786)					3,676,360	0001	
Interest Rate Swap /99616/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.4655%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	08/18/2017	08/22/2047		100,000,000	2.4655% [LIBOR]			304,003	(8,221,673)		(8,221,673)	(5,917,325)					2,675,818	0001	
Interest Rate Swap /99618/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 2.2465%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL /WELLSFARGOSEC/CLEA RED THROUGH CME	08/18/2017	08/22/2029		65,000,000	2.2465% [LIBOR]			55,252	(3,079,761)		(3,079,761)	(1,671,237)					1,060,118	0001	
Interest Rate Swap /99627/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 4.46%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	08/21/2017	08/23/2047		60,000,000	4.46% [LIBOR]			1,376,559	19,294,986		19,294,986	(5,362,139)					1,605,770	0001	
Interest Rate Swap /99630/[Quarterly] LIBOR [2.67694%]/Semi-Annual FIXED 4.5065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	08/21/2017	08/23/2047		41,000,000	4.5065% [LIBOR]			959,713	13,570,862		13,570,862	(3,693,037)					1,097,276	0001	
Interest Rate Swap /99861/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	08/29/2017	08/31/2027		275,000,000	2.065% [LIBOR]			(245,781)	(13,382,586)		(13,382,586)	(5,226,189)					4,048,669	0001	
Interest Rate Swap /99862/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.15%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	08/29/2017	08/31/2029		120,000,000	2.15% [LIBOR]			(4,967)	(6,759,268)		(6,759,268)	(2,992,539)					1,959,898	0001	

E18.161

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /99864/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.37625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	08/29/2017	08/31/2047		270,000,000	2.37625% [LIBOR]			601,397	(26,892,394)		(26,892,394)	(15,650,193)				7,228,491		0001	
Interest Rate Swap /100190/[Semi-Annual] FIXED [2.4452%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2047		250,000,000	2.4452% [LIBOR]			(657,016)	21,631,696		21,631,696	14,734,203				6,697,714		0001	
Interest Rate Swap /100191/[Semi-Annual] FIXED [2.4527%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2047		250,000,000	2.4527% [LIBOR]			(675,766)	21,251,532		21,251,532	14,762,685				6,697,714		0001	
Interest Rate Swap /100192/[Semi-Annual] FIXED [2.4477%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2047		250,000,000	2.4477% [LIBOR]			(663,266)	21,504,974		21,504,974	14,743,697				6,697,714		0001	
Interest Rate Swap /100193/[Semi-Annual] FIXED [2.4567%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2047		250,000,000	2.4567% [LIBOR]			(685,766)	21,048,778		21,048,778	14,777,875				6,697,714		0001	
Interest Rate Swap /100208/[Semi-Annual] FIXED [2.3415%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2032		52,000,000	2.3415% [LIBOR]			(82,735)	2,884,985		2,884,985	1,773,541				962,702		0001	
Interest Rate Swap /100340/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 2.3865%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2017	09/21/2032		50,000,000	2.3865% [LIBOR]			91,283	(2,516,191)		(2,516,191)	(1,724,922)				926,350		0001	
Interest Rate Swap /100341/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 2.308%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2017	09/21/2029		30,000,000	2.308% [LIBOR]			31,220	(1,266,459)		(1,266,459)	(792,072)				491,350		0001	
Interest Rate Swap /100342/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 2.229%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2017	09/21/2027		35,000,000	2.229% [LIBOR]			8,773	(1,276,941)		(1,276,941)	(717,166)				517,065		0001	
Interest Rate Swap /100343/[Quarterly] LIBOR [2.78963%]/Semi-Annual FIXED 2.065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2017	09/21/2024		50,000,000	2.065% [LIBOR]			(69,467)	(1,436,318)		(1,436,318)	(652,512)				598,435		0001	
Interest Rate Swap /100344/[Quarterly] LIBOR [2.82375%]/Semi-Annual FIXED 1.76375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/19/2017	09/22/2020		596,000,000	1.76375% [LIBOR]			(2,676,050)	(9,295,593)		(9,295,593)	(3,217,030)				3,919,578		0001	

E18.162

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /100346/[Semi-Annual] FIXED [1.756%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	09/20/2017	09/22/2020		500,000,000	LIBOR [1.756%			2,283,758	7,863,366		7,863,366	2,661,371				3,288,237		0001	
Interest Rate Swap /100347/[Semi-Annual] FIXED [1.9215%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	09/20/2017	09/22/2022		500,000,000	LIBOR [1.9215%			1,456,258	11,733,877		11,733,877	4,463,235				4,828,302		0001	
Interest Rate Swap /100348/[Semi-Annual] FIXED [2.062%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	09/20/2017	09/22/2024		300,000,000	LIBOR [2.062%			452,255	8,687,757		8,687,757	3,918,015				3,590,613		0001	
Interest Rate Swap /100349/[Quarterly] LIBOR [2.82375%/Semi-Annual] FIXED 2.226%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	09/20/2017	09/22/2027		150,000,000	2.226% [LIBOR]			19,873	(5,521,102)		(5,521,102)	(3,075,959)				2,215,993		0001	
Interest Rate Swap /100350/[Quarterly] LIBOR [2.82375%/Semi-Annual] FIXED 2.2275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	09/20/2017	09/22/2027		28,000,000	2.2275% [LIBOR]			4,130	(1,027,311)		(1,027,311)	(574,575)				413,652		0001	
Interest Rate Swap /100351/[Quarterly] LIBOR [2.82375%/Semi-Annual] FIXED 2.389%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	09/20/2017	09/22/2032		43,000,000	2.389% [LIBOR]			75,787	(2,155,058)		(2,155,058)	(1,486,392)				796,661		0001	
Interest Rate Swap /100352/[Quarterly] LIBOR [2.82375%/Semi-Annual] FIXED 2.5135%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	09/20/2017	09/22/2047		16,000,000	2.5135% [LIBOR]			48,120	(1,164,107)		(1,164,107)	(959,024)				428,803		0001	
Interest Rate Swap /100544/[Semi-Annual] FIXED [2.011%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2017	10/02/2022		400,000,000	LIBOR [2.011%			806,663	5,684,611		5,684,611	1,416,348				3,878,144		0001	
Interest Rate Swap /100547/[Semi-Annual] FIXED [1.846%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2017	10/02/2020		300,000,000	LIBOR [1.846%			1,099,997	2,449,707		2,449,707	(9,749)				1,989,975		0001	
Interest Rate Swap /100549/[Semi-Annual] FIXED [2.59375%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2017	10/02/2047		215,000,000	LIBOR [2.59375%			(819,331)	10,813,699		10,813,699	11,810,076				5,765,048		0001	
Interest Rate Swap /100550/[Semi-Annual] FIXED [2.318%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	09/28/2017	10/02/2027		50,000,000	LIBOR [2.318%			(52,667)	1,177,872		1,177,872	759,544				739,932		0001	

E18.163

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /100786/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.395%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/19/2017	10/23/2029		110,000,000	2.395% [LIBOR]			216,908	(3,785,615)		(3,785,615)	(3,019,209)				1,808,321		0001	
Interest Rate Swap /100791/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.5505%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/19/2017	10/23/2047		200,000,000	2.5505% [LIBOR]			705,377	(13,041,706)		(13,041,706)	(12,111,027)				5,367,495		0001	
Interest Rate Swap /100792/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.551%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/19/2017	10/23/2047		300,000,000	2.551% [LIBOR]			1,059,566	(19,532,073)		(19,532,073)	(18,168,826)				8,051,242		0001	
Interest Rate Swap /100867/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.339%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	10/19/2017	10/23/2027		103,000,000	2.339% [LIBOR]			145,424	(2,913,364)		(2,913,364)	(2,238,722)				1,529,472		0001	
Interest Rate Swap /100868/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.476%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NATIXIS /WELLSFARGOSEC/CLEA RED THROUGH CME	10/19/2017	10/23/2032		59,000,000	2.476% [LIBOR]			164,131	(2,374,166)		(2,374,166)	(2,099,488)				1,096,670		0001	
Interest Rate Swap /100869/[Quarterly] LIBOR [2.47719%]/Semi-Annual FIXED 2.082%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	10/19/2017	10/23/2022		56,000,000	2.082% [LIBOR]			(64,854)	(1,006,411)		(1,006,411)	(586,590)				547,255		0001	
Interest Rate Swap /100939/[Semi-Annual] FIXED [2.6325%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	10/24/2017	10/26/2037		30,000,000	LIBOR [2.6325%]			(131,630)	1,020,849		1,020,849	1,385,692				650,730		0001	
Interest Rate Swap /101040/[Semi-Annual] FIXED [2.59%]/Quarterly LIBOR 2.5585%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	10/31/2017	11/02/2037		43,000,000	LIBOR [2.59%]			(170,819)	1,739,702		1,739,702	1,967,579				933,209		0001	
Interest Rate Swap /101092/[Quarterly] LIBOR [2.58925%]/Semi-Annual FIXED 2.662%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	11/03/2017	11/07/2047		5,600,000	2.662% [LIBOR]			208	(238,611)		(238,611)	(310,240)				150,394		0001	
Interest Rate Swap /101093/[Quarterly] LIBOR [1.39194%]/Semi-Annual FIXED 2.7625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/03/2017	11/07/2047		4,500,000	2.7625% [LIBOR]				(130,105)		(130,105)	(210,943)				120,852		0001	
Interest Rate Swap /101094/[Quarterly] LIBOR [1.39194%]/Semi-Annual FIXED 2.788%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	11/03/2017	11/07/2047		2,800,000	2.788% [LIBOR]				(75,306)		(75,306)	(123,846)				75,197		0001	

E18.164

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /101095/[Quarterly] LIBOR [1.39194%]/Semi-Annual FIXED 2.854%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/03/2017	11/07/2037		3,500,000	2.854% [LIBOR]				(46,987)		(46,987)	(77,436)				75,999		0001	
Interest Rate Swap /101144/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 2.5645%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	11/07/2017	11/09/2047		80,000,000	2.5645% [LIBOR]			304,674	(4,993,801)		(4,993,801)	(4,871,443)				2,148,860		0001	
Interest Rate Swap /101147/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 2.462%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	11/07/2017	11/09/2032		180,000,000	2.462% [LIBOR]			501,016	(7,568,094)		(7,568,094)	(6,404,492)				3,350,612		0001	
Interest Rate Swap /101148/[Semi-Annual] FIXED [2.397%]/Quarterly LIBOR 2.60113%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	11/07/2017	11/09/2029		10,000,000	LIBOR [2.397%]			(21,334)	344,707		344,707	276,393				164,773		0001	
Interest Rate Swap /101150/[Semi-Annual] FIXED [2.329%]/Quarterly LIBOR 2.60113%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/07/2017	11/09/2027		32,000,000	LIBOR [2.329%]			(46,510)	937,809		937,809	697,384				476,252		0001	
Interest Rate Swap /101151/[Semi-Annual] FIXED [2.1945%]/Quarterly LIBOR 2.60113%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NATIXIS /WELLSFARGOSEC/CLEA RED THROUGH CME	11/07/2017	11/09/2024		12,000,000	LIBOR [2.1945%]			(1,301)	268,685		268,685	174,053				145,368		0001	
Interest Rate Swap /101463/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 2.45%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/21/2017	11/24/2029		140,000,000	2.45% [LIBOR]			400,566	(4,153,450)		(4,153,450)	(3,971,063)				2,312,120		0001	
Interest Rate Swap /101464/[Quarterly] LIBOR [2.68925%]/Semi-Annual FIXED 2.179%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	11/21/2017	11/24/2022		110,000,000	2.179% [LIBOR]			16,630	(1,621,417)		(1,621,417)	(1,278,858)				1,086,163		0001	
Interest Rate Swap /101556/[Quarterly] LIBOR [2.706%]/Semi-Annual FIXED 2.4325%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/27/2017	11/29/2029		60,000,000	2.4325% [LIBOR]			159,291	(1,880,061)		(1,880,061)	(1,694,007)				990,909		0001	
Interest Rate Swap /101557/[Quarterly] LIBOR [2.706%]/Semi-Annual FIXED 2.5%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	11/27/2017	11/29/2032		150,000,000	2.5% [LIBOR]			499,477	(5,665,896)		(5,665,896)	(5,428,746)				2,797,208		0001	
Interest Rate Swap /101558/[Quarterly] LIBOR [2.706%]/Semi-Annual FIXED 2.5885%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/27/2017	11/29/2047		100,000,000	2.5885% [LIBOR]			421,485	(5,744,900)		(5,744,900)	(6,143,403)				2,688,401		0001	
Interest Rate Swap /101559/[Quarterly] LIBOR [2.706%]/Semi-Annual FIXED 2.139%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	11/27/2017	11/29/2022		60,000,000	2.139% [LIBOR]			(16,809)	(974,173)		(974,173)	(676,626)				593,212		0001	

E18.165

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /102217/[Semi-Annual] FIXED [2.291%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	12/13/2017	12/15/2024		93,000,000	LIBOR [2.291%]			(101,004)	1,636,513		1,636,513	1,452,879				1,135,210		0001	
Interest Rate Swap /102218/[Semi-Annual] FIXED [2.402%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/13/2017	12/15/2027		25,000,000	LIBOR [2.402%]			(54,902)	602,150		602,150	569,890				374,166		0001	
Interest Rate Swap /102219/[Semi-Annual] FIXED [2.568%/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	12/13/2017	12/15/2037		62,000,000	LIBOR [2.568%]			(239,076)	2,733,807		2,733,807	2,838,910				1,349,836		0001	
Interest Rate Swap /102576/[Semi-Annual] FIXED [2.4945%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL /WELLSFARGOSEC/CLEA RED THROUGH CME	01/05/2018	01/09/2028		61,000,000	LIBOR [2.4945%]			(161,298)	1,035,393		1,035,393	1,035,393				916,524		0001	
Interest Rate Swap /102577/[Semi-Annual] FIXED [2.5865%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSC BANK USA, NATIONAL ASSOCIATION /WELLSFARGOSEC/CLEA RED THROUGH CME	01/05/2018	01/09/2033		64,000,000	LIBOR [2.5865%]			(226,802)	1,800,511		1,800,511	1,800,511				1,198,613		0001	
Interest Rate Swap /102578/[Semi-Annual] FIXED [2.634%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	01/05/2018	01/09/2038		19,000,000	LIBOR [2.634%]			(76,156)	652,104		652,104	652,104				414,422		0001	
Interest Rate Swap /102579/[Semi-Annual] FIXED [2.646%/Quarterly LIBOR 2.40806%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	01/05/2018	01/09/2048		29,000,000	LIBOR [2.646%]			(119,641)	1,335,477		1,335,477	1,335,477				781,253		0001	
Interest Rate Swap /102592/[Quarterly] LIBOR [2.40806%/Semi-Annual] FIXED 2.409%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	01/05/2018	01/09/2025		148,000,000	2.409% [LIBOR]			267,617	(1,669,132)		(1,669,132)	(1,669,132)				1,817,148		0001	
Interest Rate Swap /102591/[Quarterly] LIBOR [2.41425%/Semi-Annual] FIXED 2.405%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	01/08/2018	01/10/2025		360,000,000	2.405% [LIBOR]			628,491	(4,141,220)		(4,141,220)	(4,141,220)				4,420,090		0001	
Interest Rate Swap /102747/[Semi-Annual] FIXED [2.755%/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	01/18/2018	01/22/2038		32,000,000	LIBOR [2.755%]			(152,350)	514,434		514,434	514,434				698,524		0001	
Interest Rate Swap /103231/[Quarterly] LIBOR [2.48988%/Semi-Annual] FIXED 2.7225%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	01/23/2018	01/25/2030		54,000,000	2.7225% [LIBOR]			238,220	(224,034)		(224,034)	(224,034)				898,333		0001	

E18.166

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /103240/[Semi-Annual] FIXED [2.704%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /WELLSFARGOSEC/CLEARINGHOUSE	01/24/2018	01/26/2028		175,000,000	LIBOR [2.704%]			(730,925)	12,307		12,307	12,307					2,635,189	0001	
Interest Rate Swap /103291/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 2.773%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEARINGHOUSE	01/26/2018	01/30/2033		62,000,000	2.773% [LIBOR]			293,178	(383,836)		(383,836)	(383,836)					1,163,223	0001	
Interest Rate Swap /103365/[Quarterly] LIBOR [1.7734%]/Semi-Annual FIXED 2.931%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEARINGHOUSE	01/30/2018	02/01/2048		1,400,000	2.931% [LIBOR]				(2,074)		(2,074)	(2,074)					37,755	0001	
Interest Rate Swap /103366/[Quarterly] LIBOR [2.541%]/Semi-Annual FIXED 2.847%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL /WELLSFARGOSEC/CLEARINGHOUSE	01/30/2018	02/01/2048		2,200,000	2.847% [LIBOR]			11,866	(10,982)		(10,982)	(10,982)					59,329	0001	
Interest Rate Swap /103367/[Quarterly] LIBOR [1.7734%]/Semi-Annual FIXED 2.906%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARINGHOUSE	01/30/2018	02/03/2048		1,100,000	2.906% [LIBOR]				5,884		5,884	5,884					29,664	0001	
Interest Rate Swap /103368/[Quarterly] LIBOR [1.7734%]/Semi-Annual FIXED 2.913%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARINGHOUSE	01/30/2018	02/01/2048		1,200,000	2.913% [LIBOR]				4,002		4,002	4,002					32,361	0001	
Interest Rate Swap /103369/[Quarterly] LIBOR [1.7734%]/Semi-Annual FIXED 2.935%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARINGHOUSE	01/30/2018	02/01/2038		1,900,000	2.935% [LIBOR]				(4,037)		(4,037)	(4,037)					41,507	0001	
Interest Rate Swap /103370/[Quarterly] LIBOR [1.7734%]/Semi-Annual FIXED 2.9345%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARINGHOUSE	01/30/2018	02/03/2048		2,100,000	2.9345% [LIBOR]				(11,089)		(11,089)	(11,089)					56,632	0001	
Interest Rate Swap /103435/[Semi-Annual] FIXED [2.897%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARINGHOUSE	02/01/2018	02/05/2048		30,000,000	LIBOR [2.897%]			(172,673)	(156,721)		(156,721)	(156,721)					809,166	0001	
Interest Rate Swap /103473/[Semi-Annual] FIXED [2.977%]/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEARINGHOUSE	02/02/2018	02/06/2048		300,000,000	LIBOR [2.977%]			(1,929,527)	(6,477,424)		(6,477,424)	(6,477,424)					8,091,662	0001	
Interest Rate Swap /103531/[Semi-Annual] FIXED [2.805%]/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEARINGHOUSE	02/02/2018	02/06/2025		900,000,000	LIBOR [2.805%]			(4,391,080)	(9,774,268)		(9,774,268)	(9,774,268)					11,114,180	0001	
Interest Rate Swap /103532/[Semi-Annual] FIXED [2.9385%]/Quarterly LIBOR 2.59238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEARINGHOUSE	02/02/2018	02/06/2030		300,000,000	LIBOR [2.9385%]			(1,825,256)	(4,984,165)		(4,984,165)	(4,984,165)					4,997,499	0001	
Interest Rate Swap /103830/[Quarterly] LIBOR [2.61613%]/Semi-Annual FIXED 2.9535%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEARINGHOUSE	02/13/2018	02/15/2033		27,000,000	2.9535% [LIBOR]			163,743	409,729		409,729	409,729					507,464	0001	

E18.167

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /103831/(Quarterly) LIBOR [1.83875%]/Semi-Annual FIXED 3.133%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	02/13/2018	02/15/2038		9,300,000	3.133% [LIBOR]				50,881		50,881	50,881					203,381	0001	
Interest Rate Swap /103832/(Quarterly) LIBOR [1.83875%]/Semi-Annual FIXED 3.075%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	02/13/2018	02/15/2048		9,000,000	3.075% [LIBOR]				139,278		139,278	139,278					242,875	0001	
Interest Rate Swap /103833/(Quarterly) LIBOR [1.83875%]/Semi-Annual FIXED 3.0515%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	02/13/2018	02/15/2048		6,600,000	3.0515% [LIBOR]				189,427		189,427	189,427					178,108	0001	
Interest Rate Swap /103834/(Quarterly) LIBOR [2.61613%]/Semi-Annual FIXED 2.974%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	02/13/2018	02/15/2048		9,700,000	2.974% [LIBOR]			60,572	204,248		204,248	204,248					261,765	0001	
Interest Rate Swap /103835/(Quarterly) LIBOR [1.83875%]/Semi-Annual FIXED 3.068%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	02/13/2018	02/15/2048		7,400,000	3.068% [LIBOR]				156,287		156,287	156,287					199,697	0001	
Interest Rate Swap /103836/(Quarterly) LIBOR [1.83875%]/Semi-Annual FIXED 3.039%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	02/13/2018	02/15/2048		7,100,000	3.039% [LIBOR]				220,399		220,399	220,399					191,601	0001	
Interest Rate Swap /103837/(Quarterly) LIBOR [1.83875%]/Semi-Annual FIXED 3.0555%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	02/13/2018	02/15/2048		2,500,000	3.0555% [LIBOR]				23,300		23,300	23,300					67,465	0001	
Interest Rate Swap /103851/(Semi-Annual) FIXED [2.947%]/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	02/14/2018	02/16/2028		12,000,000	LIBOR [2.947%]			(71,788)	(235,155)		(235,155)	(235,155)					181,295	0001	
Interest Rate Swap /103852/(Semi-Annual) FIXED [3.0595%]/Quarterly LIBOR 2.629%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	02/14/2018	02/16/2038		30,000,000	LIBOR [3.0595%]			(209,001)	(897,180)		(897,180)	(897,180)					656,068	0001	
Interest Rate Swap /103860/(Quarterly) LIBOR [2.629%]/Semi-Annual FIXED 3.0445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	02/14/2018	02/16/2033		27,000,000	3.0445% [LIBOR]			184,557	702,352		702,352	702,352					507,464	0001	
Interest Rate Swap /103883/(Semi-Annual) FIXED [3.005%]/Quarterly LIBOR 2.6445%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	02/15/2018	02/20/2030		500,000,000	LIBOR [3.005%]			(3,182,920)	(11,541,034)		(11,541,034)	(11,541,034)					8,344,160	0001	
Interest Rate Swap /103904/(Quarterly) LIBOR [2.6445%]/Semi-Annual FIXED 3.0205%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	02/15/2018	02/20/2033		20,000,000	3.0205% [LIBOR]			129,995	462,608		462,608	462,608					376,032	0001	

E18.168

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /104256/[Semi-Annual] FIXED [2.967%/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL /WELLSFARGOSEC/CLEA RED THROUGH CME	02/28/2018	03/02/2030		53,000,000	LIBOR [2.967%			(288,098)	(1,030,003)		(1,030,003)	(1,030,003)				886,067		0001	
Interest Rate Swap /104257/[Semi-Annual] FIXED [3.0245%/Quarterly LIBOR 2.73813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	02/28/2018	03/02/2038		81,000,000	LIBOR [3.0245%			(478,983)	(1,997,752)		(1,997,752)	(1,997,752)				1,773,234		0001	
Interest Rate Swap /104304/[Semi-Annual] FIXED [2.6085%/Quarterly LIBOR 2.73888%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	03/02/2018	03/06/2021		150,000,000	LIBOR [2.6085%			(363,118)	118,373		118,373	118,373				1,109,899		0001	
Interest Rate Swap /104306/[Semi-Annual] FIXED [3.001%/Quarterly LIBOR 2.73888%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	03/02/2018	03/06/2038		165,000,000	LIBOR [3.001%			(932,827)	(3,484,503)		(3,484,503)	(3,484,503)				3,614,027		0001	
Interest Rate Swap /104800/[Semi-Annual] FIXED [3.0385%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	03/20/2018	03/22/2038		80,000,000	LIBOR [3.0385%			(408,412)	(2,138,569)		(2,138,569)	(2,138,569)				1,754,081		0001	
Interest Rate Swap /104804/[Semi-Annual] FIXED [2.669%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	03/21/2018	03/23/2020		310,000,000	LIBOR [2.669%			(672,351)	260,057		260,057	260,057				1,719,033		0001	
Interest Rate Swap /104805/[Semi-Annual] FIXED [2.778%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	03/21/2018	03/23/2021		140,000,000	LIBOR [2.778%			(421,483)	(401,155)		(401,155)	(401,155)				1,045,323		0001	
Interest Rate Swap /104806/[Semi-Annual] FIXED [3.055%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	03/21/2018	03/23/2038		86,000,000	LIBOR [3.055%			(442,870)	(2,515,080)		(2,515,080)	(2,515,080)				1,885,637		0001	
Interest Rate Swap /104807/[Semi-Annual] FIXED [2.916%/Quarterly LIBOR 2.82375%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	03/21/2018	03/23/2025		35,000,000	LIBOR [2.916%			(142,669)	(606,962)		(606,962)	(606,962)				436,799		0001	
Interest Rate Swap /104978/[At Maturity] FIXED [5.32982%/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	03/23/2018	10/15/2020		73,771,998	LIBOR [5.32982%		31,488	58,805,984	(8,352,455)		(8,352,455)	6,473,861				642,731		0001	
Interest Rate Swap /104983/[At Maturity] FIXED [5.483%/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	03/23/2018	07/15/2020		54,499,910	LIBOR [5.483%		16,785	46,062,553	(5,729,584)		(5,729,584)	5,056,333				440,637		0001	

E18.169

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23		
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)		
Interest Rate Swap /105003/[At Maturity] FIXED [4.864%]/At Maturity LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	03/23/2018	03/19/2029		105,102,426	LIBOR [4.864%]		856,504	46,706,985	(40,634,718)		(40,634,718)	8,857,185				1,679,996		0001		
Interest Rate Swap /105010/[Semi-Annual] FIXED [4.7425%]/Quarterly LIBOR 2.58925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG /WELLSFARGOSEC/CLEA RED THROUGH CME	03/23/2018	02/07/2038		57,000,000	LIBOR [4.7425%]		443,426	(1,238,380)	(16,194,087)		(16,194,087)	3,860,342					1,245,877		0001	
Interest Rate Swap /105098/[Semi-Annual] FIXED [2.7865%]/Quarterly LIBOR 2.79388%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	04/02/2018	04/04/2028		56,000,000	LIBOR [2.7865%]			(162,334)	(343,595)		(343,595)	(343,595)					852,047		0001	
Interest Rate Swap /105529/[Quarterly] LIBOR [2.44456%]/Semi-Annual FIXED 5.02%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	ROYAL BANK OF CANADA /WELLSFARGOSEC/CLEA RED THROUGH CME	04/16/2018	04/18/2033		45,000,000	5.02% [LIBOR]			822,254	11,840,455		11,840,455	11,840,455					850,845		0001	
Interest Rate Swap /105622/[Semi-Annual] FIXED [3.0655%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	04/20/2018	04/24/2033		365,000,000	LIBOR [3.0655%]			(1,575,947)	(10,435,393)		(10,435,393)	(10,435,393)					6,906,124		0001	
Interest Rate Swap /105661/[Quarterly] LIBOR [2.508%]/Semi-Annual FIXED 3.104%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL /WELLSFARGOSEC/CLEA RED THROUGH CME	04/24/2018	04/26/2038		75,000,000	LIBOR [3.104%]			339,006	2,768,014		2,768,014	2,768,014					1,648,295		0001	
Interest Rate Swap /105663/[Semi-Annual] FIXED [3.116%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	04/24/2018	04/26/2038		650,000,000	LIBOR [3.116%]			(2,991,139)	(25,178,399)		(25,178,399)	(25,178,399)					14,285,220		0001	
Interest Rate Swap /105664/[Semi-Annual] FIXED [3.094%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	04/24/2018	04/26/2033		450,000,000	LIBOR [3.094%]			(2,003,413)	(14,418,732)		(14,418,732)	(14,418,732)					8,514,400		0001	
Interest Rate Swap /105666/[Semi-Annual] FIXED [3.091%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	04/24/2018	04/26/2030		465,000,000	LIBOR [3.091%]			(2,060,700)	(14,672,539)		(14,672,539)	(14,672,539)					7,822,511		0001	
Interest Rate Swap /105680/[Semi-Annual] FIXED [3.0925%]/Quarterly LIBOR 2.508%	Portfolio Hedge	Schedule D	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	04/24/2018	04/26/2033		452,000,000	LIBOR [3.0925%]			(2,007,703)	(14,401,359)		(14,401,359)	(14,401,359)					8,552,241		0001	
Interest Rate Swap /105693/[Semi-Annual] FIXED [3.123%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	04/25/2018	04/27/2048		100,000,000	LIBOR [3.123%]			(462,452)	(5,189,364)		(5,189,364)	(5,189,364)					2,707,859		0001	
Interest Rate Swap /105694/[Semi-Annual] FIXED [3.1425%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	04/25/2018	04/27/2033		125,000,000	LIBOR [3.1425%]			(594,586)	(4,732,629)		(4,732,629)	(4,732,629)					2,365,937		0001	

E18.170

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /105695/(Semi-Annual) FIXED [3.12%]/Quarterly LIBOR 2.50925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	04/25/2018	04/27/2030		150,000,000	LIBOR [3.12%]			(690,628)	(5,160,817)		(5,160,817)	(5,160,817)					2,524,505	0001	
Interest Rate Swap /106259/(Quarterly) LIBOR [2.64%]/Semi-Annual FIXED 4.4%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2018	05/17/2033		95,000,000	4.4% [LIBOR]			1,164,482	18,005,535		18,005,535	18,005,535					1,801,246	0001	
Interest Rate Swap /106262/(Semi-Annual) FIXED [3.2005%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2018	05/17/2038		280,000,000	LIBOR [3.2005%]			(1,342,363)	(14,486,684)		(14,486,684)	(14,486,684)					6,163,181	0001	
Interest Rate Swap /106265/(Semi-Annual) FIXED [3.19%]/Quarterly LIBOR 2.64%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2018	05/17/2033		280,000,000	LIBOR [3.19%]			(1,324,070)	(12,228,433)		(12,228,433)	(12,228,433)					5,308,936	0001	
Interest Rate Swap /106282/(Quarterly) LIBOR [2.64581%]/Semi-Annual FIXED 3.105%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	05/17/2018	05/21/2025		60,000,000	3.105% [LIBOR]			245,756	1,729,682		1,729,682	1,729,682					758,353	0001	
Interest Rate Swap /106284/(Quarterly) LIBOR [2.64581%]/Semi-Annual FIXED 3.1725%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	05/17/2018	05/21/2028		45,000,000	3.1725% [LIBOR]			202,880	1,725,299		1,725,299	1,725,299					689,470	0001	
Interest Rate Swap /106285/(Quarterly) LIBOR [2.64581%]/Semi-Annual FIXED 3.198%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	05/17/2018	05/21/2030		40,000,000	3.198% [LIBOR]			186,571	1,687,624		1,687,624	1,687,624					674,981	0001	
Interest Rate Swap /106780/(Semi-Annual) FIXED [3.033%]/Quarterly LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/05/2018	06/07/2030		60,000,000	LIBOR [3.033%]			(208,988)	(1,539,531)		(1,539,531)	(1,539,531)					1,014,692	0001	
Interest Rate Swap /106781/(Semi-Annual) FIXED [2.943%]/Quarterly LIBOR 2.76575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/05/2018	06/07/2025		80,000,000	LIBOR [2.943%]			(237,851)	(1,533,256)		(1,533,256)	(1,533,256)					1,015,086	0001	
Interest Rate Swap /106927/(Quarterly) LIBOR [2.32713%]/Semi-Annual FIXED 3.1855%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	06/07/2018	06/11/2038		7,300,000	3.1855% [LIBOR]				62,501		62,501	62,501					160,973	0001	
Interest Rate Swap /106928/(Quarterly) LIBOR [2.32713%]/Semi-Annual FIXED 3.116%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/07/2018	06/12/2048		5,600,000	3.116% [LIBOR]				95,499		95,499	95,499					151,950	0001	
Interest Rate Swap /106929/(Quarterly) LIBOR [2.32713%]/Semi-Annual FIXED 3.135%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/07/2018	06/12/2048		7,300,000	3.135% [LIBOR]				226,891		226,891	226,891					198,078	0001	

E18.171

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /106930/[Quarterly] LIBOR [2.32713%]/Semi-Annual FIXED 3.1215%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/07/2018	06/11/2048		11,200,000	3.1215% [LIBOR]				561,844		561,844	561,844					303,900	0001	
Interest Rate Swap /106931/[Quarterly] LIBOR [2.32713%]/Semi-Annual FIXED 3.13%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/07/2018	06/11/2048		6,500,000	3.13% [LIBOR]				270,536		270,536	270,536					176,371	0001	
Interest Rate Swap /106932/[Quarterly] LIBOR [2.32713%]/Semi-Annual FIXED 3.127%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/07/2018	06/11/2048		3,600,000	3.127% [LIBOR]				169,213		169,213	169,213					97,682	0001	
Interest Rate Swap /106933/[Quarterly] LIBOR [2.32713%]/Semi-Annual FIXED 3.136%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/07/2018	06/11/2048		8,700,000	3.136% [LIBOR]				208,747		208,747	208,747					236,065	0001	
Interest Rate Swap /107220/[Semi-Annual] FIXED [3.105%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	06/13/2018	06/15/2038		100,000,000	LIBOR [3.105%]			(373,145)	(3,707,548)		(3,707,548)	(3,707,548)					2,205,675	0001	
Interest Rate Swap /107221/[Semi-Annual] FIXED [3.075%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/13/2018	06/15/2048		28,000,000	LIBOR [3.075%]			(99,907)	(1,178,430)		(1,178,430)	(1,178,430)					759,879	0001	
Interest Rate Swap /107222/[Semi-Annual] FIXED [3.109%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	06/13/2018	06/15/2038		200,000,000	LIBOR [3.109%]			(750,645)	(7,537,684)		(7,537,684)	(7,537,684)					4,411,349	0001	
Interest Rate Swap /107223/[Semi-Annual] FIXED [3.0775%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/13/2018	06/15/2048		150,000,000	LIBOR [3.0775%]			(537,259)	(6,390,372)		(6,390,372)	(6,390,372)					4,070,780	0001	
Interest Rate Swap /107434/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 2.813%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/22/2018	06/26/2020		172,000,000	2.813% [LIBOR]			347,564	247,414		247,414	247,414					1,049,764	0001	
Interest Rate Swap /107435/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 3.0455%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	06/22/2018	06/26/2033		25,000,000	3.0455% [LIBOR]			80,388	651,625		651,625	651,625					475,822	0001	
Interest Rate Swap /107436/[Quarterly] LIBOR [2.82163%]/Semi-Annual FIXED 3.048%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	06/22/2018	06/26/2038		43,000,000	3.048% [LIBOR]			138,819	1,218,144		1,218,144	1,218,144					949,171	0001	

E18.172

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /108103/[Semi-Annual] FIXED [2.994%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	07/18/2018	07/20/2030		100,000,000	LIBOR [2.994%]			(239,083)	(2,178,958)		(2,178,958)	(2,178,958)					1,700,000	0001	
Interest Rate Swap /108104/[Semi-Annual] FIXED [2.9885%]/Quarterly LIBOR 2.469%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	07/18/2018	07/20/2048		50,000,000	LIBOR [2.9885%]			(118,312)	(1,221,111)		(1,221,111)	(1,221,111)					1,359,228	0001	
Interest Rate Swap /108117/[Semi-Annual] FIXED [2.9745%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	07/20/2018	07/24/2048		107,000,000	LIBOR [2.9745%]			(237,611)	(2,304,744)		(2,304,744)	(2,304,744)					2,909,239	0001	
Interest Rate Swap /108118/[Semi-Annual] FIXED [2.951%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	07/20/2018	07/24/2028		63,000,000	LIBOR [2.951%]			(133,445)	(1,234,688)		(1,234,688)	(1,234,688)					974,466	0001	
Interest Rate Swap /108119/[Semi-Annual] FIXED [2.9905%]/Quarterly LIBOR 2.48738%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	07/20/2018	07/24/2038		47,000,000	LIBOR [2.9905%]			(107,651)	(924,309)		(924,309)	(924,309)					1,039,593	0001	
Interest Rate Swap /108151/[Semi-Annual] FIXED [3.014%]/Quarterly LIBOR 2.48988%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	07/23/2018	07/25/2048		200,000,000	LIBOR [3.014%]			(477,909)	(5,944,351)		(5,944,351)	(5,944,351)					5,438,750	0001	
Interest Rate Swap /108154/[Semi-Annual] FIXED [3.033%]/Quarterly LIBOR 2.48988%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL /WELLSFARGOSEC/CLEAR THROUGH CME	07/23/2018	07/25/2038		200,000,000	LIBOR [3.033%]			(494,376)	(5,242,595)		(5,242,595)	(5,242,595)					4,423,799	0001	
Interest Rate Swap /108431/[Semi-Annual] FIXED [3.1125%]/Quarterly LIBOR 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	07/30/2018	08/01/2033		205,000,000	LIBOR [3.1125%]			(548,409)	(7,033,960)		(7,033,960)	(7,033,960)					3,915,178	0001	
Interest Rate Swap /108506/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.14%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	08/01/2018	08/03/2033		68,000,000	3.14% [LIBOR]			182,918	2,561,533		2,561,533	2,561,533					1,298,693	0001	
Interest Rate Swap /108511/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.017%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	08/01/2018	08/03/2023		217,000,000	3.017% [LIBOR]			473,994	4,114,828		4,114,828	4,114,828					2,324,535	0001	
Interest Rate Swap /108512/[Quarterly] LIBOR [2.5815%]/Semi-Annual FIXED 3.143%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	08/01/2018	08/03/2038		38,000,000	3.143% [LIBOR]			102,688	1,637,631		1,637,631	1,637,631					840,951	0001	
Interest Rate Swap /108600/[Semi-Annual] FIXED [3.097%]/Quarterly LIBOR 2.58925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	08/03/2018	08/07/2048		40,000,000	LIBOR [3.097%]			(97,781)	(1,874,138)		(1,874,138)	(1,874,138)					1,088,118	0001	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Undiscounted Premium (Received) Paid	Current Year Initial Cost of Undiscounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /108601/(Semi-Annual) FIXED [3.011%/Quarterly LIBOR 2.58925%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEAR THROUGH CME	08/03/2018	08/07/2025		185,000,000	LIBOR [3.011%]			(388,599)	(4,353,509)		(4,353,509)	(4,353,509)					2,376,368	0001	
Interest Rate Swap /108797/(Quarterly) LIBOR [2.64%]/Semi-Annual FIXED 2.8%	Portfolio Hedge	Schedule D	Interest	CREDIT AGRICOLE /MORGAN STANLEY/CLEARED THROUGH CME	08/15/2018	08/17/2020		1,000,000	2.8% [LIBOR]			1,233	1,756		1,756	1,756					6,384	0001	
Interest Rate Swap /108841/(Semi-Annual) FIXED [2.9945%/Quarterly LIBOR 2.64581%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEAR THROUGH CME	08/17/2018	08/21/2048		39,000,000	2.9945% [LIBOR]			(73,790)	(1,003,181)		(1,003,181)	(1,003,181)					1,061,631	0001	
Interest Rate Swap /108842/(Semi-Annual) FIXED [3.0125%/Quarterly LIBOR 2.64581%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	08/17/2018	08/21/2038		60,000,000	3.0125% [LIBOR]			(117,423)	(1,383,794)		(1,383,794)	(1,383,794)					1,329,850	0001	
Interest Rate Swap /108843/(Semi-Annual) FIXED [2.954%/Quarterly LIBOR 2.64581%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	08/17/2018	08/21/2028		12,000,000	LIBOR [2.954%]			(20,950)	(237,216)		(237,216)	(237,216)					186,290	0001	
Interest Rate Swap /108870/(Quarterly) LIBOR [2.44881%/Semi-Annual FIXED 2.334%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /MORGAN STANLEY/CLEARED THROUGH CME	08/20/2018	10/17/2026		20,000,000	2.334% [LIBOR]			26,467	(465,201)		(465,201)	(385,351)					279,285	0001	
Interest Rate Swap /108871/(Quarterly) LIBOR [2.75125%/Semi-Annual FIXED 2.099%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /MORGAN STANLEY/CLEARED THROUGH CME	08/20/2018	12/05/2021		145,000,000	2.099% [LIBOR]			(92,747)	(2,065,830)		(2,065,830)	(1,462,471)					1,241,000	0001	
Interest Rate Swap /108872/(Quarterly) LIBOR [2.52663%/Semi-Annual FIXED 1.65%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA /MORGAN STANLEY/CLEARED THROUGH CME	08/20/2018	01/31/2019		60,000,000	1.65% [LIBOR]			(323,818)	(46,804)		(46,804)	113,924					84,853	0001	
Interest Rate Swap /108874/(Semi-Annual) FIXED [4.53%/Quarterly LIBOR 2.52663%]	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC /MORGAN STANLEY/CLEARED THROUGH CME	08/20/2018	10/31/2028		52,000,000	LIBOR [4.53%]			(1,216,958)	(8,178,403)		(8,178,403)	2,350,257					815,174	0001	
Interest Rate Swap /108894/(Semi-Annual) FIXED [2.6925%/Quarterly LIBOR 2.5815%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	08/21/2018	08/04/2035		400,000,000	2.6925% [LIBOR]			(2,012,219)	8,494,948		8,494,948	17,319,911					8,148,620	0001	
Interest Rate Swap /108895/(Quarterly) LIBOR [2.52663%/Semi-Annual FIXED 2.7%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	08/21/2018	07/31/2035		159,000,000	2.7% [LIBOR]			811,383	(3,184,602)		(3,184,602)	(6,885,399)					3,237,124	0001	
Interest Rate Swap /108911/(Semi-Annual) FIXED [2.5661%/Quarterly LIBOR 2.73888%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEAR THROUGH CME	08/21/2018	12/06/2046		75,000,000	2.5661% [LIBOR]			(303,091)	4,573,085		4,573,085	4,478,895					1,981,832	0001	

E18.174

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /108915/[Quarterly] LIBOR [2.52038%]/Semi-Annual FIXED 2.2315%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	08/21/2018	01/30/2045		50,000,000	2.2315% [LIBOR]			21,873	(6,090,012)		(6,090,012)	(2,605,595)				1,276,715		0001	
Interest Rate Swap /108916/[Semi-Annual] FIXED [2.27705%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	08/21/2018	02/05/2045		25,000,000	LIBOR [2.27705%]			(23,489)	2,832,373		2,832,373	1,320,645				638,602		0001	
Interest Rate Swap /109039/[Quarterly] LIBOR [2.706%]/Semi-Annual FIXED 2.905%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	08/27/2018	08/29/2025		126,000,000	2.905% [LIBOR]			181,738	2,167,291		2,167,291	2,167,291				1,625,839		0001	
Interest Rate Swap /109106/[Semi-Annual] FIXED [2.95875%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	08/28/2018	08/30/2028		232,000,000	LIBOR [2.95875%]			(376,611)	(4,700,257)		(4,700,257)	(4,700,257)				3,607,208		0001	
Interest Rate Swap /109107/[Semi-Annual] FIXED [3.01%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEAR THROUGH CME	08/28/2018	08/30/2033		44,000,000	LIBOR [3.01%]			(79,005)	(968,337)		(968,337)	(968,337)				842,632		0001	
Interest Rate Swap /109108/[Semi-Annual] FIXED [3.0195%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEAR THROUGH CME	08/28/2018	08/30/2038		33,000,000	LIBOR [3.0195%]			(60,308)	(802,728)		(802,728)	(802,728)				731,789		0001	
Interest Rate Swap /109129/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 3.0325%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	08/29/2018	08/31/2033		10,000,000	3.0325% [LIBOR]			19,409	250,453		250,453	250,453				191,507		0001	
Interest Rate Swap /109130/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.9225%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	08/29/2018	08/31/2023		22,000,000	2.9225% [LIBOR]			34,565	334,498		334,498	334,498				237,712		0001	
Interest Rate Swap /109131/[Semi-Annual] FIXED [2.987%]/Quarterly LIBOR 2.70663%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	08/29/2018	08/31/2028		26,000,000	LIBOR [2.987%]			(46,486)	(593,670)		(593,670)	(593,670)				404,256		0001	
Interest Rate Swap /109132/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.9015%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE TORONTO-DOMINION BANK /WELLSFARGOSEC/CLEAR THROUGH CME	08/29/2018	08/31/2021		100,000,000	2.9015% [LIBOR]			150,056	734,333		734,333	734,333				817,007		0001	
Interest Rate Swap /109207/[Quarterly] LIBOR [2.32125%]/Semi-Annual FIXED 3.0366%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	08/30/2018	09/04/2045		81,800,000	3.0366% [LIBOR]				460,035		460,035	460,035				2,112,595		0001	
Interest Rate Swap /109395/[Quarterly] LIBOR [2.7775%]/Semi-Annual FIXED 3.06%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	09/12/2018	09/14/2028		93,000,000	3.06% [LIBOR]			150,457	2,383,175		2,383,175	2,383,175				1,293,176		0001	

E18.175

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /109396/(Quarterly) LIBOR [2.7775%]/Semi-Annual FIXED 3.005%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	09/12/2018	09/14/2023		195,000,000	3.005% [LIBOR]			321,606	3,647,000		3,647,000	3,647,000					2,115,997	0001	
Interest Rate Swap /109398/(Quarterly) LIBOR [2.7775%]/Semi-Annual FIXED 3.0875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	09/12/2018	09/14/2048		45,000,000	3.0875% [LIBOR]			85,251	2,023,905		2,023,905	2,023,905					1,226,405	0001	
Interest Rate Swap /109509/(Semi-Annual) FIXED [3.156%]/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	09/17/2018	09/19/2038		200,000,000	LIBOR [3.156%]			(403,548)	(9,033,228)		(9,033,228)	(9,033,228)					4,440,721	0001	
Interest Rate Swap /109658/(Semi-Annual) FIXED [3.18%]/Quarterly LIBOR 2.792%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	09/18/2018	09/20/2038		250,000,000	LIBOR [3.18%]			(520,580)	(12,227,587)		(12,227,587)	(12,227,587)					5,550,901	0001	
Interest Rate Swap /109702/(Quarterly) LIBOR [2.78963%]/Semi-Annual FIXED 3.0465%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	09/19/2018	09/21/2021		100,000,000	3.0465% [LIBOR]			166,129	1,127,647		1,127,647	1,127,647					826,136	0001	
Interest Rate Swap /109773/(Semi-Annual) FIXED [3.224%]/Quarterly LIBOR 2.82163%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	09/21/2018	09/25/2038		450,000,000	LIBOR [3.224%]			(934,266)	(25,062,950)		(25,062,950)	(25,062,950)					9,996,687	0001	
Interest Rate Swap /109875/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 3.2075%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	09/25/2018	09/27/2030		175,000,000	3.2075% [LIBOR]			343,806	7,552,706		7,552,706	7,552,706					2,998,072	0001	
Interest Rate Swap /109876/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 3.2115%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	09/25/2018	09/27/2048		80,000,000	3.2115% [LIBOR]			158,004	5,661,280		5,661,280	5,661,280					2,181,376	0001	
Interest Rate Swap /110131/(Semi-Annual) FIXED [3.2235%]/Quarterly LIBOR 2.40825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/03/2018	10/05/2028		140,000,000	LIBOR [3.2235%]			(253,925)	(6,006,151)		(6,006,151)	(6,006,151)					2,186,870	0001	
Interest Rate Swap /110132/(Semi-Annual) FIXED [3.286%]/Quarterly LIBOR 2.40825%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	10/03/2018	10/05/2038		400,000,000	LIBOR [3.286%]			(785,222)	(26,170,125)		(26,170,125)	(26,170,125)					8,890,444	0001	
Interest Rate Swap /110302/(Semi-Annual) FIXED [3.31%]/Quarterly LIBOR 2.42044%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	10/09/2018	10/11/2028		70,000,000	LIBOR [3.31%]			(128,963)	(3,531,286)		(3,531,286)	(3,531,286)					1,094,555	0001	
Interest Rate Swap /110303/(Semi-Annual) FIXED [3.37125%]/Quarterly LIBOR 2.42044%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/09/2018	10/11/2038		400,000,000	LIBOR [3.37125%]			(791,377)	(31,485,321)		(31,485,321)	(31,485,321)					8,894,942	0001	

E18.176

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /110362/[Quarterly] LIBOR [2.43621%]/Semi-Annual FIXED 3.1255%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	10/11/2018	10/15/2021		100,000,000	3.1255% [LIBOR]			131,982	1,381,143		1,381,143	1,381,143				835,165		0001	
Interest Rate Swap /110828/[Quarterly] LIBOR [2.50925%]/Semi-Annual FIXED 3.1175%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	10/25/2018	04/29/2022		102,000,000	3.1175% [LIBOR]			92,630	1,724,972		1,724,972	1,724,972				930,663		0001	
Interest Rate Swap /110876/[Quarterly] LIBOR [2.52863%]/Semi-Annual FIXED 3.256%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/29/2018	10/31/2048		16,000,000	3.256% [LIBOR]			18,651	1,292,951		1,292,951	1,292,951				436,935		0001	
Interest Rate Swap /110877/[Quarterly] LIBOR [2.52863%]/Semi-Annual FIXED 3.0715%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/29/2018	10/31/2021		140,000,000	3.0715% [LIBOR]			119,429	1,770,144		1,770,144	1,770,144				1,177,582		0001	
Interest Rate Swap /110878/[Quarterly] LIBOR [2.52863%]/Semi-Annual FIXED 3.033%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	10/29/2018	10/31/2020		207,000,000	3.033% [LIBOR]			163,081	1,330,708		1,330,708	1,330,708				1,400,122		0001	
Interest Rate Swap /111008/[At Maturity] FIXED [2.336%]/At Maturity 0.0%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC.	10/31/2018	11/02/2043		70,000,000	[2.336%] Inflation to Maturity				(4,295,847)		(4,295,847)	(4,295,847)				1,744,391		0001	
Interest Rate Swap /111083/[Semi-Annual] FIXED [3.285%]/Quarterly LIBOR 2.58925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	11/05/2018	11/07/2028		80,000,000	LIBOR [3.285%]			(77,736)	(3,872,393)		(3,872,393)	(3,872,393)				1,255,388		0001	
Interest Rate Swap /111084/[Semi-Annual] FIXED [3.3555%]/Quarterly LIBOR 2.58925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/05/2018	11/07/2048		37,000,000	LIBOR [3.3555%]			(39,866)	(3,737,282)		(3,737,282)	(3,737,282)				1,010,920		0001	
Interest Rate Swap /111129/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 3.2055%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/07/2018	11/09/2023		45,000,000	3.2055% [LIBOR]			36,033	1,278,717		1,278,717	1,278,717				496,022		0001	
Interest Rate Swap /111130/[Quarterly] LIBOR [2.60113%]/Semi-Annual FIXED 3.37%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/07/2018	11/09/2033		35,000,000	3.37% [LIBOR]			36,342	2,321,865		2,321,865	2,321,865				674,602		0001	
Interest Rate Swap /111256/[Quarterly] LIBOR [2.61613%]/Semi-Annual FIXED 3.112%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/13/2018	11/15/2021		50,000,000	3.112% [LIBOR]			28,047	699,259		699,259	699,259				424,264		0001	
Interest Rate Swap /111539/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.238%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	11/26/2018	11/28/2048		25,700,000	3.238% [LIBOR]			10,582	1,249,756		1,249,756	1,249,756				702,884		0001	

E18.177

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /111540/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.263%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/26/2018	11/30/2048		18,100,000	3.263% [LIBOR]				1,282,357		1,282,357	1,282,357					495,028	0001	
Interest Rate Swap /111541/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.2745%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/26/2018	11/29/2048		19,300,000	3.2745% [LIBOR]				1,269,405		1,269,405	1,269,405					527,847	0001	
Interest Rate Swap /111542/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.2985%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/26/2018	11/28/2048		21,800,000	3.2985% [LIBOR]				1,231,470		1,231,470	1,231,470					596,221	0001	
Interest Rate Swap /111543/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.304%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/26/2018	11/28/2048		13,300,000	3.304% [LIBOR]				537,000		537,000	537,000					363,750	0001	
Interest Rate Swap /111544/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.311%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	11/26/2018	11/28/2048		25,700,000	3.311% [LIBOR]				1,260,337		1,260,337	1,260,337					702,884	0001	
Interest Rate Swap /111545/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.3575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/26/2018	11/29/2038		18,300,000	3.3575% [LIBOR]				332,067		332,067	332,067					408,279	0001	
Interest Rate Swap /111546/[Quarterly] LIBOR [2.70681%]/Semi-Annual FIXED 3.374%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	11/26/2018	11/28/2038		4,700,000	3.374% [LIBOR]				109,250		109,250	109,250					104,858	0001	
Interest Rate Swap /111653/[Quarterly] LIBOR [2.70663%]/Semi-Annual FIXED 2.9925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE /WELLSFARGOSEC/CLEA RED THROUGH CME	11/28/2018	11/30/2021		75,000,000	2.9925% [LIBOR]			12,824	814,083		814,083	814,083					640,800	0001	
Interest Rate Swap /111673/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 3.1635%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	11/29/2018	12/03/2048		250,000,000	3.1635% [LIBOR]			63,696	16,330,988		16,330,988	16,330,988					6,838,540	0001	
Interest Rate Swap /111674/[Quarterly] LIBOR [2.73813%]/Semi-Annual FIXED 3.1835%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	11/29/2018	12/03/2048		250,000,000	3.1835% [LIBOR]			67,585	15,281,070		15,281,070	15,281,070					6,838,540	0001	
Interest Rate Swap /111908/[Quarterly] LIBOR [2.76713%]/Semi-Annual FIXED 2.866%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	12/06/2018	12/10/2025		239,000,000	2.866% [LIBOR]			(4,587)	3,516,506		3,516,506	3,516,506					3,148,094	0001	

E18.178

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Interest Rate Swap /111982/[Quarterly] LIBOR [2.77106%]/Semi-Annual FIXED 2.85%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE TORONTO-DOMINION BANK /WELLSFARGOSEC/CLEA RED THROUGH CME	12/07/2018	12/11/2021		50,000,000	2.85% [LIBOR]			(1,656)	347,886		347,886	347,886					429,389	0001	
Interest Rate Swap /112032/[Quarterly] LIBOR [2.779%]/Semi-Annual FIXED 2.8605%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	12/11/2018	12/13/2021		25,000,000	2.8605% [LIBOR]			(911)	181,234		181,234	181,234					214,695	0001	
Interest Rate Swap /112283/[Semi-Annual] FIXED [2.5925%]/Quarterly LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	12/17/2018	12/19/2028		50,000,000	LIBOR [2.5925%]			7,413	628,969		628,969	628,969					789,383	0001	
Interest Rate Swap /112351/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 2.7615%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	12/18/2018	12/20/2021		50,000,000	2.7615% [LIBOR]			(4,344)	225,193		225,193	225,193					430,842	0001	
Interest Rate Swap /112352/[Quarterly] LIBOR [2.792%]/Semi-Annual FIXED 2.967%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE TORONTO-DOMINION BANK /WELLSFARGOSEC/CLEA RED THROUGH CME	12/18/2018	12/20/2038		50,000,000	2.967% [LIBOR]			(1,204)	799,921		799,921	799,921					1,117,195	0001	
Interest Rate Swap /112568/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 2.9045%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/27/2018	12/31/2033		82,000,000	2.9045% [LIBOR]			231	721,403		721,403	721,403					1,587,923	0001	
Interest Rate Swap /112569/[Semi-Annual] FIXED [2.9125%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	12/27/2018	12/31/2033		41,000,000	LIBOR [2.9125%]			(125)	(401,658)		(401,658)	(401,658)					793,962	0001	
Interest Rate Swap /112570/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 2.731%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	12/27/2018	12/31/2025		63,000,000	2.731% [LIBOR]			(126)	385,825		385,825	385,825					833,412	0001	
Interest Rate Swap /112571/[Semi-Annual] FIXED [2.9175%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	12/27/2018	12/31/2038		250,000,000	LIBOR [2.9175%]			(795)	(2,135,467)		(2,135,467)	(2,135,467)					5,590,170	0001	
Interest Rate Swap /112572/[Semi-Annual] FIXED [2.678%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/27/2018	12/31/2023		160,000,000	LIBOR [2.678%]			556	(696,033)		(696,033)	(696,033)					1,788,854	0001	
Interest Rate Swap /112573/[Semi-Annual] FIXED [2.914%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/27/2018	12/31/2033		156,000,000	LIBOR [2.914%]			(481)	(1,557,479)		(1,557,479)	(1,557,479)					3,020,927	0001	
Interest Rate Swap /112574/[Quarterly] LIBOR [2.803%]/Semi-Annual FIXED 2.937%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/27/2018	12/31/2048		82,000,000	2.937% [LIBOR]			305	1,183,541		1,183,541	1,183,541					2,245,662	0001	
Interest Rate Swap /112577/[Semi-Annual] FIXED [2.9085%]/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEA RED THROUGH CME	12/28/2018	01/02/2039		300,000,000	LIBOR [2.9085%]				(2,044,335)		(2,044,335)	(2,044,335)					6,709,881	0001	

E18.179

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)				
Interest Rate Swap /112578/(Semi-Annual) FIXED [2.9155%/Quarterly LIBOR 2.797%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES /WELLSFARGOSEC/CLEAR THROUGH CME	12/28/2018	01/02/2039		300,000,000	LIBOR [2.9155%				(2,373,002)		(2,373,002)	(2,373,002)							6,709,881	0001		
0919999999. Subtotal - Swaps - Hedging Other - Interest Rate										(1,115,007)	1,348,203	217,830,219	1,908,261,679	XXX	1,908,261,773	(447,949,537)					2,660,289,457	XXX	XXX			
Credit Default Swap /18729/931142CH4 VMT 5.875% 04/05/27 Senior Unsecured	Portfolio Hedge	Schedule D	Credit	GOLDMAN SACHS BANK USA	03/26/2010	06/20/2020		9,025,000	CREDIT [1.0%				(289,334)		(91,503)	(117,646)								3	0008	
0929999999. Subtotal - Swaps - Hedging Other - Credit Default										(289,334)			(91,503)	XXX	(117,646)	84,156									XXX	XXX
Currency Swap 020476 /1663 /CAD/ USD(Monthly) FIXED [8.648%/Monthly FIXED 9.345%	ASSET HEDGE	Schedule B	Currency	BANK OF MONTREAL	08/31/2000	11/01/2020		4,739,751	8.648%				(7,097)		(183,840)	768,986								32,147	0002	
Currency Swap 028762 /1695 /EUR/ USD(Semi-Annual) FIXED [4.817%/Semi-Annual FIXED 5.7%	Portfolio Hedge	Schedule D	Currency	THE ROYAL BANK OF SCOTLAND PLC	02/20/2007	03/28/2019		14,941,063	5.7% [4.817%			204,474	1,858,237		1,858,237	798,433								36,599	0002	
Currency Swap /17580 /USD/ (Quarterly) LIBOR [2.9775%/Annual FIXED 6.2%	LIABILITY HEDGE	Exhibit 7	Currency	WELLS FARGO BANK, N.A.	01/13/2010	06/14/2019		95,902,500	6.2% [2.9775%			4,672,454	16,059,063		16,059,063	(13,245,494)								325,221	0002	
Currency Swap /26781 /GBP/ USD(Semi-Annual) FIXED [5.57%/Semi-Annual FIXED 5.73%	ASSET HEDGE	Schedule D	Currency	THE ROYAL BANK OF SCOTLAND PLC	02/11/2011	04/28/2031		39,962,500	5.73% [5.57%			430,680	6,541,318		6,541,318	3,550,624								701,623	0002	
Currency Swap /28288 /EUR/ USD(Semi-Annual) FIXED [5.78%/Semi-Annual FIXED 5.93%	Portfolio Hedge	Schedule D	Currency	BANK OF AMERICA, N.A.	03/31/2011	05/06/2023		18,440,500	5.93% [5.78%			206,001	2,272,364		2,272,364	964,360								192,525	0002	
Currency Swap /28306 /EUR/ USD(Semi-Annual) FIXED [5.834%/Semi-Annual FIXED 6.03%	Portfolio Hedge	Schedule BA, D	Currency	BANK OF AMERICA, N.A.	03/31/2011	05/06/2026		20,568,250	6.03% [5.834%			241,090	1,860,405		1,860,405	1,096,410								278,811	0002	
Currency Swap /30199 /GBP/ USD(Semi-Annual) FIXED [6.04%/Semi-Annual FIXED 6.09%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC	06/07/2011	08/02/2041		36,146,000	6.09% [6.04%			427,140	4,576,813		4,576,813	4,263,308								858,992	0002	
Currency Swap /30771 /CAD/ USD(Semi-Annual) FIXED [5.52%/Semi-Annual FIXED 5.175%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA	06/22/2011	07/19/2021		16,837,782	5.175% [5.52%			172,633	4,887,127		4,887,127	945,639								134,438	0002	
Currency Swap /44151 /GBP/ USD(Semi-Annual) FIXED [4.41%/Semi-Annual FIXED 4.295%	Portfolio Hedge	Schedule BA, D	Currency	CITIBANK N.A.	06/20/2012	08/29/2027		28,332,000	4.295% [4.41%			157,103	3,604,178		3,604,178	2,236,458								417,116	0002	
Currency Swap /45338 /GBP/ USD(Quarterly) FIXED [3.733%/Quarterly FIXED 3.585%	ASSET HEDGE	Schedule B	Currency	BARCLAYS BANK PLC	07/27/2012	10/20/2024		120,642,000	3.733%			505,568	16,789,977		16,789,977	8,464,803								1,453,973	0002	

E18.180

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Currency Swap /49142 /GBP/ USD[Semi-Annual] FIXED [4.08%]/Semi-Annual FIXED 4.095% ..	ASSET HEDGE	Schedule BA	Currency.....	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	..11/16/2012	..12/12/2027	.....	..48,800,250	4.095% [4.08%]			.....323,352	..6,766,922		..6,766,922	..3,562,078				.....729,967	.....	0002
Currency Swap /49985 /CAD/ USD[Monthly] FIXED [5.635%]/Monthly FIXED 4.9%	ASSET HEDGE	Schedule D	Currency.....	ROYAL BANK OF CANADA ES71P3U3RH1GC71XB11	..12/03/2012	..03/01/2023	.....	..64,263,094	4.9% [5.635%]			.....342,020	..16,391,865		..16,391,865	..3,673,700				.....656,144	.....	0002
Currency Swap /55780 /GBP/ USD[Semi-Annual] FIXED [4.48%]/Semi-Annual FIXED 4.84%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..03/13/2013	..04/17/2028	.....	..65,100,000	4.84% [4.48%]			.....541,075	..6,896,395		..6,896,395	..5,418,040				.....992,642	.....	0002
Currency Swap /59812 /GBP/ USD[Semi-Annual] FIXED [4.101%]/Semi-Annual FIXED 4.62%	ASSET HEDGE	Schedule D	Currency.....	ROYAL BANK OF CANADA ES71P3U3RH1GC71XB11	..05/30/2013	..06/30/2025	.....	..54,014,534	4.62% [4.101%]			.....565,257	..7,751,299		..7,751,299	..3,159,860				.....688,553	.....	0002
Currency Swap /61119 /EUR/ USD[Quarterly] E-BOR [2.459%]/Quarterly LIBOR 5.82819%	Portfolio Hedge	Schedule D	Currency.....	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	..06/14/2013	..06/15/2020	.....	..240,359,400	5.82819% [2.459%]			.....7,367,914	..35,568,412		..35,568,412	..10,875,610				.....1,452,136	.....	0002
Currency Swap /61615 /GBP/ USD[Semi-Annual] FIXED [3.75%]/Semi-Annual FIXED 4.22%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..06/25/2013	..09/12/2026	.....	..14,032,200	4.22% [3.75%]			.....136,593	..2,081,932		..2,081,932	..1,006,309				.....194,815	.....	0002
Currency Swap /61621 /GBP/ USD[Semi-Annual] FIXED [4.07%]/Semi-Annual FIXED 4.555%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..06/25/2013	..09/12/2030	.....	..14,032,200	4.555% [4.07%]			.....144,726	..1,945,694		..1,945,694	..1,123,346				.....239,987	.....	0002
Currency Swap /66399 /GBP/ USD[Quarterly] FIXED [5.01%]/Quarterly FIXED 5.475%	Portfolio Hedge	Schedule D	Currency.....	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	..09/10/2013	..10/20/2022	.....	..134,877,600	5.475% [5.01%]			.....1,646,373	..24,746,370		..24,746,370	..8,398,006				.....1,316,354	.....	0002
Currency Swap /66412 /GBP/ USD[Quarterly] FIXED [5.23%]/Quarterly FIXED 5.7875%	Portfolio Hedge	Schedule D	Currency.....	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	..09/10/2013	..10/20/2024	.....	..87,253,451	5.7875% [5.23%]			.....1,174,715	..16,560,790		..16,560,790	..5,930,056				.....1,051,576	.....	0002
Currency Swap /68249 /CAD/ USD[Monthly] FIXED [5.33%]/Monthly FIXED 4.936%	Portfolio Hedge	Schedule B	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..10/08/2013	..02/01/2024	.....	..60,597,167	4.936% [5.33%]			.....406,638	..14,536,177		..14,536,177	..3,691,798				.....683,567	.....	0002
Currency Swap /68303 /CAD/ USD[Monthly] FIXED [5.57%]/Monthly FIXED 5.14%	Portfolio Hedge	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..10/08/2013	..12/01/2023	.....	..27,501,066	5.14% [5.57%]	.....9,700		.....186,958	..6,580,092		..6,580,092	..1,653,558				.....305,001	.....	0002
Currency Swap /68610 /GBP/ USD[Semi-Annual] FIXED [4.66%]/Semi-Annual FIXED 5.105%	Portfolio Hedge	Schedule D	Currency.....	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	..10/16/2013	..12/11/2028	.....	..14,400,000	5.105% [4.66%]			.....175,179	..2,709,669		..2,709,669	..1,070,767				.....227,114	.....	0002
Currency Swap /68611 /GBP/ USD[Semi-Annual] FIXED [4.91%]/Semi-Annual FIXED 5.44%	Portfolio Hedge	Schedule D	Currency.....	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	..10/16/2013	..12/11/2033	.....	..40,000,000	5.44% [4.91%]			.....537,164	..7,408,039		..7,408,039	..3,402,737				.....773,305	.....	0002

E18.181

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /69330 /GBP/ USD[Semi-Annual] FIXED [4.472%]/Semi-Annual FIXED 4.713%	Portfolio Hedge	Schedule D	Currency	THE ROYAL BANK OF SCOTLAND PLC RR30WICWIPCS8A4S074	10/31/2013	12/03/2023		24,052,500	4.713% [4.472%]			238,033	4,413,830		4,413,830	1,474,444				267,027		0002	
Currency Swap /69474 /GBP/ USD[Semi-Annual] FIXED [4.14%]/Semi-Annual FIXED 4.655%	Portfolio Hedge	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/01/2013	11/27/2043		47,814,000	4.655% [4.14%]			567,370	5,891,710		5,891,710	4,636,458				1,193,196		0002	
Currency Swap /69546 /CAD/ USD[Semi-Annual] FIXED [4.5%]/Semi-Annual FIXED 3.996%	Portfolio Hedge	Schedule D	Currency	ROYAL BANK OF CANADA ES71P3U3RH1GCT1XBU11	11/04/2013	12/04/2020		28,785,262	3.996% [4.5%]			108,193	6,546,736		6,546,736	1,842,340				199,948		0002	
Currency Swap /70063 /GBP/ USD[Semi-Annual] FIXED [4.56%]/Semi-Annual FIXED 4.881%	Portfolio Hedge	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/08/2013	06/17/2024		72,000,000	4.881% [4.56%]			774,672	13,625,365		13,625,365	4,743,378				841,199		0002	
Currency Swap /70365 /GBP/ USD[Semi-Annual] FIXED [4.8%]/Semi-Annual FIXED 5.0575%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/13/2013	12/05/2023		36,765,500	5.0575% [4.8%]			385,493	6,877,298		6,877,298	2,388,890				408,163		0002	
Currency Swap /72109 /GBP/ USD[Quarterly] FIXED [4.561%]/Quarterly FIXED 5.234%	ASSET HEDGE	Schedule B	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYL02	01/29/2014	01/31/2024		189,851,440	4.775% [4.561%]			2,086,666	40,426,093		40,426,093	11,274,613				2,139,518		0002	
Currency Swap /73816 /GBP/ USD[Semi-Annual] FIXED [4.51%]/Semi-Annual FIXED 4.886%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/01/2014	10/20/2024		14,460,217	5.5275% [5.234%]			191,762	3,329,988		3,329,988	942,424				174,274		0002	
Currency Swap /73956 /GBP/ USD[Semi-Annual] FIXED [4.25%]/Semi-Annual FIXED 4.52%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/10/2014	06/15/2029		25,155,000	4.886% [4.51%]			325,871	5,672,172		5,672,172	1,761,754				406,781		0002	
Currency Swap /74472 /EUR/ USD[Semi-Annual] FIXED [2.2%]/Semi-Annual FIXED 3.406%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	04/17/2014	07/17/2039		50,456,778	4.52% [4.25%]			584,707	10,496,169		10,496,169	2,883,324				1,143,657		0002	
Currency Swap /74950 /JPY/ USD[Semi-Annual] FIXED [0.92%]/Semi-Annual FIXED 3.74%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	05/20/2014	06/24/2021		71,240,000	3.406% [2.2%]			1,075,310	9,418,803		9,418,803	3,217,600				560,945		0002	
Currency Swap /74966 /AUD/ USD[Semi-Annual] FIXED [6.28%]/Semi-Annual FIXED 4.56%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/10/2014	07/08/2024		58,679,707	3.74% [0.92%]			1,694,456	2,917,397		2,917,397	(2,732,328)				689,331		0002	
Currency Swap /75252 /GBP/ USD[Semi-Annual] FIXED [4.28%]/Semi-Annual FIXED 4.5275%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/11/2014	08/14/2029		27,222,300	4.56% [6.28%]			(119,976)	4,926,960		4,926,960	1,654,389				443,565		0002	
Currency Swap /75362 /EUR/ USD[Semi-Annual] FIXED [2.67%]/Semi-Annual FIXED 4.173%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/18/2014	07/31/2029		59,325,000	4.28% [4.5275%]			685,871	13,025,226		13,025,226	4,102,850				964,829		0002	
	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMQUJXT09	06/25/2014	07/24/2021		34,087,500	4.173% [2.67%]			634,081	4,588,210		4,588,210	1,393,787				273,233		0002	

E18.182

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /75364 /EUR/ USD[Semi-Annual] FIXED [3.11%]/Semi-Annual FIXED 4.625% ...	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	06/25/2014	07/24/2024	42,268,500	4.625% [3.11%]			816,210	5,241,458		5,241,458	1,682,581				498,786		0002	
Currency Swap /75432 /GBP/ USD[Semi-Annual] BPLib [3.13469%]/Semi-Annual FIXED 5.092% ...	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	KB1H1DSRPFMYMCFXT09	06/27/2014	06/29/2029	76,612,500	5.092% [3.13469%]			1,044,992	24,110,695		24,110,695	4,038,401				1,241,264		0002	
Currency Swap /75815 /CAD/ USD[Semi-Annual] FIXED [3.95%]/Semi-Annual FIXED 3.9453% ...	Portfolio Hedge	Schedule B, D, Exhibit 5	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	07/22/2014	10/22/2024	23,776,289	3.95% [3.9453%]			159,453	5,107,601		5,107,601	1,409,014				286,550		0002	
Currency Swap /76359 /EUR/ USD[Semi-Annual] FIXED [2.957%]/Semi-Annual FIXED 4.74% ...	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	08/26/2014	08/31/2043	45,059,520	4.74% [2.957%]			684,402	5,774,984		5,774,984	2,367,084				1,119,029		0002	
Currency Swap /76939 /GBP/ USD[Semi-Annual] FIXED [3.63%]/Semi-Annual FIXED 4.05% ...	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	09/16/2014	12/16/2024	45,329,644	4.05% [3.63%]			480,588	8,733,504		8,733,504	2,797,460				553,318		0002	
Currency Swap /76940 /GBP/ USD[Semi-Annual] FIXED [3.68%]/Semi-Annual FIXED 4.154% ...	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	09/16/2014	12/16/2026	8,105,000	4.154% [3.68%]			91,021	1,548,702		1,548,702	516,245				114,335		0002	
Currency Swap /77709 /GBP/ USD[Semi-Annual] FIXED [3.91%]/Semi-Annual FIXED 4.375% ...	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	10/31/2014	12/10/2044	49,600,000	4.375% [3.91%]			551,729	6,599,612		6,599,612	4,755,856				1,263,339		0002	
Currency Swap /77834 /EUR/ USD[Semi-Annual] FIXED [2.69%]/Semi-Annual FIXED 4.531% ...	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	11/07/2014	12/10/2024	40,176,000	4.531% [2.69%]			790,967	1,589,796		1,589,796	1,538,496				489,587		0002	
Currency Swap /78060 /AUD/ USD[Quarterly] [4.03%]/Quarterly LIBOR 4.213% ...	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	KB1H1DSRPFMYMCFXT09	11/24/2014	11/21/2024	39,093,900	4.213% [4.03%]			101,533	7,431,277		7,431,277	3,892,695				474,391		0002	
Currency Swap /78874 /CAD/ USD[Quarterly] FIXED [5.375%]/Quarterly FIXED 5.172% ...	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	12/23/2014	04/30/2034	36,626,473	5.172% [5.375%]			104,384	5,168,675		5,168,675	2,350,539				717,028		0002	
Currency Swap /79262 /EUR/ USD[Semi-Annual] FIXED [1.94%]/Semi-Annual FIXED 3.612% ...	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	KB1H1DSRPFMYMCFXT09	01/15/2015	03/16/2025	82,012,000	3.612% [1.94%]			1,342,372	(2,511,750)		(2,511,750)	3,944,774				1,021,864		0002	
Currency Swap /79738 /EUR/ USD[Semi-Annual] FIXED [1.39%]/Semi-Annual FIXED 3.385% ...	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	02/19/2015	04/13/2025	34,850,340	3.385% [1.39%]			677,321	(1,355,024)		(1,355,024)	1,500,118				437,021		0002	
Currency Swap /79953 /GBP/ USD[Semi-Annual] FIXED [2.84%]/Semi-Annual FIXED 3.41% ...	ASSET HEDGE	Schedule D	Currency	THE ROYAL BANK OF SCOTLAND PLC	RR3QIICW1PCSB44S074	02/26/2015	04/29/2025	35,755,840	3.41% [2.84%]			339,581	5,247,640		5,247,640	2,185,036				449,799		0002	
Currency Swap /80136 /EUR/ USD[Semi-Annual] FIXED [5.506%]/Semi-Annual FIXED 7.915% ...	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	03/06/2015	03/24/2022	24,629,500	7.915% [5.506%]			480,163	(2,145,070)		(2,145,070)	1,521,048				221,324		0002	

E18.183

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /80233 /EUR/ USD[Semi-Annual] FIXED [1.47%]/Semi-Annual FIXED 3.712%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	03/11/2015	06/17/2030		42,400,000	3.712% [1.47%]			879,419	(3,253,245)		(3,253,245)	1,389,485				717,676		0002	
Currency Swap /80551 /EUR/ USD[Semi-Annual] FIXED [2.197%]/Semi-Annual FIXED 4.415%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	03/18/2015	12/31/2029		47,120,836	4.415% [2.197%]			950,403	(5,002,893)		(5,002,893)	2,453,031				781,411		0002	
Currency Swap /80692 /CAD/ USD[Monthly] FIXED [3.5%]/Monthly FIXED 3.764%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	03/20/2015	06/01/2025		7,374,739	3.764% [3.5%]			28,547	611,448		611,448	559,235				93,429		0002	
Currency Swap /80705 /CAD/ USD[Monthly] FIXED [3.5%]/Monthly FIXED 3.764%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	03/20/2015	06/01/2025		9,933,322	3.764% [3.5%]			38,451	823,583		823,583	753,255				125,844		0002	
Currency Swap /80711 /CAD/ USD[Monthly] FIXED [3.5%]/Monthly FIXED 3.764%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	03/20/2015	06/01/2025		9,993,524	3.764% [3.5%]			38,684	828,575		828,575	757,820				126,607		0002	
Currency Swap /80748 /CAD/ USD[Quarterly] FIXED [5.375%]/Quarterly FIXED 5.341%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	03/26/2015	04/30/2034		19,696,221	5.341% [5.375%]			36,880	1,607,633		1,607,633	1,455,207				385,714		0002	
Currency Swap /80805 /EUR/ USD[Quarterly] FIXED [2.59%]/Quarterly FIXED 4.64%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	03/27/2015	12/31/2036		41,332,863	4.64% [2.59%]			612,249	(530,792)		(530,792)	2,489,290				876,802		0002	
Currency Swap /80834 /CAD/ USD[Monthly] FIXED [3.8%]/Monthly FIXED 3.802%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA	01/23/2015	04/01/2025		28,365,941	3.802% [3.8%]			45,502	2,241,305		2,241,305	1,992,586				354,575		0002	
Currency Swap /80936 /GBP/ USD[Quarterly] FIXED [3.03%]/Quarterly FIXED 3.676%	ASSET HEDGE	Schedule D	Currency	BNP PARIBAS LONDON	04/02/2015	04/20/2027		143,200,000	3.676% [3.03%]			1,346,020	16,297,574		16,297,574	10,039,423				2,064,019		0002	
Currency Swap /81039 /EUR/ USD[Semi-Annual] FIXED [1.53%]/Semi-Annual FIXED 3.577%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA	04/10/2015	05/07/2025		26,575,000	3.577% [1.53%]			498,795	(3,125,660)		(3,125,660)	1,056,501				334,834		0002	
Currency Swap /81054 /GBP/ USD[Semi-Annual] FIXED [3.57%]/Semi-Annual FIXED 4.3425%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	04/10/2015	04/30/2030		27,823,600	4.3425% [3.57%]			302,616	3,028,920		3,028,920	2,241,407				468,274		0002	
Currency Swap /81070 /GBP/ USD[Semi-Annual] FIXED [3.81%]/Semi-Annual FIXED 4.59%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	04/10/2015	04/30/2035		27,823,600	4.59% [3.81%]			310,597	2,631,938		2,631,938	2,592,635				562,180		0002	
Currency Swap /81087 /GBP/ USD[Semi-Annual] FIXED [3.98%]/Semi-Annual FIXED 4.76%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	04/10/2015	04/30/2040		34,559,840	4.76% [3.98%]			390,981	2,612,194		2,612,194	3,847,285				798,063		0002	
Currency Swap /81098 /EUR/ USD[Annual] FIXED [4.0%]/Semi-Annual FIXED 6.93%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	04/13/2015	03/15/2045		6,330,000	6.93% [4.0%]			155,233	21,015		21,015	243,127				162,034		0002	

E18.184

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /81260 /GBP/ USD[Semi-Annual] FIXED [3.03%/Semi-Annual] FIXED 3.608%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	04/22/2015	05/21/2040	70,340,400	3.608% [3.03%]				644,490	4,749,501		4,749,501	6,700,880					1,626,597	0002	
Currency Swap /81275 /GBP/ USD[Semi-Annual] FIXED [3.47%/Semi-Annual] FIXED 4.05%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/22/2015	06/01/2030	107,765,100	4.05% [3.47%]				1,043,427	12,496,249		12,496,249	8,449,130					1,821,677	0002	
Currency Swap /81312 /GBP/ USD[Semi-Annual] FIXED [2.83%/Semi-Annual] FIXED 3.3575%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/24/2015	05/27/2027	7,565,000	3.3575% [2.83%]				65,064	935,050		935,050	532,248					109,693	0002	
Currency Swap /81313 /GBP/ USD[Semi-Annual] FIXED [2.77%/Semi-Annual] FIXED 3.2575%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/24/2015	05/27/2025	28,141,800	3.2575% [2.77%]				228,798	3,607,564		3,607,564	1,932,812					356,248	0002	
Currency Swap /81448 /GBP/ USD[Semi-Annual] FIXED [3.68%/Semi-Annual] FIXED 4.283%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	05/01/2015	05/27/2035	71,107,840	4.283% [3.68%]				749,878	8,080,427		8,080,427	6,233,544					1,440,262	0002	
Currency Swap /81972 /EUR/ USD[Semi-Annual] FIXED [2.62%/Semi-Annual] FIXED 4.391%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	06/04/2015	06/25/2025	14,673,100	4.391% [2.62%]				242,025	(1,024,885)		(1,024,885)	743,813					186,902	0002	
Currency Swap /81973 /EUR/ USD[Semi-Annual] FIXED [2.77%/Semi-Annual] FIXED 4.5175%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	06/04/2015	06/25/2027	14,673,100	4.5175% [2.77%]				237,556	(1,114,001)		(1,114,001)	747,859					213,769	0002	
Currency Swap /82039 /DKK/ USD[Semi-Annual] FIXED [2.35%/Semi-Annual] FIXED 3.921%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/09/2015	08/27/2025	49,698,795	3.921% [2.35%]				719,877	(4,641,698)		(4,641,698)	2,697,291					641,289	0002	
Currency Swap /82471 /EUR/ USD[Semi-Annual] FIXED [2.61%/Semi-Annual] FIXED 4.465%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	06/24/2015	06/25/2022	31,175,340	4.465% [2.61%]				533,172	(1,981,422)		(1,981,422)	1,486,871					291,202	0002	
Currency Swap /82686 /GBP/ USD[Semi-Annual] FIXED [3.66%/Semi-Annual] FIXED 4.1365%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	07/06/2015	08/28/2025	26,435,000	4.1365% [3.66%]				262,820	4,234,650		4,234,650	1,789,711					341,103	0002	
Currency Swap /82687 /GBP/ USD[Semi-Annual] FIXED [3.89%/Semi-Annual] FIXED 4.4265%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	07/06/2015	08/28/2027	27,990,000	4.4265% [3.89%]				304,180	4,502,819		4,502,819	1,963,904					412,081	0002	
Currency Swap /82688 /GBP/ USD[Semi-Annual] FIXED [4.07%/Semi-Annual] FIXED 4.67%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G56SEF7VJP5170UK5573	07/06/2015	08/28/2030	31,100,000	4.67% [4.07%]				365,644	4,902,194		4,902,194	2,314,406					530,982	0002	
Currency Swap /83339 /EUR/ USD[Semi-Annual] FIXED [2.684%/Semi-Annual] FIXED 4.391%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/14/2015	08/19/2030	83,610,000	4.391% [2.684%]				1,293,919	(7,737,248)		(7,737,248)	4,293,883					1,426,279	0002	
Currency Swap // USD[Annual] FIXED [0.955%/Semi-Annual] FIXED 3.815%	ASSET HEDGE	Schedule D	Currency	BANK OF AMERICA, N.A. B4TYDEB6GMZ0031MB27	09/11/2015	10/08/2025	51,198,034	3.815% [0.955%]				1,464,986	(357,685)		(357,685)	345,466					666,067	0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /84044 /GBP/ USD[Semi-Annual] FIXED [5.0%]/Semi-Annual FIXED 5.1975%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	09/11/2015	09/14/2020		7,936,150	5.1975% [5.0%]			68,747	1,258,406		1,258,406	448,405				51,889		0002	
Currency Swap /84046 /GBP/ USD[Semi-Annual] FIXED [5.0%]/Semi-Annual FIXED 5.351%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	09/11/2015	09/14/2022		6,472,200	5.351% [5.0%]			66,000	1,019,145		1,019,145	407,765				62,332		0002	
Currency Swap /84048 /GBP/ USD[Semi-Annual] FIXED [5.0%]/Semi-Annual FIXED 5.544%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	09/11/2015	09/14/2025		20,033,000	5.544% [5.0%]			242,878	3,340,712		3,340,712	1,445,180				259,464		0002	
Currency Swap /84200 /EUR/ USD[Semi-Annual] FIXED [1.92%]/Semi-Annual FIXED 3.836%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	09/16/2015	03/22/2023		51,980,000	3.836% [1.92%]			950,828	(2,622,346)		(2,622,346)	2,534,034				534,535		0002	
Currency Swap /84202 /GBP/ USD[Semi-Annual] FIXED [3.56%]/Semi-Annual FIXED 4.085%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	09/16/2015	03/22/2025		23,265,000	4.085% [3.56%]			237,459	3,724,367		3,724,367	1,579,344				290,347		0002	
Currency Swap /84232 /EUR/ USD[Semi-Annual] FIXED [6.5%]/Semi-Annual FIXED 8.6%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	09/17/2015	09/21/2022		21,470,000	8.6% [6.5%]			387,799	(1,158,158)		(1,158,158)	1,352,622				207,327		0002	
Currency Swap /84245 /EUR/ USD[Semi-Annual] FIXED [6.5%]/Semi-Annual FIXED 8.5475%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	09/18/2015	09/22/2022		52,394,000	8.5475% [6.5%]			946,965	(2,396,276)		(2,396,276)	3,270,398				505,948		0002	
Currency Swap /84355 /GBP/ USD[Semi-Annual] FIXED [3.38%]/Semi-Annual FIXED 4.178%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	09/25/2015	10/30/2045		15,170,000	4.178% [3.38%]			182,526	1,522,580		1,522,580	1,552,213				392,885		0002	
Currency Swap /84356 /GBP/ USD[Semi-Annual] FIXED [3.22%]/Semi-Annual FIXED 3.9125%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	09/25/2015	10/30/2035		15,170,000	3.9125% [3.22%]			163,612	1,753,362		1,753,362	1,272,937				311,170		0002	
Currency Swap /84357 /GBP/ USD[Semi-Annual] FIXED [3.35%]/Semi-Annual FIXED 4.11%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	09/25/2015	10/30/2040		15,170,000	4.11% [3.35%]			176,216	1,657,929		1,657,929	1,488,463				354,391		0002	
Currency Swap /84528 /GBP/ USD[Semi-Annual] FIXED [2.84%]/Semi-Annual FIXED 3.089%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	10/02/2015	01/06/2023		23,911,100	3.089% [2.84%]			143,234	3,200,981		3,200,981	1,553,540				239,708		0002	
Currency Swap /84529 /GBP/ USD[Semi-Annual] FIXED [3.05%]/Semi-Annual FIXED 3.456%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	10/02/2015	01/06/2026		16,905,300	3.456% [3.05%]			132,184	2,178,643		2,178,643	1,190,064				223,954		0002	
Currency Swap /84833 /GBP/ USD[Semi-Annual] FIXED [3.99%]/Semi-Annual FIXED 4.7135%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	10/27/2015	12/08/2045		42,993,000	4.7135% [3.99%]			529,587	4,345,736		4,345,736	5,148,652				1,115,749		0002	
Currency Swap /84834 /GBP/ USD[Semi-Annual] FIXED [3.76%]/Semi-Annual FIXED 4.36%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/27/2015	12/02/2035		21,864,700	4.36% [3.76%]			235,466	2,600,747		2,600,747	1,878,690				449,824		0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /84835 /GBP/ USD[Semi-Annual] FIXED [3.91%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/27/2015	12/02/2040		21,864,700	4.58% [3.91%]			254,931	2,386,779		2,386,779	2,101,385				511,957		0002	
Currency Swap /84992 /EUR/ USD[Semi-Annual] FIXED [2.46%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/03/2015	12/02/2025		76,720,000	4.345% [2.46%]			1,271,719	(7,856,323)		(7,856,323)	3,579,539				1,009,094		0002	
Currency Swap /85056 /GBP/ USD[Semi-Annual] FIXED [3.34%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/05/2015	03/03/2027		109,495,000	3.7475% [3.34%]			901,949	14,216,532		14,216,532	8,130,959				1,565,816		0002	
Currency Swap /85253 /GBP/ USD[Semi-Annual] FIXED [3.38%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7F32TWEFA76	11/19/2015	02/18/2041		35,144,000	4.131% [3.38%]			413,900	4,049,407		4,049,407	3,449,376				826,630		0002	
Currency Swap /85261 /GBP/ USD[Semi-Annual] FIXED [3.46%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/19/2015	02/18/2046		14,974,400	4.264% [3.46%]			185,806	1,648,111		1,648,111	1,616,845				390,054		0002	
Currency Swap /85416 // USD[Annual] FIXED [1.01%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/24/2015	08/15/2026		27,414,759	4.26% [1.01%]			879,765	(728,054)		(728,054)	48,943				378,632		0002	
Currency Swap /85420 // USD[Annual] FIXED [1.17%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/24/2015	08/15/2028		54,043,431	4.4% [1.17%]			1,719,992	(980,956)		(980,956)	401,224				838,545		0002	
Currency Swap /85443 /EUR/ USD[Semi-Annual] FIXED [2.48%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/25/2015	12/15/2035		59,142,200	4.128% [2.48%]			804,044	(9,263,336)		(9,263,336)	1,834,593				1,217,812		0002	
Currency Swap /85771 /EUR/ USD[Semi-Annual] FIXED [2.125%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7F32TWEFA76	12/07/2015	12/31/2021		32,355,248	4.021% [2.125%]			676,302	(2,612,011)		(2,612,011)	3,615,479				280,671		0002	
Currency Swap /86050 /EUR/ USD[Semi-Annual] FIXED [3.249%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/17/2015	01/15/2036		30,677,200	4.98% [3.249%]			441,676	(4,252,646)		(4,252,646)	1,119,477				633,170		0002	
Currency Swap /86051 /GBP/ USD[Semi-Annual] FIXED [4.184%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/17/2015	01/15/2036		41,869,000	4.9325% [4.184%]			495,290	4,712,381		4,712,381	3,834,996				864,168		0002	
Currency Swap /86580 /EUR/ USD[Semi-Annual] FIXED [1.839%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	01/15/2016	03/30/2026		77,088,000	3.455% [1.839%]			1,134,256	(8,694,453)		(8,694,453)	3,443,513				1,037,829		0002	
Currency Swap /86800 /EUR/ USD[Semi-Annual] FIXED [2.739%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	01/29/2016	02/08/2034		76,243,200	4.38625% [2.739%]			1,066,857	(10,422,735)		(10,422,735)	2,669,331				1,481,847		0002	
Currency Swap /87047 /GBP/ USD[Semi-Annual] FIXED [3.34%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7F32TWEFA76	02/10/2016	03/23/2026		19,535,850	3.82% [3.34%]			144,293	1,659,006		1,659,006	1,497,814				262,646		0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /87332 /GBP/ USD[Semi-Annual] FIXED [3.8%]/Semi-Annual FIXED 4.71%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	02/25/2016	03/30/2041		33,686,400	4.71% [3.8%]			358,871	862,916		862,916	3,461,244				794,493		0002	
Currency Swap /87518 /EUR/ USD[Semi-Annual] FIXED [3.75%]/Semi-Annual FIXED 5.976%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/04/2016	12/31/2045		37,810,090	5.976% [3.75%]			751,226	(2,316,005)		(2,316,005)	2,265,810				982,335		0002	
Currency Swap /87881 /GBP/ USD[Semi-Annual] FIXED [3.5%]/Semi-Annual FIXED 4.2225%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/17/2016	04/20/2034		53,502,000	4.2225% [3.5%]			530,162	4,060,609		4,060,609	4,547,363				1,046,712		0002	
Currency Swap /87922 /GBP/ USD[Semi-Annual] FIXED [3.875%]/Semi-Annual FIXED 4.407%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/21/2016	03/30/2026		64,665,000	4.407% [3.875%]			521,903	5,413,325		5,413,325	5,132,257				870,579		0002	
Currency Swap /87976 /EUR/ USD[Semi-Annual] FIXED [2.742%]/Semi-Annual FIXED 4.695%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/22/2016	12/31/2035		24,857,077	2.742% [4.695%]			221,709	(1,477,437)		(1,477,437)	1,349,911				512,442		0002	
Currency Swap /87987 /GBP/ USD[Semi-Annual] FIXED [3.77%]/Semi-Annual FIXED 4.56%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/22/2016	04/27/2036		26,591,400	4.56% [3.77%]			271,315	1,502,392		1,502,392	2,677,182				553,492		0002	
Currency Swap /88016 /GBP/ USD[Semi-Annual] FIXED [3.98%]/Semi-Annual FIXED 4.9925%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/23/2016	04/05/2046		65,658,000	4.9925% [3.98%]			807,458	2,868,756		2,868,756	7,219,609				1,714,038		0002	
Currency Swap /88039 /AUD/ USD[Semi-Annual] FIXED [5.75%]/Semi-Annual FIXED 4.399%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCFXT09	03/23/2016	10/28/2020		15,228,000	4.399% [5.75%]			(200,467)	525,090		525,090	1,667,146				103,000		0002	
Currency Swap /88160 /GBP/ USD[Quarterly] FIXED [3.41%]/Quarterly FIXED 3.9575%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	03/29/2016	04/04/2026		119,548,000	3.41% [3.9575%]			916,161	9,308,628		9,308,628	9,292,308				1,611,683		0002	
Currency Swap /88192 /GBP/ USD[Quarterly] FIXED [3.24%]/Quarterly FIXED 3.7775%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	04/01/2016	04/12/2028		108,477,000	3.24% [3.7775%]			789,035	6,595,518		6,595,518	8,613,980				1,652,271		0002	
Currency Swap /88568 /EUR/ USD[Semi-Annual] FIXED [1.92%]/Semi-Annual FIXED 3.782%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCFXT09	04/28/2016	06/01/2026		57,788,100	3.782% [1.92%]			1,029,056	(3,216,463)		(3,216,463)	2,620,295				787,066		0002	
Currency Swap /88914 /EUR/ USD[Semi-Annual] FIXED [3.8%]/Semi-Annual FIXED 5.72125%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/17/2016	05/18/2020		96,135,000	5.72125% [3.8%]			1,684,908	(3,062,597)		(3,062,597)	5,327,299				564,665		0002	
Currency Swap /89028 /EUR/ USD[Semi-Annual] FIXED [2.454%]/Semi-Annual FIXED 4.212%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMCFXT09	05/20/2016	11/30/2040		49,893,180	4.212% [2.454%]			473,270	(3,052,432)		(3,052,432)	3,713,188				1,167,969		0002	
Currency Swap /89308 /GBP/ USD[Semi-Annual] FIXED [3.45%]/Semi-Annual FIXED 3.885%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/24/2016	01/31/2027		36,475,000	3.885% [3.45%]			265,479	3,228,538		3,228,538	2,841,965				518,728		0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /89360 /GBP/ USD[Semi-Annual] FIXED [3.18%]/Semi-Annual FIXED 3.62%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.05/25/2016	.07/20/2028		53,802,000	3.62% [3.18%]			393,731	4,744,817		4,744,817	4,162,308				831,759		0002	
Currency Swap /89368 /GBP/ USD[Semi-Annual] FIXED [3.33%]/Semi-Annual FIXED 3.829%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.05/25/2016	.07/20/2031		23,520,000	3.829% [3.33%]			189,237	1,840,063		1,840,063	1,955,345				416,776		0002	
Currency Swap /89403 /GBP/ USD[Semi-Annual] FIXED [3.01%]/Semi-Annual FIXED 3.85%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.05/26/2016	.07/20/2051		27,432,900	3.85% [3.01%]			304,579	1,467,345		1,467,345	2,773,074				782,680		0002	
Currency Swap /89543 /CAD/ USD[Semi-Annual] FIXED [3.926%]/Semi-Annual FIXED 3.96%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.05/31/2016	.01/31/2035		44,442,983	3.96% [3.926%]			3,736	1,255,552		1,255,552	3,534,903				891,080		0002	
Currency Swap /89570 /EUR/ USD[Semi-Annual] FIXED [1.43%]/Semi-Annual FIXED 3.2925%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.06/02/2016	.06/27/2026		20,088,000	1.43% [3.2925%]			357,394	(1,406,639)		(1,406,639)	788,293				275,066		0002	
Currency Swap /89585 /GBP/ USD[Semi-Annual] FIXED [2.8%]/Semi-Annual FIXED 3.31%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.06/02/2016	.06/27/2026		40,376,000	3.31% [2.8%]			289,716	3,209,981		3,209,981	3,015,549				552,872		0002	
Currency Swap /89609 /EUR/ USD[Semi-Annual] FIXED [2.02%]/Semi-Annual FIXED 3.973%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.06/03/2016	.06/28/2023		31,640,000	3.973% [2.02%]			589,058	(1,591,689)		(1,591,689)	1,533,701				335,220		0002	
Currency Swap /89936 /GBP/ USD[Semi-Annual] FIXED [3.18%]/Semi-Annual FIXED 4.0325%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	.06/14/2016	.08/31/2041		26,479,200	3.18% [4.0325%]			274,681	993,895		993,895	2,759,814				630,377		0002	
Currency Swap /89964 /EUR/ USD[Semi-Annual] FIXED [3.195%]/Semi-Annual FIXED 5.078%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.06/15/2016	.06/30/2036		27,295,059	3.195% [5.078%]			490,596	(1,826,288)		(1,826,288)	1,416,896				570,917		0002	
Currency Swap /90076 /EUR/ USD[Semi-Annual] FIXED [2.243%]/Semi-Annual FIXED 3.93875%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.06/17/2016	.06/22/2031		28,175,000	2.243% [3.93875%]			447,459	(2,037,948)		(2,037,948)	979,467				497,669		0002	
Currency Swap /90137 /EUR/ USD[Semi-Annual] FIXED [2.34%]/Semi-Annual FIXED 4.21%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	.06/21/2016	.06/29/2026		33,930,000	4.21% [2.34%]			599,366	(2,098,127)		(2,098,127)	1,469,983				464,605		0002	
Currency Swap /90170 /EUR/ USD[Semi-Annual] FIXED [3.4%]/Semi-Annual FIXED 5.295%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.06/22/2016	.09/30/2041		44,481,868	5.295% [3.4%]			385,906	(2,371,379)		(2,371,379)	2,881,837				1,060,825		0002	
Currency Swap /90173 /EUR/ USD[Semi-Annual] FIXED [3.34%]/Semi-Annual FIXED 5.2%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	.06/22/2016	.06/30/2038		17,525,274	5.2% [3.34%]			311,774	(1,022,602)		(1,022,602)	985,201				386,947		0002	
Currency Swap /90402 /GBP/ USD[Semi-Annual] FIXED [6.95%]/Semi-Annual FIXED 7.586%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFMYMJCJXT09	.06/29/2016	.07/11/2020		47,712,000	7.586% [6.95%]			324,941	1,917,215		1,917,215	3,320,881				296,046		0002	

E18.189

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /90732 /GBP/ USD[Semi-Annual] FIXED [2.54%]/Semi-Annual FIXED 3.4735%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	07/21/2016	09/14/2031		11,871,000	3.4735% [2.54%]			107,145	79,867		79,867	949,078				211,606		0002	
Currency Swap /90734 /GBP/ USD[Semi-Annual] FIXED [2.74%]/Semi-Annual FIXED 3.8%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	07/21/2016	09/14/2036		22,423,000	3.8% [2.74%]			230,204	146,289		146,289	1,920,978				471,817		0002	
Currency Swap /90753 /CAD/ USD[Semi-Annual] FIXED [3.96%]/Semi-Annual FIXED 3.959%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	07/21/2016	10/13/2026		30,581,040	3.959% [3.96%]			(11,971)	716,594		716,594	2,427,396				426,766		0002	
Currency Swap /91040 /GBP/ USD[Semi-Annual] FIXED [2.28%]/Semi-Annual FIXED 3.4025%	ASSET HEDGE	Schedule BA	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	08/12/2016	11/14/2026		51,920,000	3.4025% [2.28%]			548,880	630,406		630,406	3,925,500				728,731		0002	
Currency Swap /91145 /GBP/ USD[Semi-Annual] FIXED [2.36%]/Semi-Annual FIXED 3.45125%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	08/19/2016	09/30/2034		65,200,000	3.45125% [2.36%]			675,021	631,130		631,130	5,362,988				1,294,183		0002	
Currency Swap /91342 /GBP/ USD[Semi-Annual] FIXED [6.8%]/Semi-Annual FIXED 7.91%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	08/30/2016	09/01/2019		41,920,000	7.91% [6.8%]			411,011	1,019,477		1,019,477	2,827,212				172,840		0002	
Currency Swap /92255 /GBP/ USD[Quarterly] FIXED [3.534%]/Quarterly FIXED 4.83%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/04/2016	03/31/2020		38,091,392	4.83% [3.534%]			408,387	1,126,465		1,126,465	(3,075,371)				212,936		0002	
Currency Swap /92304 /GBP/ USD[Semi-Annual] FIXED [3.534%]/Semi-Annual FIXED 4.83%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/04/2016	03/31/2045		70,050,678	4.83% [3.534%]				(2,112,658)		(2,112,658)	8,040,894				1,794,514		0002	
Currency Swap /92357 /EUR/ USD[Semi-Annual] FIXED [1.5%]/Semi-Annual FIXED 3.3575%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/05/2016	10/27/2029		26,880,000	3.3575% [1.5%]			477,292	(1,542,371)		(1,542,371)	1,021,609				442,297		0002	
Currency Swap /92517 /EUR/ USD[Semi-Annual] FIXED [1.34%]/Semi-Annual FIXED 3.2125%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/14/2016	10/31/2026		44,080,000	3.2125% [1.34%]			782,978	(3,649,371)		(3,649,371)	1,861,975				616,726		0002	
Currency Swap /92626 /EUR/ USD[Semi-Annual] FIXED [1.67%]/Semi-Annual FIXED 3.655%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	10/21/2016	11/30/2026		54,375,000	3.655% [1.67%]			987,656	(5,104,684)		(5,104,684)	2,576,629				765,124		0002	
Currency Swap /92774 /GBP/ USD[Semi-Annual] FIXED [2.85%]/Semi-Annual FIXED 3.615%	Portfolio Hedge	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/01/2016	05/18/2024		48,880,000	3.615% [2.85%]			244,875	(3,569,391)		(3,569,391)	4,175,402				567,408		0002	
Currency Swap /92775 /GBP/ USD[Semi-Annual] FIXED [3.22%]/Semi-Annual FIXED 4.036%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/01/2016	12/14/2036		36,720,000	4.036% [3.22%]			192,306	(4,872,816)		(4,872,816)	4,361,970				778,083		0002	
Currency Swap /92803 /GBP/ USD[Semi-Annual] BPLib [3.23469%]/Semi-Annual FIXED 4.1275%	Portfolio Hedge	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/01/2016	12/31/2029		16,668,549	4.1275% [3.23469%]			179,840	(1,539,643)		(1,539,643)	1,503,264				276,416		0002	

E18.190

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /92866 /EUR/ USD[Semi-Annual] FIXED [1.64%/Semi-Annual] FIXED 3.5825%	Portfolio Hedge	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/02/2016	11/16/2026		49,950,000	3.5825% [1.64%]			917,750	(3,594,304)		(3,594,304)	1,963,443				701,081		0002	
Currency Swap /92869 /EUR/ USD[Semi-Annual] FIXED [2.73%/Semi-Annual] FIXED 4.625%	Portfolio Hedge	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/02/2016	01/31/2040		83,325,000	4.625% [2.73%]			1,435,559	(5,953,027)		(5,953,027)	3,039,039				1,912,850		0002	
Currency Swap /92930 /CAD/ USD[Quarterly] FIXED [3.89%/Quarterly] FIXED 4.0675%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32WIEFA76	11/04/2016	11/17/2026		55,845,123	4.0675% [3.89%]			19,525	393,628		393,628	4,486,640				783,824		0002	
Currency Swap /93105 /GBP/ USD[Semi-Annual] FIXED [2.93%/Semi-Annual] FIXED 4.1575%	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVYU02	11/16/2016	01/30/2052		18,675,000	4.1575% [2.93%]			189,571	(1,518,588)		(1,518,588)	2,896,059				537,049		0002	
Currency Swap /93106 /GBP/ USD[Semi-Annual] FIXED [2.93%/Semi-Annual] FIXED 4.1575%	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVYU02	11/16/2016	01/30/2052		6,225,000	4.1575% [2.93%]			63,190	(506,196)		(506,196)	965,353				179,016		0002	
Currency Swap /93584 /GBP/ USD[Semi-Annual] FIXED [3.15%/Semi-Annual] FIXED 4.37%	ASSET HEDGE	Schedule B	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/01/2016	01/05/2037		18,915,000	4.37% [3.15%]			195,660	(622,865)		(622,865)	1,781,957				401,360		0002	
Currency Swap /93742 /GBP/ USD[Semi-Annual] FIXED [3.04%/Semi-Annual] FIXED 4.196%	ASSET HEDGE	Schedule B	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	12/06/2016	02/27/2029		31,825,000	4.196% [3.04%]			320,741	(356,015)		(356,015)	2,762,976				507,206		0002	
Currency Swap /94294 /GBP/ USD[Quarterly] FIXED [3.64%/Quarterly] FIXED 4.806%	ASSET HEDGE	Schedule B	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	12/13/2016	04/12/2028		48,692,250	4.806% [3.64%]			509,445	(297,238)		(297,238)	4,320,638				741,658		0002	
Currency Swap /95361 /AUD/ USD[Semi-Annual] FIXED [6.13%/Semi-Annual] FIXED 5.07875%	Portfolio Hedge	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	01/19/2017	02/15/2029		34,398,000	5.07875% [6.13%]			(337,852)	(62,824)		(62,824)	2,746,595				547,403		0002	
Currency Swap /95477 /EUR/ USD[Semi-Annual] FIXED [1.471%/Semi-Annual] FIXED 3.888%	Portfolio Hedge	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32WIEFA76	02/01/2017	08/14/2023		55,900,000	3.888% [1.471%]			1,355,155	(4,391,920)		(4,391,920)	3,758,209				600,762		0002	
Currency Swap /95444 /GBP/ USD[Semi-Annual] FIXED [4.043%/Semi-Annual] FIXED 5.37%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/01/2017	12/31/2035		18,961,302	5.37% [4.043%]			208,611	(208,019)		(208,019)	1,844,931				390,897		0002	
Currency Swap /95598 /GBP/ USD[Semi-Annual] FIXED [6.5%/Semi-Annual] FIXED 7.905%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	02/02/2017	02/06/2021		28,363,000	7.905% [6.5%]			281,395	(628,041)		(628,041)	2,094,076				205,998		0002	
Currency Swap /95599 /EUR/ USD[Semi-Annual] FIXED [4.5%/Semi-Annual] FIXED 7.12%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	02/02/2017	02/06/2021		22,314,600	7.12% [4.5%]			488,652	(1,833,181)		(1,833,181)	1,197,464				162,069		0002	
Currency Swap /95819 /GBP/ USD[Semi-Annual] FIXED [2.54%/Semi-Annual] FIXED 3.906%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	02/16/2017	08/16/2027		27,478,000	3.906% [2.54%]			327,199	(287,859)		(287,859)	2,149,890				403,609		0002	

E18.191

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /95821 /GBP/ USD[Semi-Annual] FIXED [2.63%/Semi-Annual] FIXED 4.009%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	02/16/2017	08/16/2027		24,980,000	4.009% [2.63%]			299,185	(295,904)		(295,904)	2,026,481				366,917		0002	
Currency Swap /96145 /GBP/ USD[Semi-Annual] FIXED [2.15%/Semi-Annual] FIXED 3.645%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	02/22/2017	05/22/2024		44,856,000	3.645% [2.15%]			601,540	(501,811)		(501,811)	3,223,057				520,697		0002	
Currency Swap /96230 /GBP/ USD[Semi-Annual] FIXED [2.12%/Semi-Annual] FIXED 3.711%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	03/01/2017	08/05/2024		36,900,000	3.711% [2.12%]			520,113	(697,871)		(697,871)	2,731,222				436,607		0002	
Currency Swap /96336 /EUR/ USD[Monthly] FIXED [2.812%/Semi-Annual] FIXED 4.427%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	10/14/2015	07/31/2042		56,356,500	4.427% [2.812%]			693,608	(3,913,627)		(3,913,627)	1,515,861				1,368,314		0002	
Currency Swap /96366 /GBP/ USD[Monthly] FIXED [1.0%/Monthly] FIXED 1.448%	Portfolio Hedge	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	02/22/2017	02/25/2047		680,413	1.448% [1.0%]			63,171	(50,289)		(50,289)	1,133,533				18,050		0002	
Currency Swap /96392 /JPY/ USD[Semi-Annual] FIXED [0.49%/Semi-Annual] FIXED 3.8305%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	03/09/2017	03/15/2027		20,905,923	3.8305% [0.49%]			694,259	(1,099,817)		(1,099,817)	(1,391,561)				299,510		0002	
Currency Swap /96397 /EUR/ USD[Semi-Annual] FIXED [1.51%/Semi-Annual] FIXED 3.7945%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	03/09/2017	03/15/2027		25,440,000	3.7945% [1.51%]			537,309	(2,471,432)		(2,471,432)	1,148,044				364,469		0002	
Currency Swap /96398 /EUR/ USD[Semi-Annual] FIXED [1.72%/Semi-Annual] FIXED 3.886%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/09/2017	03/15/2029		14,840,000	3.886% [1.72%]			292,287	(1,497,204)		(1,497,204)	523,426				237,092		0002	
Currency Swap /96453 /GBP/ USD[Semi-Annual] FIXED [3.074%/Semi-Annual] FIXED 4.682%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	03/10/2017	06/09/2032		18,225,000	4.682% [3.074%]			237,680	(389,255)		(389,255)	1,834,442				334,070		0002	
Currency Swap /96504 /GBP/ USD[Quarterly] FIXED [3.13%/Quarterly] FIXED 4.73%	ASSET HEDGE	Schedule B	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	03/13/2017	03/13/2024		35,726,888	4.73% [3.13%]			470,977	(1,094,634)		(1,094,634)	2,905,456				407,349		0002	
Currency Swap /96535 /SGD/ USD[Quarterly] FIXED [7.08%/Quarterly] FIXED 7.705%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	03/14/2017	03/23/2029		50,176,678	7.705% [7.08%]			98,746	(6,117,155)		(6,117,155)	(545,015)				802,435		0002	
Currency Swap /96678 /EUR/ USD[Annual] FIXED [4.0%/Annual] FIXED 7.718%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	03/20/2017	03/22/2047		9,245,000	7.718% [4.0%]			242,349	(1,008,245)		(1,008,245)	680,535				245,602		0002	
Currency Swap /96726 /GBP/ USD[Semi-Annual] FIXED [3.604%/Semi-Annual] FIXED 5.165%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/24/2017	03/31/2037		156,000,000	5.165% [3.604%]			2,043,494	(873,602)		(873,602)	15,572,786				3,332,162		0002	
Currency Swap /96802 /GBP/ USD[Semi-Annual] FIXED [2.804%/Semi-Annual] FIXED 4.1705%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/28/2017	03/31/2037		119,635,450	4.1705% [2.804%]			1,442,602	(1,357,547)		(1,357,547)	10,976,186				2,555,414		0002	

E18.192

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /96817 /EUR/ USD[Semi-Annual] FIXED [1.09%]/Semi-Annual FIXED 3.406%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/29/2017	04/18/2024		34,432,000	3.406% [1.09%]			760,787	(2,966,324)		(2,966,324)	1,335,524				396,342		0002	
Currency Swap /96976 /EUR/ USD[Semi-Annual] FIXED [1.84%]/Semi-Annual FIXED 4.009%	Portfolio Hedge	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/05/2017	12/07/2027		48,001,500	4.009% [1.84%]			946,455	(4,797,712)		(4,797,712)	2,279,324				717,619		0002	
Currency Swap /96978 /EUR/ USD[Semi-Annual] FIXED [2.05%]/Semi-Annual FIXED 4.125%	Portfolio Hedge	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	04/05/2017	12/07/2029		64,002,000	4.125% [2.05%]			1,187,368	(6,689,195)		(6,689,195)	2,330,600				1,058,454		0002	
Currency Swap /97095 /EUR/ USD[Annual] FIXED [2.375%]/Semi-Annual FIXED 4.678%	Portfolio Hedge	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/10/2017	04/19/2027		10,595,000	4.678% [2.375%]			215,888	(1,152,977)		(1,152,977)	539,135				152,619		0002	
Currency Swap /97217 /GBP/ USD[Semi-Annual] FIXED [2.49%]/Semi-Annual FIXED 3.919%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G56SEF7VJP5170LK5573	04/21/2017	07/20/2042		59,473,500	3.919% [2.49%]			784,716	1,257,811		1,257,811	6,383,035				1,443,382		0002	
Currency Swap /97329 /EUR/ USD[Semi-Annual] FIXED [1.82%]/Semi-Annual FIXED 3.795%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	04/28/2017	05/11/2029		20,638,800	3.795% [1.82%]			376,945	(1,678,830)		(1,678,830)	943,791				332,149		0002	
Currency Swap /97447 /JPY/ USD[Semi-Annual] FIXED [0.65%]/Semi-Annual FIXED 3.683%	Portfolio Hedge	Schedule D	Currency	MUFG SECURITIES EMEA PLC U7M81AY481YLI0R75625	05/02/2017	05/11/2032		94,830,660	3.683% [0.65%]			2,865,970	(5,127,222)		(5,127,222)	(7,170,713)				1,733,092		0002	
Currency Swap /97522 /GBP/ USD[Semi-Annual] FIXED [3.38%]/Semi-Annual FIXED 4.8055%	Portfolio Hedge	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	05/09/2017	06/15/2037		24,415,719	3.38% [4.8055%]			321,169	648,223		648,223	2,683,005				524,512		0002	
Currency Swap /97523 /GBP/ USD[Semi-Annual] FIXED [3.47%]/Semi-Annual FIXED 4.9825%	Portfolio Hedge	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/09/2017	06/15/2042		24,415,719	3.47% [4.9825%]			341,695	704,421		704,421	2,548,277				591,294		0002	
Currency Swap /97573 /CAD/ [Quarterly] FIXED [3.54%]/Semi-Annual FIXED 4.228%	Portfolio Hedge	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	05/11/2017	05/31/2024		33,819,242	4.228% [3.54%]			158,519	269,388		269,388	2,607,070				393,671		0002	
Currency Swap /97608 /GBP/ USD[Semi-Annual] FIXED [2.64%]/Semi-Annual FIXED 4.049%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	05/17/2017	08/02/2042		35,871,500	4.049% [2.64%]			476,067	1,167,603		1,167,603	4,105,992				871,130		0002	
Currency Swap /97715 /EUR/ USD[Semi-Annual] FIXED [3.748%]/Semi-Annual FIXED 5.56375%	Portfolio Hedge	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/19/2017	06/30/2050		152,184,000	5.56375% [3.748%]			2,448,258	(16,851,030)		(16,851,030)	3,819,170				4,270,652		0002	
Currency Swap /97918 /EUR/ USD[Semi-Annual] FIXED [1.77%]/Semi-Annual FIXED 3.7525%	Portfolio Hedge	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	05/24/2017	08/17/2027		69,937,500	3.7525% [1.77%]			1,317,893	(4,044,025)		(4,044,025)	3,126,330				1,027,272		0002	
Currency Swap /97967 /EUR/ USD[Semi-Annual] FIXED [1.76%]/Semi-Annual FIXED 3.88625%	Portfolio Hedge	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/19/2017	07/06/2027		57,069,000	3.88625% [1.76%]			1,157,621	(3,002,411)		(3,002,411)	2,287,878				832,896		0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /98219 /EUR/ USD[Semi-Annual] FIXED [1.96%]/Semi-Annual FIXED 3.97%	Portfolio Hedge	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..06/07/2017	..06/27/2027	.....	..19,367,200	3.97% [1.96%]			.....370,680	.....(985,131)		.....(985,131)	.....874,265				.....282,157		.....0002	
Currency Swap /98225 /EUR/ USD[Semi-Annual] FIXED [2.21%]/Semi-Annual FIXED 4.117%	Portfolio Hedge	Schedule D	Currency.....	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	..06/07/2017	..06/27/2029	.....	..26,235,800	4.117% [2.21%]			.....471,906	.....(1,533,827)		.....(1,533,827)	.....1,112,167				.....424,866		.....0002	
Currency Swap /98619 /CAD/ USD[Semi-Annual] FIXED [3.68%]/Semi-Annual FIXED 3.95%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	..06/20/2017	..09/20/2027	.....	..17,969,925	3.95% [3.68%]			.....30,910	.....417,312		.....417,312	.....1,335,557				.....265,324		.....0002	
Currency Swap /98694 /GBP/ USD[Quarterly] FIXED [3.938%]/Quarterly FIXED 5.475%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	..06/19/2017	..06/18/2047	.....	..17,025,639	5.475% [3.938%]			.....77,709	.....1,517,267		.....1,517,267	.....(7,574,056)				.....454,221		.....0002	
Currency Swap /98778 /EUR/ USD[Semi-Annual] FIXED [3.1%]/Semi-Annual FIXED 5.33%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..06/29/2017	..06/30/2021	.....	..42,382,920	5.33% [3.1%]			.....923,189	.....(978,458)		.....(978,458)	.....2,588,729				.....335,066		.....0002	
Currency Swap /98801 /GBP/ USD[Semi-Annual] FIXED [2.86%]/Semi-Annual FIXED 3.998%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..06/29/2017	..09/28/2032	.....	..60,060,000	3.998% [2.86%]			.....637,120	.....522,943		.....522,943	.....5,570,443				.....1,113,137		.....0002	
Currency Swap /98812 /GBP/ USD[Semi-Annual] FIXED [3.27%]/Semi-Annual FIXED 4.513%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	..06/30/2017	..09/27/2037	.....	..26,650,000	4.513% [3.27%]			.....307,628	.....173,579		.....173,579	.....2,508,847				.....576,836		.....0002	
Currency Swap /98819 /GBP/ USD[Semi-Annual] FIXED [3.37%]/Semi-Annual FIXED 4.688%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..06/30/2017	..09/27/2042	.....	..26,650,000	4.688% [3.37%]			.....327,011	.....160,709		.....160,709	.....3,432,094				.....649,381		.....0002	
Currency Swap /98871 /GBP/ USD[Semi-Annual] FIXED [3.57%]/Semi-Annual FIXED 4.814%	ASSET HEDGE	Schedule D	Currency.....	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	..07/03/2017	..07/05/2021	.....	..20,192,870	4.814% [3.57%]			.....228,196	.....206,115		.....206,115	.....1,372,431				.....160,276		.....0002	
Currency Swap /98889 /EUR/ USD[Semi-Annual] FIXED [2.55%]/Semi-Annual FIXED 4.697%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..07/05/2017	..09/30/2028	.....	..74,264,860	4.697% [2.55%]			.....1,512,207	.....(1,921,430)		.....(1,921,430)	.....4,666,735				.....1,160,054		.....0002	
Currency Swap /98986 /EUR/ USD[Semi-Annual] FIXED [2.82%]/Semi-Annual FIXED 4.888%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..07/11/2017	..07/18/2027	.....	..51,984,000	4.888% [2.82%]			.....492,096	.....(1,541,377)		.....(1,541,377)	.....3,057,374				.....760,017		.....0002	
Currency Swap /98995 // USD[Annual] FIXED [2.15%]/Semi-Annual FIXED 4.301%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..07/11/2017	..07/18/2024	.....	..9,634,800	4.301% [2.15%]			.....201,702	.....(255,037)		.....(255,037)	.....433,519				.....113,490		.....0002	
Currency Swap /99006 /GBP/ USD[Semi-Annual] FIXED [3.19%]/Semi-Annual FIXED 4.4015%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	..07/13/2017	..08/16/2027	.....	..36,591,900	4.4015% [3.19%]			.....405,304	.....516,400		.....516,400	.....2,964,819				.....537,478		.....0002	
Currency Swap /99021 /EUR/ USD[Annual] FIXED [5.375%]/Semi-Annual FIXED 7.769%	ASSET HEDGE	Schedule D	Currency.....	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	..07/13/2017	..01/20/2023	.....	..6,270,000	7.769% [5.375%]			.....138,962	.....(194,754)		.....(194,754)	.....344,952				.....63,168		.....0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /99206 /EUR/ USD[Annual] FIXED [3.5%]/Semi-Annual FIXED 5.701%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	07/20/2017	06/19/2024		2,326,000	5.701% [3.5%]			50,167	(35,316)		(35,316)	106,623				27,200		0002	
Currency Swap /99276 /EUR/ USD[Semi-Annual] FIXED [2.75%]/Semi-Annual FIXED 4.621%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/28/2017	09/30/2029		13,277,500	4.621% [2.75%]			246,523	(184,682)		(184,682)	605,161				217,666		0002	
Currency Swap /99283 /EUR/ USD[Semi-Annual] FIXED [2.87%]/Semi-Annual FIXED 4.67%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/28/2017	11/29/2030		15,040,000	4.67% [2.87%]			25,297	(282,895)		(282,895)	246,726				259,522		0002	
Currency Swap /99288 /GBP/ USD[Semi-Annual] FIXED [3.7%]/Semi-Annual FIXED 5.106%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	07/28/2017	09/28/2037		60,568,200	5.106% [3.7%]			810,412	2,090,531		2,090,531	6,529,998				1,310,990		0002	
Currency Swap /99420 /EUR/ USD[Semi-Annual] FIXED [1.05%]/Semi-Annual FIXED 3.152%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	08/03/2017	09/06/2023		31,995,000	3.152% [1.05%]			673,669	238,052		238,052	1,196,736				346,079		0002	
Currency Swap /99506 /GBP/ USD[Semi-Annual] FIXED [9.0%]/Semi-Annual FIXED 10.455%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/11/2017	08/14/2021		11,285,300	10.455% [9.0%]			136,771	234,497		234,497	914,216				91,508		0002	
Currency Swap /99508 /GBP/ USD[Semi-Annual] FIXED [5.08%]/Semi-Annual FIXED 6.453%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/11/2017	08/14/2021		10,985,000	6.453% [5.08%]			135,752	208,821		208,821	794,598				89,073		0002	
Currency Swap /99916 /GBP/ USD[Quarterly] FIXED [3.37%]/Quarterly FIXED 4.6565%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	08/29/2017	06/20/2025		144,748,018	4.6565% [3.37%]			1,796,313	2,714,360		2,714,360	11,688,824				1,840,919		0002	
Currency Swap /100482 /GBP/ USD[Semi-Annual] FIXED [3.05%]/Semi-Annual FIXED 4.129%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/27/2017	10/06/2032		33,500,000	4.129% [3.05%]			366,221	1,193,761		1,193,761	3,009,717				621,558		0002	
Currency Swap /100483 /GBP/ USD[Semi-Annual] FIXED [3.35%]/Semi-Annual FIXED 4.543%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/27/2017	10/06/2037		33,500,000	4.543% [3.35%]			404,886	1,228,277		1,228,277	3,529,231				725,683		0002	
Currency Swap /100617 // USD[Annual] FIXED [1.75%]/Semi-Annual FIXED 3.73%	ASSET HEDGE	Schedule D	Currency	BNP PARIBAS LONDON ROMUJISFPU8MPR08K5P83	10/04/2017	10/10/2027		7,996,800	3.73% [1.75%]			158,133	(3,057)		(3,057)	312,236				118,477		0002	
Currency Swap /100676 /CAD/ USD[Monthly] FIXED [5.35%]/Monthly FIXED 5.3275%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/10/2017	03/01/2023		29,164,981	5.3275% [5.35%]			49,045	2,258,671		2,258,671	2,375,295				297,783		0002	
Currency Swap /100689 /EUR/ USD[Semi-Annual] FIXED [2.93%]/Semi-Annual FIXED 4.631%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/10/2017	11/01/2037		23,620,000	4.631% [2.93%]			401,691	(217,924)		(217,924)	705,754				512,613		0002	
Currency Swap /100707 /GBP/ USD[Quarterly] FIXED [3.64%]/Quarterly FIXED 4.7535%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/10/2017	10/12/2027		55,727,750	4.7535% [3.64%]			875,882	1,616,543		1,616,543	4,317,000				825,636		0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /100780 /EUR/ USD[Semi-Annual] FIXED [1.81%]/Semi-Annual FIXED 3.902% ...	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	10/18/2017	10/30/2027		117,680,000	3.902% [1.81%]			2,454,032	740,287		740,287	4,282,534				1,749,440		0002	
Currency Swap /100934 /GBP/ USD[Quarterly] FIXED [2.74%]/Quarterly FIXED 3.907% ...	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	10/24/2017	10/27/2027		106,531,200	3.907% [2.74%]			1,219,530	3,378,002		3,378,002	8,596,315				1,582,804		0002	
Currency Swap /100956 /EUR/ USD[Annual] FIXED [3.5%]/Semi-Annual FIXED 6.005% ...	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/25/2017	06/19/2024		10,398,382	6.005% [3.5%]			261,646	208,505		208,505	430,242				121,599		0002	
Currency Swap /101210 /GBP/ USD[Semi-Annual] FIXED [2.85%]/Semi-Annual FIXED 4.293% ...	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNYLU02	11/08/2017	01/19/2043		9,825,000	4.293% [2.85%]			129,874	411,464		411,464	752,691				240,913		0002	
Currency Swap /101211 /GBP/ USD[Semi-Annual] FIXED [2.83%]/Semi-Annual FIXED 4.3025% ...	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/08/2017	01/19/2048		32,750,000	4.3025% [2.83%]			442,203	1,635,244		1,635,244	2,165,544				882,732		0002	
Currency Swap /101220 /GBP/ USD[Quarterly] FIXED [3.263%]/Semi-Annual FIXED 4.522% ...	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/09/2017	05/31/2033		92,156,745	4.522% [3.263%]			1,000,577	2,691,359		2,691,359	6,170,024				1,749,765		0002	
Currency Swap /101276 /EUR/ USD[Annual] FIXED [2.75%]/Semi-Annual FIXED 4.89% ...	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/16/2017	01/27/2030		5,767,300	4.89% [2.75%]			123,331	89,664		89,664	244,157				95,987		0002	
Currency Swap /101647 /EUR/ USD[Annual] FIXED [5.375%]/Semi-Annual FIXED 8.16% ...	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/29/2017	01/20/2023		3,558,000	8.16% [5.375%]			100,435	113,872		113,872	167,240				35,846		0002	
Currency Swap /101651 /EUR/ USD[Semi-Annual] FIXED [1.51%]/Semi-Annual FIXED 3.8185% ...	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/30/2017	01/31/2026		17,820,000	3.8185% [1.51%]			380,399	485,260		485,260	409,105				237,248		0002	
Currency Swap /101652 /EUR/ USD[Semi-Annual] FIXED [1.8%]/Semi-Annual FIXED 3.992% ...	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/30/2017	01/31/2028		11,880,000	3.992% [1.8%]			241,151	331,187		331,187	264,656				178,991		0002	
Currency Swap /101668 /GBP/ USD[Semi-Annual] FIXED [6.15%]/Semi-Annual FIXED 7.624% ...	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/30/2017	12/04/2020		17,981,600	7.624% [6.15%]			260,875	1,067,421		1,067,421	1,180,647				124,904		0002	
Currency Swap /102086 /CAD/ USD[Semi-Annual] FIXED [3.95%]/Semi-Annual FIXED 4.127% ...	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H10SPRFMYMCFXT09	12/11/2017	01/02/2028		38,925,652	4.127% [3.95%]			82,018	2,088,078		2,088,078	1,777,924				584,208		0002	
Currency Swap /102265 /EUR/ USD[Annual] FIXED [3.5%]/Semi-Annual FIXED 6.1425% ...	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/14/2017	06/19/2024		2,358,000	6.1425% [3.5%]			62,406	58,137		58,137	95,063				27,574		0002	
Currency Swap /102286 /GBP/ USD[Quarterly] FIXED [3.09%]/Quarterly FIXED 4.47% ...	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/15/2017	12/19/2024		219,945,000	4.47% [3.09%]			3,025,866	12,374,846		12,374,846	15,956,856				2,687,022		0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /102295 /GBP/ USD[Semi-Annual] FIXED [3.28%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/15/2017	02/20/2043		26,660,000	4.8875% [3.28%]			373,868	2,429,588		2,429,588	2,337,519				654,936		0002	
Currency Swap /102296 /GBP/ USD[Semi-Annual] FIXED [3.32%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/15/2017	02/20/2048		13,330,000	4.985% [3.32%]			193,578	1,348,295		1,348,295	1,220,541				359,786		0002	
Currency Swap /102616 /EUR/ USD[Annual] FIXED [3.25%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	BANK OF AMERICA, N.A. B4TYDEB6KMZ0031MB27	01/09/2018	06/14/2025		2,742,520	5.83% [3.25%]			69,643	114,214		114,214	114,214				34,853		0002	
Currency Swap /102657 /EUR/ USD[Annual] FIXED [2.75%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	BANK OF AMERICA, N.A. B4TYDEB6KMZ0031MB27	01/11/2018	01/18/2025		14,324,030	5.205% [2.75%]			342,335	636,815		636,815	636,815				176,308		0002	
Currency Swap /103253 /GBP/ USD[Semi-Annual] FIXED [2.7%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32WIEFA76	01/25/2018	04/25/2048		46,475,000	4.225% [2.7%]			557,979	8,160,154		8,160,154	8,160,154				1,258,477		0002	
Currency Swap /103256 /GBP/ USD[Semi-Annual] FIXED [2.9%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	01/25/2018	03/14/2030		10,017,000	4.3105% [2.9%]			130,340	1,418,673		1,418,673	1,418,673				167,691		0002	
Currency Swap /103257 /GBP/ USD[Semi-Annual] FIXED [3.02%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	01/25/2018	03/14/2033		7,155,000	4.458% [3.02%]			95,192	1,064,771		1,064,771	1,064,771				134,858		0002	
Currency Swap /103436 /EUR/ USD[Semi-Annual] FIXED [2.61%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU0QSJ21A208	02/01/2018	12/31/2025		51,200,971	5.31% [2.61%]			1,398,764	4,168,741		4,168,741	4,168,741				677,325		0002	
Currency Swap /103460 /EUR/ USD[Annual] FIXED [3.375%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32WIEFA76	02/01/2018	02/08/2038		12,500,000	5.474% [3.375%]			258,389	1,517,102		1,517,102	1,517,102				273,219		0002	
Currency Swap /103925 /GBP/ USD[Semi-Annual] FIXED [2.7%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32WIEFA76	02/16/2018	06/05/2028		15,400,000	4.101% [2.7%]			140,695	1,779,366		1,779,366	1,779,366				236,454		0002	
Currency Swap /103929 /GBP/ USD[Semi-Annual] FIXED [2.79%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU0QSJ21A208	02/16/2018	06/05/2030		11,200,000	4.2% [2.79%]			103,318	1,360,890		1,360,890	1,360,890				189,326		0002	
Currency Swap /104158 /GBP/ USD[Semi-Annual] FIXED [2.66%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/22/2018	06/17/2028		5,154,100	4.14% [2.66%]			48,962	595,289		595,289	595,289				79,304		0002	
Currency Swap /104161 /GBP/ USD[Semi-Annual] FIXED [2.88%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	02/22/2018	06/17/2033		5,572,000	4.406% [2.88%]			54,874	724,785		724,785	724,785				105,942		0002	
Currency Swap /104668 /EUR/ USD[Semi-Annual] FIXED [2.92%]/Semi-Annual	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/15/2018	03/23/2028		58,179,000	5.4065% [2.92%]			1,213,520	5,216,403		5,216,403	5,216,403				883,766		0002	

E18.197

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /105016 /GBP/ USD[Semi-Annual] FIXED [3.25%]/Semi-Annual FIXED 4.96%	ASSET HEDGE	Schedule D	Currency.....	CREDIT AGRICOLE 1VUV7VQFKU0QSJ21A208	..03/27/2018	..04/25/2048	.....	..81,928,500	4.96% [3.25%]	.....	.....	..1,085,495	..15,787,782	.....	..15,787,782	..15,787,782	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /105018 /GBP/ USD[Semi-Annual] FIXED [3.4%]/Semi-Annual FIXED 5.15%	ASSET HEDGE	Schedule D	Currency.....	CREDIT AGRICOLE 1VUV7VQFKU0QSJ21A208	..03/27/2018	..04/25/2048	.....	..54,619,000	5.15% [3.4%]	.....	.....	.....	..5,593,386	.....	..5,593,386	..5,593,386	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /105280 /GBP/ USD[Quarterly] FIXED [3.24%]/Quarterly FIXED 4.718%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..04/09/2018	..04/06/2025	.....	..111,397,220	4.718% [3.24%]	.....	.....	..1,371,465	..13,638,471	.....	..13,638,471	..13,638,471	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /105553 /EUR/ USD[Semi-Annual] FIXED [1.78%]/Semi-Annual FIXED 4.182%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	..04/17/2018	..07/30/2028	.....	..123,600,000	4.182% [1.78%]	.....	.....	..1,336,748	..11,742,912	.....	..11,742,912	..11,742,912	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /105563 /EUR/ USD[Annual] FIXED [1.75%]/Semi-Annual FIXED 4.482%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..04/17/2018	..04/24/2025	.....	..28,376,780	4.482% [1.75%]	.....	.....	..550,112	..2,584,220	.....	..2,584,220	..2,584,220	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /105578 /GBP/ USD[Quarterly] FIXED [3.15%]/Quarterly FIXED 4.367%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..12/04/2017	..11/30/2027	.....	..44,131,835	4.367% [3.15%]	.....	.....	..497,756	..3,050,982	.....	..3,050,982	..4,210,004	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /105857 /GBP/ USD[Semi-Annual] FIXED [2.91%]/Semi-Annual FIXED 4.532%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..04/27/2018	..06/04/2038	.....	..41,370,000	4.532% [2.91%]	.....	.....	..426,103	..5,767,040	.....	..5,767,040	..5,767,040	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /105914 /EUR/ USD[Semi-Annual] FIXED [2.23%]/Semi-Annual FIXED 4.817%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	..05/02/2018	..05/30/2028	.....	..71,820,000	4.817% [2.23%]	.....	.....	..1,122,668	..4,937,955	.....	..4,937,955	..4,937,955	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /106011 /EUR/ USD[Semi-Annual] FIXED [3.12%]/Semi-Annual FIXED 5.81%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	..04/11/2018	..07/12/2028	.....	..30,905,000	5.81% [3.12%]	.....	.....	..421,692	..3,445,267	.....	..3,445,267	..3,445,267	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /106473 /EUR/ USD[Annual] FIXED [1.26%]/Semi-Annual FIXED 4.033%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..05/23/2018	..03/27/2025	.....	..46,800,000	4.033% [1.26%]	.....	.....	..667,992	..1,669,840	.....	..1,669,840	..1,669,840	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /106728 /EUR/ USD[Semi-Annual] FIXED [3.228%]/Semi-Annual FIXED 5.835%	ASSET HEDGE	Schedule D	Currency.....	CREDIT AGRICOLE 1VUV7VQFKU0QSJ21A208	..06/01/2018	..06/30/2037	.....	..40,356,082	5.835% [3.228%]	.....	.....	..613,107	..1,555,202	.....	..1,555,202	..1,555,202	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /106757 /GBP/ USD[Quarterly] FIXED [2.36%]/Quarterly FIXED 3.994%	ASSET HEDGE	Schedule D	Currency.....	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQX57XV54	..06/04/2018	..06/07/2025	.....	..266,800,000	3.994% [2.36%]	.....	.....	..2,558,969	..19,242,169	.....	..19,242,169	..19,242,169	.....	.....	.....	.....	.....	.....	..0002
Currency Swap /106920 /EUR/ USD[Annual] FIXED [2.7%]/Semi-Annual FIXED 5.341%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	..06/06/2018	..06/15/2028	.....	..2,117,520	5.341% [2.7%]	.....	.....	..30,732	..106,248	.....	..106,248	..106,248	.....	.....	.....	.....	.....	.....	..0002

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /106940 /GBP/ USD[Quarterly] FIXED [3.07%]/Quarterly FIXED 4.735%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	06/07/2018	06/14/2025		57,844,800	4.735% [3.07%]			554,563	4,474,290		4,474,290	4,474,290				735,107		0002	
Currency Swap /106953 /EUR/ USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 5.615%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/07/2018	02/08/2038		5,905,000	3.375%			74,933	388,709		388,709	388,709				129,068		0002	
Currency Swap /106964 /EUR/ USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 5.64%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/08/2018	02/08/2038		5,885,000	5.64% [3.375%]			74,748	381,740		381,740	381,740				128,631		0002	
Currency Swap /106981 /GBP/ USD[Semi-Annual] FIXED [3.98%]/Semi-Annual FIXED 5.643%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/08/2018	06/17/2038		50,334,734	5.643% [3.98%]			501,984	4,302,579		4,302,579	4,302,579				1,110,221		0002	
Currency Swap /107218 /EUR/ USD[Semi-Annual] FIXED [2.88%]/Semi-Annual FIXED 5.43%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/14/2018	06/29/2030		35,100,000	5.43% [2.88%]			462,973	1,733,115		1,733,115	1,733,115				595,149		0002	
Currency Swap /107314 /GBP/ USD[Semi-Annual] FIXED [3.08%]/Semi-Annual FIXED 4.63%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	06/20/2018	08/02/2043		49,462,500	4.63% [3.08%]			331,421	3,439,516		3,439,516	3,439,516				1,226,381		0002	
Currency Swap /107340 /EUR/ USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 5.652%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/21/2018	02/08/2038		5,810,000	3.375%			68,473	282,032		282,032	282,032				126,992		0002	
Currency Swap /107357 /GBP/ USD[Semi-Annual] FIXED [3.06%]/Semi-Annual FIXED 4.61%	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCJFXT09	06/21/2018	10/15/2028		13,240,000	4.61% [3.06%]			46,073	933,241		933,241	933,241				207,133		0002	
Currency Swap /107433 // USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.3175%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	06/22/2018	10/29/2035		11,650,000	3.875%			147,095	587,642		587,642	587,642				238,967		0002	
Currency Swap /107590 /GBP/ USD[Semi-Annual] FIXED [2.66%]/Semi-Annual FIXED 4.166%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/28/2018	08/28/2048		18,312,000	4.166% [2.66%]			96,437	1,178,566		1,178,566	1,178,566				498,644		0002	
Currency Swap /107642 /GBP/ USD[Semi-Annual] FIXED [2.926%]/Semi-Annual FIXED 4.431%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	06/29/2018	09/28/2043		72,325,000	2.926%			289,082	4,500,455		4,500,455	4,500,455				1,798,698		0002	
Currency Swap /107693 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.8115%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	06/29/2018	03/22/2026		5,850,000	3.875%			85,785	238,389		238,389	238,389				78,649		0002	
Currency Swap /107768 // USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.23%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	07/03/2018	10/29/2035		5,825,000	6.23% [3.875%]			67,416	223,294		223,294	223,294				119,484		0002	
Currency Swap /107871 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.819%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/06/2018	03/22/2026		4,696,000	3.875%			66,596	216,372		216,372	216,372				63,135		0002	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /107900 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.863% ..	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/09/2018	03/22/2026		5,870,000	6.863% [3.875%]			83,976	287,521		287,521	287,521				78,918		0002	
Currency Swap /107904 // USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.303%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/09/2018	10/29/2035		3,525,000	6.303% [3.875%]			41,161	220,117		220,117	220,117				72,305		0002	
Currency Swap /108005 // USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.2775%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	07/11/2018	10/29/2035		2,336,000	6.2775% [3.875%]			26,424	113,829		113,829	113,829				47,916		0002	
Currency Swap /108016 /EUR/ USD[Semi-Annual] FIXED [2.37%]/Semi-Annual FIXED 4.562% ..	ASSET HEDGE	Schedule D	Currency.....	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCLFXT09	07/12/2018	10/12/2033		21,589,500	4.562% [2.37%]			106,532	832,608		832,608	832,608				415,002		0002	
Currency Swap /108100 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.8475% ..	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/18/2018	03/22/2026		9,320,000	6.8475% [3.875%]			124,312	357,269		357,269	357,269				125,301		0002	
Currency Swap /108101 // USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.288%	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/18/2018	10/29/2035		5,825,000	6.288% [3.875%]			63,119	279,382		279,382	279,382				119,484		0002	
Currency Swap /108234 /EUR/ USD[Semi-Annual] FIXED [2.96%]/Semi-Annual FIXED 5.489% ..	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	07/25/2018	07/27/2030		37,440,000	5.489% [2.96%]			397,962	1,876,887		1,876,887	1,876,887				637,030		0002	
Currency Swap /108389 // USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.366%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	07/27/2018	10/29/2035		5,830,000	6.366% [3.875%]			61,809	340,639		340,639	340,639				119,586		0002	
Currency Swap /108495 /EUR/ USD[Semi-Annual] FIXED [1.86%]/Semi-Annual FIXED 4.9105% ..	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	08/01/2018	08/28/2023		53,586,000	4.9105% [1.86%]			565,109	1,890,525		1,890,525	1,890,525				578,381		0002	
Currency Swap /108640 /GBP/ USD[Semi-Annual] FIXED [2.75%]/Semi-Annual FIXED 4.235% ..	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/08/2018	11/07/2028		10,965,000	4.235% [2.75%]			24,940	397,482		397,482	397,482				172,067		0002	
Currency Swap /108697 /GBP/ USD[Semi-Annual] FIXED [3.7%]/Semi-Annual FIXED 5.2475% ..	ASSET HEDGE	Schedule D	Currency.....	CITIBANK N.A. E570DZIZ7FF32TWEFA76	08/09/2018	08/16/2030		61,275,000	5.2475% [3.7%]			361,083	2,436,718		2,436,718	2,436,718				1,044,824		0002	
Currency Swap /109301 /GBP/ USD[Semi-Annual] FIXED [5.01%]/Semi-Annual FIXED 6.70375% ..	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/06/2018	09/11/2030		46,569,000	6.70375% [5.01%]			241,959	2,252,838		2,252,838	2,252,838				796,452		0002	
Currency Swap /109426 /EUR/ USD[Annual] FIXED [2.97%]/Annual FIXED 5.36425%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/13/2018	09/26/2033		87,750,000	5.36425% [2.97%]			574,953	4,784,853		4,784,853	4,784,853				1,684,480		0002	
Currency Swap /109576 // USD[Annual] FIXED [2.15%]/Semi-Annual FIXED 5.15625%	ASSET HEDGE	Schedule D	Currency.....	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/17/2018	07/18/2024		1,169,000	5.15625% [2.15%]			10,070	44,351		44,351	44,351				13,770		0002	

E18.200

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Currency Swap /109577 // USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 6.40325%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/17/2018	07/30/2025		9,468,900	6.40325% [3.375%]			82,673	409,775		409,775	409,775				121,446	0002	
Currency Swap /109611 // USD[Annual] FIXED [2.15%]/Semi-Annual FIXED 5.15%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/17/2018	07/18/2024		1,169,000	5.15% [2.15%]			10,049	43,976		43,976	43,976				13,770	0002	
Currency Swap /109659 // USD[Annual] FIXED [2.15%]/Semi-Annual FIXED 5.166%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	09/18/2018	07/18/2024		3,510,000	5.166% [2.15%]			29,850	142,115		142,115	142,115				41,345	0002	
Currency Swap /109662 // USD[Annual] FIXED [4.25%]/Semi-Annual FIXED 5.82%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKUOQSJ21A208	09/18/2018	09/25/2030		27,591,900	5.82% [4.25%]			119,771	1,809,384		1,809,384	1,809,384				472,700	0002	
Currency Swap /109698 /GBP/ USD[Semi-Annual] FIXED [3.0%]/Semi-Annual FIXED 4.6085%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	09/19/2018	09/28/2048		93,272,000	4.6085% [3.0%]			404,800	6,864,475		6,864,475	6,864,475				2,543,265	0002	
Currency Swap /109800 // USD[Annual] FIXED [1.25%]/Semi-Annual FIXED 4.048%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	09/25/2018	10/22/2025		21,186,000	4.048% [1.25%]			148,042	1,021,636		1,021,636	1,021,636				276,435	0002	
Currency Swap /109979 /EUR/ USD[Semi-Annual] FIXED [2.46%]/Semi-Annual FIXED 5.1171%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	09/26/2018	10/25/2028		53,586,000	5.1171% [2.46%]			267,897	2,664,738		2,664,738	2,664,738				839,609	0002	
Currency Swap /110092 // USD[Annual] FIXED [3.5%]/Semi-Annual FIXED 6.558%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	10/02/2018	10/09/2025		6,987,750	6.558% [3.5%]			48,844	221,059		221,059	221,059				90,975	0002	
Currency Swap /110196 /EUR/ USD[Semi-Annual] FIXED [4.125%]/Semi-Annual FIXED 6.688%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	10/04/2018	03/11/2039		17,307,500	6.688% [4.125%]			98,320	1,013,521		1,013,521	1,013,521				388,938	0002	
Currency Swap /110384 /GBP/ USD[Semi-Annual] FIXED [2.96%]/Semi-Annual FIXED 4.405%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKUOQSJ21A208	10/11/2018	01/10/2029		30,406,000	4.405% [2.96%]				641,573		641,573	641,573				481,482	0002	
Currency Swap /110386 /GBP/ USD[Semi-Annual] FIXED [3.21%]/Semi-Annual FIXED 4.67%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKUOQSJ21A208	10/11/2018	01/10/2034		22,474,000	4.67% [3.21%]				546,194		546,194	546,194				435,642	0002	
Currency Swap /110508 /GBP/ USD[Semi-Annual] FIXED [3.67%]/Semi-Annual FIXED 5.5468%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/18/2018	11/28/2048		39,240,000	5.5468% [3.67%]			67,297	4,595,065		4,595,065	4,595,065				1,073,198	0002	
Currency Swap /110509 /GBP/ USD[Semi-Annual] FIXED [3.92%]/Semi-Annual FIXED 5.838%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/18/2018	11/28/2048		39,240,000	5.838% [3.92%]				3,392,015		3,392,015	3,392,015				1,073,198	0002	
Currency Swap /110577 // USD[Annual] FIXED [2.875%]/Semi-Annual FIXED 5.976%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	10/19/2018	10/25/2025		8,893,125	5.976% [2.875%]			50,245	269,915		269,915	269,915				116,208	0002	

E18.201

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Currency Swap /110865 /EUR/ USD[Semi-Annual] FIXED [2.69%]/Semi-Annual FIXED 5.4225%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	10/26/2018	01/23/2029		42,675,000	5.4225% [2.69%]				1,294,347		1,294,347	1,294,347				676,772		0002
Currency Swap /110869 /EUR/ USD[Semi-Annual] FIXED [2.36%]/Semi-Annual FIXED 5.29%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	10/26/2018	01/23/2026		42,675,000	5.29% [2.36%]				725,568		725,568	725,568				566,951		0002
Currency Swap /111095 // USD[Annual] FIXED [1.55%]/Semi-Annual FIXED 4.741%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/05/2018	11/09/2023		11,420,000	4.741% [1.55%]			48,535	210,526		210,526	210,526				125,879		0002
Currency Swap /111201 // USD[Annual] FIXED [1.55%]/Semi-Annual FIXED 4.7475%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	11/09/2018	11/09/2023		7,931,000	4.7475% [1.55%]			32,934	43,026		43,026	43,026				87,421		0002
Currency Swap /111259 // USD[Annual] FIXED [1.55%]/Semi-Annual FIXED 4.66%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	11/14/2018	11/09/2023		11,285,000	4.66% [1.55%]			43,521	(33,371)		(33,371)	(33,371)				124,391		0002
Currency Swap /111260 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.985%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/14/2018	03/22/2026		7,903,000	6.985% [3.875%]			30,128	58,722		58,722	58,722				106,251		0002
Currency Swap /111264 /GBP/ USD[Semi-Annual] FIXED [2.86%]/Semi-Annual FIXED 4.493%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57RNE97	11/15/2018	02/28/2028		83,200,000	4.493% [2.86%]				2,902,401		2,902,401	2,902,401				1,259,044		0002
Currency Swap /111288 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 7.001%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57RNE97	11/15/2018	03/22/2026		3,390,000	7.001% [3.875%]			12,119	34,008		34,008	34,008				45,576		0002
Currency Swap /111289 /GBP/ USD[Semi-Annual] FIXED [3.201%]/Monthly FIXED 4.876%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	11/15/2018	03/31/2036		74,108,664	4.876% [3.201%]			125,672	2,845,757		2,845,757	2,845,757				1,538,982		0002
Currency Swap /111303 /GBP/ USD[Semi-Annual] FIXED [3.01%]/Semi-Annual FIXED 4.557%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/16/2018	01/09/2034		12,850,000	4.557% [3.01%]				425,482		425,482	425,482				249,088		0002
Currency Swap /111304 /GBP/ USD[Semi-Annual] FIXED [3.11%]/Semi-Annual FIXED 4.703%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/16/2018	01/09/2039		11,565,000	4.703% [3.11%]				439,654		439,654	439,654				258,795		0002
Currency Swap /111305 /GBP/ USD[Semi-Annual] FIXED [3.11%]/Semi-Annual FIXED 4.646%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/16/2018	11/14/2034		10,280,000	4.646% [3.11%]				332,774		332,774	332,774				204,763		0002
Currency Swap /111306 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.965%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57RNE97	11/16/2018	03/22/2026		3,426,000	6.965% [3.875%]			11,971	72,182		72,182	72,182				46,060		0002
Currency Swap /111331 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.9175%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	11/19/2018	03/22/2026		8,015,000	6.9175% [3.875%]			26,970	122,027		122,027	122,027				107,756		0002

E18.202

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /111444 /EUR/ USD[Annual] FIXED [1.75%]/Semi-Annual FIXED 4.679%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/21/2018	04/24/2025		5,700,000	4.679% [1.75%]			17,525	83,304		83,304	83,304					71,648	0002	
Currency Swap /111456 /GBP/ USD[Semi-Annual] FIXED [3.65%]/Semi-Annual FIXED 5.38%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	11/21/2018	01/15/2049		60,160,000	5.38% [3.65%]				2,670,423		2,670,423	2,670,423					1,648,647	0002	
Currency Swap /111531 /EUR/ USD[Semi-Annual] FIXED [3.11%]/Semi-Annual FIXED 5.645%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	11/26/2018	12/05/2036		73,001,250	5.645% [3.11%]			133,074	2,175,560		2,175,560	2,175,560					1,545,576	0002	
Currency Swap /111654 /EUR/ USD[Semi-Annual] FIXED [1.71%]/Semi-Annual FIXED 4.374%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	11/28/2018	12/13/2027		28,200,000	4.374% [1.71%]			37,337	219,774		219,774	219,774					421,823	0002	
Currency Swap /111771 /EUR/ USD[Semi-Annual] FIXED [3.216%]/Semi-Annual FIXED 5.85%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00SJ21A208	11/30/2018	06/30/2037		6,860,775	5.85% [3.216%]			10,929	92,772		92,772	92,772					147,547	0002	
Currency Swap /111906 // USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 6.293%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/06/2018	07/30/2025		2,842,500	6.293% [3.375%]			4,647	9,688		9,688	9,688					36,457	0002	
Currency Swap /111932 // USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 6.2775%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00SJ21A208	12/07/2018	07/30/2025		3,417,000	6.2775% [3.375%]			5,287	(3,479)		(3,479)	(3,479)					43,826	0002	
Currency Swap /112000 /EUR/ USD[Semi-Annual] FIXED [1.4%]/Semi-Annual FIXED 4.02%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00SJ21A208	12/10/2018	12/19/2025		38,760,000	4.02% [1.4%]			33,833	(85,145)		(85,145)	(85,145)					511,647	0002	
Currency Swap /112002 /EUR/ USD[Semi-Annual] FIXED [1.81%]/Semi-Annual FIXED 4.2075%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00SJ21A208	12/10/2018	12/19/2028		22,800,000	4.2075% [1.81%]			18,208	(24,993)		(24,993)	(24,993)					359,959	0002	
Currency Swap /112006 // USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 6.22%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	12/10/2018	07/30/2025		5,112,000	6.22% [3.375%]			7,307	(11,072)		(11,072)	(11,072)					65,565	0002	
Currency Swap /112092 /GBP/ USD[Semi-Annual] FIXED [2.74%]/Semi-Annual FIXED 4.17%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00SJ21A208	12/12/2018	06/15/2032		21,454,000	4.17% [2.74%]			15,059	158,289		158,289	158,289					393,551	0002	
Currency Swap /112227 // USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 6.276%	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00SJ21A208	12/14/2018	07/30/2025		316,120	6.276% [3.375%]			303	(3,807)		(3,807)	(3,807)					4,054	0002	
Currency Swap /112332 // USD[Annual] FIXED [3.375%]/Semi-Annual FIXED 6.25%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/14/2018	07/30/2025		7,390,000	6.25% [3.375%]			7,021	(49,546)		(49,546)	(49,546)					94,782	0002	
Currency Swap /112338 /EUR/ USD[Annual] FIXED [3.875%]/Semi-Annual FIXED 6.7425%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E57ODZIZ7FF32TWEFA76	12/14/2018	03/22/2026		5,650,000	6.7425% [3.875%]			5,279	(41,875)		(41,875)	(41,875)					75,960	0002	

E18.203

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Currency Swap /112240 // USD[Annual] FIXED [2.75%]/Semi-Annual FIXED 5.515%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZVZ7F32TWFA76	12/14/2018	01/30/2026		3,390,000	5.515% [2.75%]			3,142	(22,509)		(22,509)	(22,509)						45,101	0002
Currency Swap /112284 /EUR/ USD[Annual] FIXED [2.75%]/Semi-Annual FIXED 5.489%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGFU57RNE97	12/17/2018	01/30/2026		6,810,000	5.489% [2.75%]			5,754	(17,348)		(17,348)	(17,348)						90,601	0002
Currency Swap /112390 // USD[Semi-Annual] BPLib [5.28644%]/Quarterly LIBOR 7.14213%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGFU57RNE97	12/19/2018	12/21/2019		126,200,000	5.28644% [7.14213%]			64,186	(1,368,500)		(1,368,500)	(1,368,500)						624,658	0002
Currency Swap /112523 /GBP/ USD[Annual] FIXED [8.25%]/Semi-Annual FIXED 9.8875%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E570DZVZ7F32TWFA76	12/21/2018	06/02/2022		12,655,000	8.25% [9.8875%]			(451)	(44,751)		(44,751)	(44,751)						117,016	0002
0939999999. Subtotal - Swaps - Hedging Other - Foreign Exchange										1,106,445		157,569,969	611,749,325	XXX	611,749,325	805,756,055					207,609,811	XXX	XXX
Total Return Swap /82268 /[Quarterly] FIXED [0.0%]/Quarterly LIBOR 3.13319%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	06/12/2015	06/12/2020		52,534,355	LIBOR [0.0%]			1,383,792	3,057,707		3,057,707	3,659,001						317,388	0003
Total Return Swap /86557 /[Quarterly] FIXED [0.0%]/Quarterly LIBOR 1.86456%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	01/12/2016	01/14/2019		26,960,140	LIBOR [0.0%]			442,942	3,462,069		3,462,069	4,103,637						30,142	0003
Total Return Swap /89654 /[Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.21888%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	06/02/2016	06/03/2020		26,587,394	LIBOR [0.0%]			454,320	3,265,955		3,265,955	3,697,843						159,524	0003
Total Return Swap /90033 /[Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.93863%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	06/14/2016	06/18/2020		52,065,106	LIBOR [0.0%]			1,279,896	1,926,529		1,926,529	3,035,557						315,628	0003
Total Return Swap /90667 /[Quarterly] FIXED [0.0%]/Quarterly LIBOR 1.89956%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	07/12/2016	07/16/2020		26,960,140	LIBOR [0.0%]			452,676	3,330,983		3,330,983	4,454,056						167,283	0003
Total Return Swap /94794 /[Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.953%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A. B4TYDEB6GKMZ0031MB27	12/22/2016	12/30/2021		9,245,379	LIBOR [0.0%]			217,191	(15,372)		(15,372)	78,109						80,201	0003
Total Return Swap /95262 /[Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.62988%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON ROMUJISFPUBMPRO8K5P83	01/17/2017	01/24/2020		41,210,779	LIBOR [0.0%]			953,123	3,941,206		3,941,206	5,995,661						213,144	0003
Total Return Swap /96537 /[Quarterly] FIXED [0.0%]/Quarterly LIBOR 3.07069%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	NATIXIS KX1WK48MPD4Y2NCUIZ63	03/13/2017	03/18/2019		19,183,275	LIBOR [0.0%]			490,149	1,050,157		1,050,157	1,243,963						44,989	0003

E18.204

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Total Return Swap /97579 / [Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.8145%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQX5T7XV54	02/15/2017	02/20/2020	30,066,319	LIBOR [0.0%]			598,333	2,487,684		2,487,684	3,735,981				160,510		0003	
Total Return Swap /99228 / [Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.84925%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON	ROMUI/SFPUBMPRO8K5P83	07/24/2017	07/28/2022	23,815,871	LIBOR [0.0%]			615,452	1,418,422		1,418,422	2,644,653				225,309		0003	
Total Return Swap /99534 / [Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.739%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A.	B4TYDEB6GKMZ0031MB27	07/31/2017	08/14/2020	23,091,905	LIBOR [0.0%]			565,297	1,304,904		1,304,904	2,217,420				147,409		0003	
Total Return Swap /100040 / [Quarterly] FIXED [0.0%]/Quarterly LIBOR 3.14713%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON	ROMUI/SFPUBMPRO8K5P83	09/06/2017	09/10/2020	19,695,712	LIBOR [0.0%]			510,004	1,468,971		1,468,971	1,931,758				128,022		0003	
Total Return Swap /105810 / [At Maturity] FIXED [0.8319%]/At Maturity FIXED 0.0%	Portfolio Hedge	Schedule BA, D	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQX5T7XV54	04/26/2018	04/29/2019	73,208,343	0.0% [0.8319%]			570,446	2,082,235		2,082,235	2,082,235				210,275		0005	
Total Return Swap /106452 / [At Maturity] FIXED [0.83609%]/At Maturity FIXED 0.0%	Portfolio Hedge	Schedule BA, D	Interest	BNP PARIBAS LONDON	ROMUI/SFPUBMPRO8K5P83	05/23/2018	05/24/2019	83,609,116	0.0% [0.83609%]			695,862	2,080,176		2,080,176	2,080,176				264,395		0005	
Total Return Swap /108593 / [Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.49238%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A.	B4TYDEB6GKMZ0031MB27	08/01/2018	08/02/2022	14,532,496	LIBOR [0.0%]			145,323	910,947		910,947	910,947				137,676		0003	
Total Return Swap /108876 / [At Maturity] FIXED [1.00221%]/At Maturity FIXED 0.0%	Portfolio Hedge	Schedule BA, D	Interest	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQX5T7XV54	08/20/2018	08/21/2019	190,419,497	0.0% [1.00221%]			(699,746)	192,872		192,872	192,872				761,678		0005	
Total Return Swap /110204 / [At Maturity] FIXED [0.80055%]/At Maturity FIXED 0.0%	Portfolio Hedge	Schedule BA, D	Interest	NATIXIS	KX11K48MPD4Y2NCUIZ63	10/05/2018	10/09/2019	240,165,082	0.0% [0.80055%]			(443,276)	17,520,807		17,520,807	17,520,807				1,060,540		0005	
Total Return Swap /110702 / [At Maturity] FIXED [0.855%]/At Maturity FIXED 0.0%	Portfolio Hedge	Schedule BA, D	Interest	BANK OF AMERICA, N.A.	B4TYDEB6GKMZ0031MB27	10/22/2018	10/23/2019	290,700,000	0.0% [0.855%]			3,773,615	16,501,545		16,501,545	16,501,545				1,308,150		0005	
Total Return Swap /110863 / [At Maturity] FIXED [0.86228%]/At Maturity FIXED 0.0%	Portfolio Hedge	Schedule BA, D	Interest	BANK OF AMERICA, N.A.	B4TYDEB6GKMZ0031MB27	10/26/2018	07/29/2019	116,408,152	0.0% [0.86228%]			1,511,841	5,639,409		5,639,409	5,639,409				443,269		0005	
Total Return Swap /112033 / [Quarterly] FIXED [0.0%]/Quarterly LIBOR 2.87594%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A.	B4TYDEB6GKMZ0031MB27	12/10/2018	12/10/2019	52,643,726	LIBOR [0.0%]			84,111	2,565,781		2,565,781	2,565,781				256,554		0003	

E18.205

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
Total Return Swap /112089 /[(Quarterly) FIXED [0.0%]/Quarterly LIBOR 2.964%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY CAPITAL SERVICES ... 17331LVC2K0KX5T7XV54	12/11/2018	12/13/2021		52,287,216	LIBOR [0.0%			81,795	(331,405)		(331,405)	(331,405)				449,792		0003	
0949999999. Subtotal - Swaps - Hedging Other - Total Return												13,683,146	73,861,581	XXX	73,861,581	83,960,004					6,881,878	XXX	XXX
0969999999. Subtotal - Swaps - Hedging Other										(297,896)	1,348,203	388,991,831	2,593,754,940	XXX	2,593,755,033	441,850,679					2,874,781,146	XXX	XXX
Interest Rate Swap /47310/57629*AA9 Evergreen Basket of Long Fixed Rate Corp Inv Grade Equiv Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	09/27/2012	10/01/2042		50,000,000	2.581% [LIBOR]			184,386			(2,567,196)					1,218,349	2	0014	
Interest Rate Swap /47313/57629*AB7 Evergreen Basket of Long Fixed Rate Bank Loans B- or Above	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	09/27/2012	10/01/2042		50,000,000	2.575% [LIBOR]			181,386			(2,620,481)					1,218,349	3	0015	
Interest Rate Swap /49774/57629*AC5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	11/27/2012	11/29/2042		264,000,000	2.5575% [LIBOR]			1,030,879			(14,637,474)					6,454,516	1	0016	
Interest Rate Swap /51144/57629*AE1 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/21/2012	12/27/2042		100,000,000	2.743% [LIBOR]			523,694			(2,278,581)					2,449,490	1	0016	
Interest Rate Swap /51145/57629*AD3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. E570DZIZ7FF32TWEFA76	12/21/2012	12/27/2042		100,000,000	2.743% [LIBOR]			523,694			(2,278,581)					2,449,490	1	0016	
Interest Rate Swap /51181/57629*AF8 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/24/2012	12/28/2042		100,000,000	2.754% [LIBOR]			533,494			(1,869,526)					2,449,490	1	0016	
Interest Rate Swap /51185/57629*AH4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/24/2012	12/28/2042		100,000,000	2.754% [LIBOR]			533,494			(1,869,526)					2,449,490	1	0016	
Interest Rate Swap /51189/57629*AG6 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/24/2012	12/28/2042		100,000,000	2.754% [LIBOR]			533,494			(1,869,526)					2,449,490	1	0016	

E18.206

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /51198/57629*AJ0 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/24/2012	12/28/2042		50,000,000	2.754% [LIBOR]			266,747			(934,763)					1,224,744	1	0016
Interest Rate Swap /51207/57629*AK7 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/24/2012	12/28/2042		50,000,000	2.754% [LIBOR]			266,747			(934,763)					1,224,744	1	0016
Interest Rate Swap /51210/57629*AL5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/24/2012	12/28/2042		50,000,000	2.754% [LIBOR]			266,747			(934,763)					1,224,744	1	0016
Interest Rate Swap /51213/57629*AM3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	MERRILL LYNCH CAPITAL SERVICES ... GDWITXX03601TB7DW3U69	12/24/2012	12/28/2042		50,000,000	2.754% [LIBOR]			266,747			(934,763)					1,224,744	1	0016
Interest Rate Swap /51329/57629*AN1 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/27/2012	12/31/2042		50,000,000	2.705% [LIBOR]			247,039			(1,460,509)					1,224,745	1	0016
Interest Rate Swap /51330/57629*AP6 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/27/2012	12/31/2042		50,000,000	2.705% [LIBOR]			247,039			(1,460,509)					1,224,745	1	0016
Interest Rate Swap /51331/57629*AQ4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/27/2012	12/31/2042		50,000,000	2.705% [LIBOR]			247,039			(1,460,509)					1,224,745	1	0016
Interest Rate Swap /51332/57629*AR2 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/27/2012	12/31/2042		50,000,000	2.705% [LIBOR]			247,039			(1,460,509)					1,224,745	1	0016
Interest Rate Swap /51333/57629*AS0 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. ... E570DZIZ7FF32TWEFA76	12/27/2012	12/31/2042		50,000,000	2.705% [LIBOR]			247,039			(1,460,509)					1,224,745	1	0016

E18.207

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /51334/57629*AT8 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	12/27/2012	12/31/2042	50,000,000	2.705% [LIBOR]			247,039			(1,460,509)					1,224,745	1	0016
Interest Rate Swap /56771/57629*AW1 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CREDIT SUISSE INTERNATIONAL	E58DKGJYJYLNB8C3868	04/05/2013	04/09/2043	55,000,000	2.772% [LIBOR]			312,042			(1,078,701)					1,355,055	1	0016
Interest Rate Swap /56772/57629*AV3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CREDIT SUISSE INTERNATIONAL	E58DKGJYJYLNB8C3868	04/05/2013	04/09/2043	60,000,000	2.772% [LIBOR]			340,410			(1,176,764)					1,478,242	1	0016
Interest Rate Swap /56774/57629*AX9 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BANK OF AMERICA, N.A.	B4TYDEB6GKMZ0031MB27	04/05/2013	04/09/2043	55,000,000	2.77% [LIBOR]			310,942			(872,193)					1,355,055	1	0016
Interest Rate Swap /56775/57629*AY7 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BANK OF AMERICA, N.A.	B4TYDEB6GKMZ0031MB27	04/05/2013	04/09/2043	55,000,000	2.77% [LIBOR]			310,942			(872,193)					1,355,055	1	0016
Interest Rate Swap /56782/57629*AU5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	04/05/2013	04/09/2043	55,000,000	2.772% [LIBOR]			312,042			(969,648)					1,355,055	1	0016
Interest Rate Swap /56783/57629*BA8 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	04/05/2013	04/09/2043	60,000,000	2.772% [LIBOR]			340,410			(1,057,798)					1,478,242	1	0016
Interest Rate Swap /56784/57629*BB6 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	04/05/2013	04/09/2043	50,000,000	2.7729% [LIBOR]			284,125			(873,380)					1,231,868	1	0016
Interest Rate Swap /56785/57629*AZ4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A.	E570DZIZ7FF32TWEFA76	04/05/2013	04/09/2043	50,000,000	2.7729% [LIBOR]			284,125			(873,380)					1,231,868	1	0016

E 18,208

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /72798/57629*BD2 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	03/03/2014	03/05/2034		100,000,000	3.409% [LIBOR]			1,246,037			7,199,987					1,948,076	1	0016
Interest Rate Swap /72800/57629*BC4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	03/03/2014	03/05/2034		100,000,000	3.411% [LIBOR]			1,248,037			7,225,188					1,948,076	1	0016
Interest Rate Swap /74419/57629*BP5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	05/07/2014	05/09/2034		85,000,000	3.2835% [LIBOR]			934,866			4,809,345					1,665,653	1	0016
Interest Rate Swap /74385/57629*BE0 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2044		150,000,000	3.289% [LIBOR]			1,690,098			11,637,033					3,779,137	1	0016
Interest Rate Swap /74387/57629*BF7 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2034		125,000,000	3.174% [LIBOR]			1,264,665			5,335,997					2,451,881	1	0016
Interest Rate Swap /74412/57629*BG5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BNP PARIBAS LONDON /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2044		150,000,000	3.29875% [LIBOR]			1,704,723			11,909,488					3,779,137	1	0016
Interest Rate Swap /74413/57629*BH3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2044		150,000,000	3.297% [LIBOR]			1,702,098			11,860,586					3,779,137	1	0016
Interest Rate Swap /74414/57629*BJ9 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2044		150,000,000	3.285% [LIBOR]			1,684,098			11,525,256					3,779,137	1	0016
Interest Rate Swap /74415/57629*BK6 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2044		150,000,000	3.285% [LIBOR]			1,684,098			11,525,256					3,779,137	1	0016

E 18.209

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /74416/57629*BL4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	THE ROYAL BANK OF SCOTLAND PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2044		150,000,000	3.287% [LIBOR]			1,687,097			11,581,144					3,779,137	1	0016
Interest Rate Swap /74417/57629*BM2 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2044		150,000,000	3.2875% [LIBOR]			1,687,848			11,595,116					3,779,137	1	0016
Interest Rate Swap /74418/57629*BN0 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	05/15/2014	05/19/2044		135,000,000	3.303% [LIBOR]			1,539,988			10,825,425					3,401,223	1	0016
Interest Rate Swap /75773/57629*BR1 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	07/18/2014	07/22/2044		125,000,000	3.262% [LIBOR]			1,330,404			9,107,070					3,159,806	1	0016
Interest Rate Swap /75774/57629*BT7 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	HSBC BANK USA, NATIONAL ASSOCIATION /WELLSFARGOSEC/CLEA RED THROUGH CME	07/18/2014	07/22/2044		125,000,000	3.2625% [LIBOR]			1,331,029			9,118,770					3,159,806	1	0016
Interest Rate Swap /75775/57629*BU4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CREDIT SUISSE INTERNATIONAL /WELLSFARGOSEC/CLEA RED THROUGH CME	07/18/2014	07/22/2044		125,000,000	3.2625% [LIBOR]			1,331,029			9,118,770					3,159,806	1	0016
Interest Rate Swap /75776/57629*BV2 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	07/18/2014	07/22/2044		125,000,000	3.2605% [LIBOR]			1,328,529			9,071,970					3,159,806	1	0016
Interest Rate Swap /75777/57629*BW0 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	07/18/2014	07/22/2044		125,000,000	3.261% [LIBOR]			1,329,154			9,083,670					3,159,806	1	0016
Interest Rate Swap /76303/57629*BZ3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	08/22/2014	08/27/2044		50,000,000	3.1635% [LIBOR]			502,657			2,726,604					1,266,393	1	0016

E18.210

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /76304/57629*CA7 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	08/22/2014	08/27/2044		50,000,000	3.1655% [LIBOR]			503,657			2,745,377					1,266,393	1	0016
Interest Rate Swap /76305/57629*CB5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	08/22/2014	08/27/2044		50,000,000	3.1605% [LIBOR]			501,157			2,698,445					1,266,393	1	0016
Interest Rate Swap /76306/57629*CC3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	08/22/2014	08/27/2044		50,000,000	3.157% [LIBOR]			499,407			2,665,593					1,266,393	1	0016
Interest Rate Swap /77198/57629*CG4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH CME	10/02/2014	10/06/2034		55,000,000	3.0205% [LIBOR]			446,351			1,265,069					1,092,065	1	0016
Interest Rate Swap /77201/57629*CH2 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH CME	10/02/2014	10/06/2044		100,000,000	3.129% [LIBOR]			920,047			4,811,941					2,538,208	1	0016
Interest Rate Swap /77252/57629*CJ8 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	JPMORGAN CHASE BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	10/08/2014	10/10/2044		175,000,000	3.053% [LIBOR]			1,485,661			5,921,793					4,442,726	2	0016
Interest Rate Swap /77592/57629*CX7 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BANK OF AMERICA, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/12/2014	12/16/2044		150,000,000	2.741% [LIBOR]			833,389			(3,758,132)					3,821,322	1	0016
Interest Rate Swap /77593/57629*CT6 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	WELLS FARGO BANK, N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/12/2014	12/16/2044		150,000,000	2.731% [LIBOR]			818,389			(4,041,996)					3,821,322	1	0016
Interest Rate Swap /77693/57629*CI9 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	12/12/2014	12/16/2044		250,000,000	2.744% [LIBOR]			1,396,482			(6,121,622)					6,368,870	1	0016

E18.211

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /78695/57629*CU3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	12/12/2014	12/16/2044	250,000,000	2.725% [LIBOR]			1,348,982			(7,020,524)					6,368,870	1	0016
Interest Rate Swap /78697/57629*CV1 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /GOLDMAN SACHS/CLEARED THROUGH CME	FOR8UP27PHTHYVLBN30	12/12/2014	12/16/2044	200,000,000	2.715% [LIBOR]			1,059,186			(5,994,904)					5,095,096	1	0016
Interest Rate Swap /79539/57629*DB4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZLN70PB21	02/03/2015	02/05/2045	125,000,000	2.277% [LIBOR]			117,384			(14,163,053)					3,193,010	1	0016
Interest Rate Swap /93558/57629*DK4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZLN70PB21	12/01/2016	12/05/2046	125,000,000	2.617% [LIBOR]			567,546			(6,358,737)					3,303,053	1	0016
Interest Rate Swap /93559/57629*DJ7 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZLN70PB21	12/01/2016	12/05/2046	125,000,000	2.618% [LIBOR]			568,796			(6,333,861)					3,303,053	1	0016
Interest Rate Swap /93575/57629*DH1 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZLN70PB21	12/01/2016	12/05/2046	125,000,000	2.6049% [LIBOR]			552,421			(6,659,742)					3,303,053	1	0016
Interest Rate Swap /93577/57629*DG3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZLN70PB21	12/01/2016	12/05/2046	125,000,000	2.605% [LIBOR]			552,546			(6,657,254)					3,303,053	1	0016
Interest Rate Swap /93599/57629*DF5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZLN70PB21	12/02/2016	12/06/2046	125,000,000	2.555% [LIBOR]			491,276			(7,897,956)					3,303,053	1	0016
Interest Rate Swap /93602/57629*DE8 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63DVZLN70PB21	12/02/2016	12/06/2046	125,000,000	2.566% [LIBOR]			505,026			(7,624,296)					3,303,053	1	0016

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /93605/57629*DD0 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/02/2016	12/06/2046		125,000,000	2.5515% [LIBOR]			486,901			(7,985,029)					3,303,053	1	0016
Interest Rate Swap /93607/57629*DC2 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEA RED THROUGH CME	12/02/2016	12/06/2046		125,000,000	2.5517% [LIBOR]			487,151			(7,980,053)					3,303,053	1	0016
Interest Rate Swap /98741/57629*CE9 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	09/08/2044		150,000,000	3.159% [LIBOR]			1,489,978			8,044,570					3,801,398	1	0016
Interest Rate Swap /98748/57629*CK5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	3.052% [LIBOR]			1,078,194			4,213,801					3,177,066	1	0016
Interest Rate Swap /98753/57629*CL3 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	DEUTSCHE BANK AG /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	3.053% [LIBOR]			1,079,444			4,237,381					3,177,066	1	0016
Interest Rate Swap /98779/57629*CM1 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	3.061% [LIBOR]			1,089,444			4,426,024					3,177,066	1	0016
Interest Rate Swap /98784/57629*CN9 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	3.062% [LIBOR]			1,090,694			4,449,604					3,177,066	1	0016
Interest Rate Swap /98786/57629*CP4 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	3.065% [LIBOR]			1,094,444			4,520,345					3,177,066	1	0016
Interest Rate Swap /98788/57629*CO2 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEA RED THROUGH CME	06/28/2017	11/04/2044		125,000,000	3.071% [LIBOR]			1,101,944			4,661,826					3,177,066	1	0016

E18.213

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Interest Rate Swap /98790/57629*CR0 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	06/28/2017	11/04/2044		125,000,000	3.07% [LIBOR]			1,100,694			4,638,246					3,177,066	1	0016
Interest Rate Swap /98792/57629*CS8 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	06/28/2017	11/04/2044		125,000,000	3.072% [LIBOR]			1,103,194			4,685,407					3,177,066	1	0016
Interest Rate Swap /98793/57629*CY5 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	06/28/2017	02/05/2045		125,000,000	2.291% [LIBOR]			134,884			(13,830,669)					3,193,010	1	0016
Interest Rate Swap /98795/57629*CZ2 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	06/28/2017	02/05/2045		125,000,000	2.29% [LIBOR]			133,634			(14,024,127)					3,193,010	1	0016
Interest Rate Swap /98798/57629*DA6 Evergreen Basket of Long Fixed Rate ABS Bank Loans and Corp Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	CITIBANK N.A. /WELLSFARGOSEC/CLEAR THROUGH CME	06/28/2017	02/05/2045		125,000,000	2.283% [LIBOR]			124,884			(13,850,886)					3,193,010	1	0016
Interest Rate Swap /100186/57629*DM0 Evergreen Basket of Inverse Floating Rate Corporate Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2047		250,000,000	2.445% [LIBOR]			656,516			(21,641,834)					6,697,714	1	0014
Interest Rate Swap /100187/57629*DL2 Evergreen Basket of Inverse Floating Rate Corporate Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2047		250,000,000	2.4525% [LIBOR]			675,266			(21,261,669)					6,697,714	2	0014
Interest Rate Swap /100188/57629*DP3 Evergreen Basket of Inverse Floating Rate Corporate Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2047		250,000,000	2.4565% [LIBOR]			685,266			(21,058,915)					6,697,714	2	0014
Interest Rate Swap /100189/57629*DN8 Evergreen Basket of Inverse Floating Rate Corporate Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. /WELLSFARGOSEC/CLEAR THROUGH CME	09/13/2017	09/15/2047		250,000,000	2.4475% [LIBOR]			662,766			(21,515,112)					6,697,714	2	0014
Interest Rate Swap /111092/Awaiting PPN Evergreen Basket of Floating Rate Corporate Bonds	REPLICATION	Schedule DB, Part C - Sec 1	Interest	THROUGH CME I7331LVCZKQX57XV54	11/05/2018	11/07/2048		130,000,000	LIBOR [3.363%]			(141,531)			(13,333,908)					3,551,880	1	0014

E18,214

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
Credit Default Swap /109397/Awaiting PPN Sovereign Bond of Panama	REPLICATION	Schedule DB, Part C - Sec 1	Credit	JPMORGAN CHASE BANK, N.A.	09/12/2018	12/20/2023		10,000,000	1.0% [CREDIT]		125,082	18,414	112,941		77,819					10,000,000	1Z	0007
Credit Default Swap /109399/Awaiting PPN Sovereign Bond of Malaysia	REPLICATION	Schedule DB Part C - Sec 1	Credit	BNP PARIBAS LONDON	09/12/2018	12/20/2023		10,000,000	1.0% [CREDIT]		(57,662)	36,152	(52,065)		(40,574)			5,597		10,000,000	1Z	0007
Credit Default Swap /109579/Awaiting PPN Sovereign Bond of India	REPLICATION	Schedule DB Part C - Sec 1	Credit	BNP PARIBAS LONDON	09/17/2018	12/20/2023		15,000,000	1.0% [CREDIT]		(332,554)	76,029	(300,275)		(253,903)			32,279		15,000,000	1Z	0007
Credit Default Swap /109607/Awaiting PPN Sovereign Bond of Mexico	REPLICATION	Schedule DB Part C - Sec 1	Credit	GOLDMAN SACHS INTERNATIONAL	09/17/2018	12/20/2023		15,000,000	1.0% [CREDIT]		(128,271)	56,200	(115,820)		(369,846)			12,450		15,000,000	1Z	0007
Credit Default Swap /109614/Awaiting PPN Sovereign Bond of Colombia	REPLICATION	Schedule DB Part C - Sec 1	Credit	BNP PARIBAS LONDON	09/17/2018	12/20/2023		15,000,000	1.0% [CREDIT]		(113,822)	54,798	(102,774)		(376,152)			11,048		15,000,000	1Z	0007
Credit Default Swap /109991/Awaiting PPN Credit Default Indices (CDI6031/CDX.NA.IG.31)	REPLICATION	Schedule DB, Part C - Sec 1	Credit	GOLDMAN SACHS BANK USA /WELLSFARGOSEC/CLEA RED THROUGH ICE	09/25/2018	12/20/2023		517,000,000	1.0% [CREDIT]		9,234,099	896,882	8,737,953		2,869,867				(496,146)	517,000,000	2Z	0007
Credit Default Swap /109992/Awaiting PPN Credit Default Indices (CDI6031/CDX.NA.IG.31)	REPLICATION	Schedule DB, Part C - Sec 1	Credit	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH ICE	09/25/2018	12/20/2023		257,000,000	1.0% [CREDIT]		4,606,438	444,969	4,358,935		1,426,607				(247,503)	257,000,000	2Z	0007
Credit Default Swap /110008/Awaiting PPN Credit Default Indices (CDI6031/CDX.NA.IG.31)	REPLICATION	Schedule DB, Part C - Sec 1	Credit	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH ICE	09/27/2018	12/20/2023		226,000,000	1.0% [CREDIT]		4,372,066	361,479	4,137,156		1,254,526				(234,910)	226,000,000	2Z	0007
Credit Default Swap /112392/Awaiting PPN Credit Default Indices (CDI6031/CDX.NA.IG.31)	REPLICATION	Schedule DB, Part C - Sec 1	Credit	BARCLAYS BANK PLC /WELLSFARGOSEC/CLEA RED THROUGH ICE	12/19/2018	12/20/2023		100,000,000	1.0% [CREDIT]		658,014	29,009	653,690		555,100				(4,324)	100,000,000	2Z	0007
Credit Default Swap /112525/Awaiting PPN Sovereign Bond of Colombia	REPLICATION	Schedule DB Part C - Sec 1	Credit	BNP PARIBAS LONDON	12/21/2018	12/20/2023		15,000,000	1.0% [CREDIT]		(357,020)	6,513	(354,674)		(376,152)				2,346	15,000,000	1Z	0007
0989999999. Subtotal - Swaps - Replication - Credit Default										607,391	17,404,600	2,217,349	16,556,484	XXX	4,398,419			(988,845)	1,230,000,000	XXX	XXX	
1029999999. Subtotal - Swaps - Replication										607,391	17,404,600	62,175,495	16,556,484	XXX	(230,809,627)			(988,845)	1,518,012,832	XXX	XXX	
1089999999. Subtotal - Swaps - Income Generation														XXX						XXX	XXX	
1149999999. Subtotal - Swaps - Other														XXX						XXX	XXX	
1159999999. Total Swaps - Interest Rate										(1,115,007)	1,348,203	277,788,365	1,908,261,679	XXX	1,673,053,727	(447,949,537)			2,948,302,289	XXX	XXX	
1169999999. Total Swaps - Credit Default										318,057	17,404,600	2,125,846	16,438,839	XXX	4,280,773	84,156		(988,845)	1,230,000,000	XXX	XXX	
1179999999. Total Swaps - Foreign Exchange										1,106,445		157,569,969	611,749,325	XXX	611,749,325	805,756,055			207,609,811	XXX	XXX	
1189999999. Total Swaps - Total Return												13,683,146	73,861,581	XXX	73,861,581	83,960,004			6,881,878	XXX	XXX	
1199999999. Total Swaps - Other														XXX						XXX	XXX	

E18.216

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
1209999999. Total Swaps										309,495	18,752,803	451,167,326	2,610,311,424	XXX	2,362,945,406	441,850,679		(988,845)		4,392,793,978	XXX	XXX
FNCL 4 1/19 FIXED COUPON 4.000000 /111916	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FOR8UP27PHTHYVLBN630	12/06/2018	01/14/2019		8,000,000	100.89453125				83,438		83,438	83,438				8,000		0013
FNCL 4 1/19 FIXED COUPON 4.000000 /111918	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FOR8UP27PHTHYVLBN630	12/06/2018	01/14/2019		42,000,000	100.89453125				438,047		438,047	438,047				42,000		0013
FNCL 4 1/19 FIXED COUPON 4.000000 /111920	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FOR8UP27PHTHYVLBN630	12/06/2018	01/14/2019		527,000,000	100.89453125				5,496,445		5,496,445	5,496,445				527,000		0013
FNCL 4 1/19 FIXED COUPON 4.000000 /111924	TBA FORWARD	Schedule D	Interest	J.P. Morgan Securities LLC ZBUT11V806EZRVTWT807	12/06/2018	01/14/2019		163,050,000	100.84375000				1,783,359		1,783,359	1,783,359				163,050		0013
FNCL 4 1/19 FIXED COUPON 4.000000 /111926	TBA FORWARD	Schedule D	Interest	NOMURA SECURITIES XPSKD1VTEOPKCHBK095	12/06/2018	01/14/2019		600,000,000	100.84375000				6,562,500		6,562,500	6,562,500				600,000		0013
FNCL 4 1/19 FIXED COUPON 4.000000 /111928	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFJXT09	12/06/2018	01/14/2019		600,000,000	100.89062500				6,281,250		6,281,250	6,281,250				600,000		0013
REC 13887524.00 GBP PAY [18080167.50] USD /92244	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/04/2016	03/15/2019		18,080,168	1.30190000				(317,633)		(317,633)	(1,310,840)				41,427		0002
REC 3760221.00 GBP PAY [4924009.40] USD /92250	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/04/2016	09/16/2019		4,924,009	1.30950000				(72,711)		(72,711)	(349,042)				20,745		0002
REC 18082945.00 USD PAY [13887524.00] GBP /92271	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/04/2016	04/01/2019		18,082,945	1.30210000				304,948		304,948	1,309,122				45,207		0002
REC 7476654.00 GBP PAY [9765257.78] USD /92276	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/04/2016	06/17/2019		9,765,258	1.30610000				(159,156)		(159,156)	(698,968)				33,115		0002
REC 9765257.78 USD PAY [7476654.00] GBP /92281	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/04/2016	07/01/2019		9,765,258	1.30610000				152,436		152,436	696,724				34,525		0002
REC 4923257.36 USD PAY [3760221.00] GBP /92287	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX5T7XV54	10/04/2016	09/30/2019		4,923,257	1.30930000				68,980		68,980	348,317				21,319		0002
REC 95438789.38 USD PAY [10000000000.20] JPY /106646	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVYLU02	05/31/2018	09/05/2019		95,438,789	00954388				2,380,727		2,380,727	2,380,727				393,504		0002
REC 93149870.81 USD PAY [128820000.00] AUD /110060	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/01/2018	01/04/2019		93,149,871	72310100				2,380,579		2,380,579	2,380,579				46,575		0002
REC 209767973.14 USD PAY [160914000.00] GBP /110076	ASSET HEDGE	Schedule BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL70XOHC3ZE78	10/02/2018	01/04/2019		209,767,973	1.30360300				4,687,728		4,687,728	4,687,728				104,884		0002
REC 22011759.00 USD PAY [18975000.00] EUR /110105	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/03/2018	01/02/2019		22,011,759	1.16004000				274,752		274,752	274,752				11,006		0002
REC 95843826.95 USD PAY [134422000.00] AUD /110107	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVYLU02	10/03/2018	01/02/2019		95,843,827	71300700				1,171,992		1,171,992	1,171,992				47,921		0002
REC 61946929.26 USD PAY [53345000.00] EUR /110134	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAVYLU02	10/03/2018	01/02/2019		61,946,929	1.16125090				873,639		873,639	873,639				30,973		0002
REC 246856705.55 USD PAY [188649000.00] GBP /110186	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VU7VQFKUQGSJ21A208	10/04/2018	01/02/2019		246,856,706	1.30855030				7,596,659		7,596,659	7,596,659				123,429		0002

E18.217

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
REC 5325692.09 USD PAY [4050000.00] GBP /110216	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/05/2018	01/02/2019		5,325,692	1.31498570				161,143		161,143	161,143				2,663		0002	
REC 232339463.10 USD PAY [176455000.00] GBP /110224	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/05/2018	01/03/2019		232,339,463	1.31670660				7,313,350		7,313,350	7,313,350				116,170		0002	
REC 8098000.00 EUR PAY [9412398.60] USD /110323	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	10/10/2018	01/08/2019		9,412,339	1.16230410				(136,585)		(136,585)	(136,585)				6,656		0002	
REC 171074891.26 USD PAY [147186000.00] EUR /110327	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	10/10/2018	01/08/2019		171,074,891	1.16230410				2,482,506		2,482,506	2,482,506				120,968		0002	
REC 364287721.03 USD PAY [274579000.00] GBP /110341	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFMVCJFX09	10/10/2018	01/08/2019		364,287,721	1.32671370				13,998,916		13,998,916	13,998,916				257,591		0002	
REC 146536395.98 USD PAY [110455000.00] GBP /110389	ASSET HEDGE	Schedule BA, D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	10/11/2018	01/09/2019		146,536,396	1.32666150				5,716,472		5,716,472	5,716,472				126,904		0002	
REC 49161249.31 USD PAY [69174000.00] AUD /110521	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	10/18/2018	01/16/2019		49,161,249	1.71068970				423,423		423,423	423,423				49,161		0002	
REC 4726272.33 USD PAY [7215000.00] NZD /110523	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA ES71P3U9RH1GCT1XBU11	10/18/2018	01/16/2019		4,726,272	1.65506200				(118,185)		(118,185)	(118,185)				4,727		0002	
REC 15127126.00 USD PAY [1682504000.37] JPY /110557	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	10/18/2018	01/16/2019		15,127,126	0.0899084				(226,721)		(226,721)	(226,721)				15,127		0002	
REC 31699988.01 USD PAY [44200000.00] AUD /110586	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	10/19/2018	01/04/2019		31,609,988	1.71515810				475,845		475,845	475,845				15,804		0002	
REC 37056418.02 USD PAY [28280000.00] GBP /110607	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/19/2018	01/16/2019		37,056,418	1.31034010				967,965		967,965	967,965				37,056		0002	
REC 95101569.44 USD PAY [81961000.00] EUR /110609	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/19/2018	01/16/2019		95,101,569	1.16032710				1,101,510		1,101,510	1,101,510				95,101		0002	
REC 19271793.07 USD PAY [25205000.00] CAD /110712	ASSET HEDGE	Schedule D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XHC3ZE78	10/22/2018	01/22/2019		19,271,793	1.76460199				795,571		795,571	795,571				23,602		0002	
REC 21743723.21 USD PAY [30700000.00] AUD /110885	Portfolio Hedge	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	10/29/2018	01/02/2019		21,743,723	1.70826460				120,039		120,039	120,039				10,872		0002	
REC 141348665.08 USD PAY [109816000.00] GBP /110904	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/29/2018	01/28/2019		141,348,665	1.28714090				1,131,146		1,131,146	1,131,146				199,896		0002	
REC 8565000.00 GBP PAY [11016473.44] USD /110916	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/29/2018	01/28/2019		11,016,473	1.28621990				(80,352)		(80,352)	(80,352)				15,580		0002	
REC 2163923.62 USD PAY [241580000.15] JPY /110922	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14HNAYLU02	10/29/2018	01/28/2019		2,163,924	0.0895738				(42,641)		(42,641)	(42,641)				3,060		0002	
REC 116718024.83 USD PAY [90745000.00] GBP /110931	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/29/2018	01/28/2019		116,718,025	1.28621990				851,323		851,323	851,323				165,063		0002	
REC 179311419.06 USD PAY [158232000.00] EUR /110937	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	10/29/2018	01/28/2019		179,311,419	1.14772530				117,751		117,751	117,751				253,585		0002	

E18.218

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
REC 9076635.77 USD PAY [7057000.00] GBP /110956	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	10/29/2018	01/28/2019		9,076,636	1.28618900				65,988		65,988	65,988					12,837	0002	
REC 1613614.66 USD PAY [14621999.99] SEK /110970	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE 1VUV7VQFKU0QSJ21A208	10/29/2018	01/28/2019		1,613,615	11035526				(22,847)		(22,847)	(22,847)					2,282	0002	
REC 5429229.96 USD PAY [4230000.00] GBP /111055	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES 17331VCZKQX57XV54	10/31/2018	01/31/2019		5,429,230	1.28350590				30,603		30,603	30,603					7,678	0002	
REC 1557170.66 USD PAY [13978000.05] SEK /111086	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XHC3ZE78	11/05/2018	01/28/2019		1,557,171	11140153				(23,972)		(23,972)	(23,972)					2,203	0002	
REC 228396427.12 USD PAY [173650000.00] GBP /111100	ASSET HEDGE	Schedule BA, D	Currency	CREDIT AGRICOLE 1VUV7VQFKU0QSJ21A208	11/06/2018	02/04/2019		228,396,427	1.31526880				7,782,864		7,782,864	7,782,864					342,595	0002	
REC 24838727.54 USD PAY [21512000.00] EUR /111120	ASSET HEDGE	Schedule BA, D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/07/2018	02/05/2019		24,838,728	1.15464520				136,514		136,514	136,514					39,273	0002	
REC 239000.00 EUR PAY [275960.21] USD /111125	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/07/2018	02/05/2019		275,960	1.15464523				(1,517)		(1,517)	(1,517)					437	0002	
REC 1493700.75 USD PAY [2215000.00] NZD /111185	ASSET HEDGE	Schedule BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XHC3ZE78	11/09/2018	02/07/2019		1,493,701	67435700				6,504		6,504	6,504					2,362	0002	
REC 177425881.38 USD PAY [136034000.00] GBP /111200	ASSET HEDGE	Scheduled	Currency	SOCIETE GENERAL 02RNE81BXP4R0TD8PU41	11/09/2018	02/07/2019		177,425,881	1.30427600				3,618,952		3,618,952	3,618,952					280,535	0002	
REC 46115954.94 USD PAY [40365000.00] EUR /111215	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/09/2018	02/07/2019		46,115,955	1.14247380				(241,732)		(241,732)	(241,732)					72,915	0002	
REC 2695000.00 GBP PAY [3529172.84] USD /111241	ASSET HEDGE	Schedule BA, D	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	11/13/2018	02/11/2019		3,529,173	1.30952610				(85,098)		(85,098)	(85,098)					5,852	0002	
REC 124682599.04 USD PAY [95212000.00] GBP /111242	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A. KB1H1DSRPFMYMCFXT09	11/13/2018	02/11/2019		124,682,599	1.30952610				3,006,428		3,006,428	3,006,428					206,761	0002	
REC 486521.71 USD PAY [4372500.03] SEK /111285	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE 1VUV7VQFKU0QSJ21A208	11/15/2018	02/11/2019		486,522	11126854				(3,371)		(3,371)	(3,371)					806	0002	
REC 10188947.75 USD PAY [91088500.04] SEK /111307	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XHC3ZE78	11/16/2018	02/14/2019		10,188,948	11185767				(128,515)		(128,515)	(128,515)					17,648	0002	
REC 7504000.00 EUR PAY [8655634.37] USD /111371	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/19/2018	02/07/2019		8,655,634	1.15346940				(37,374)		(37,374)	(37,374)					13,685	0002	
REC 16366905.43 USD PAY [22520000.00] AUD /111443	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XHC3ZE78	11/21/2018	02/19/2019		16,366,905	72677200				492,295		492,295	492,295					30,620	0002	
REC 33180000.00 GBP PAY [42501678.79] USD /111465	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/21/2018	01/02/2019		42,501,679	1.28094270				(209,106)		(209,106)	(209,106)					21,251	0002	
REC 123441937.68 USD PAY [170422000.00] AUD /111525	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XHC3ZE78	11/26/2018	02/25/2019		123,441,938	72433100				3,298,355		3,298,355	3,298,355					239,045	0002	
REC 19658062.96 USD PAY [15285000.00] GBP /111533	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	11/26/2018	01/28/2019		19,658,063	1.28610160				150,123		150,123	150,123					27,801	0002	

E18.219

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
REC 38096000.00 EUR PAY [43534394.47] USD /111567	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	11/26/2018	02/25/2019		43,534,394	1.14275500				282,862		282,862	282,862				84,305		0002	
REC 13961725.78 USD PAY [10929577.82] GBP /111603	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	11/27/2018	01/28/2019		13,961,726	1.27742590				12,689		12,689	12,689				19,745		0002	
REC 2296632.96 USD PAY [1800000.00] GBP /111605	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	11/27/2018	01/02/2019		2,296,633	1.27590720				2,280		2,280	2,280				1,149		0002	
REC 10651400.00 GBP PAY [13716681.19] USD /111699	ASSET HEDGE	Scheduled	Currency	DEUTSCHE BANK AG . 7LTFWZYI0NSX8D621K86	11/30/2018	06/04/2019		13,716,681	1.28778200				(41,681)		(41,681)	(41,681)				44,973		0002	
REC 13718400.35 USD PAY [10651400.00] GBP /111721	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA . K03XUN7C6T14#NAYLU02	11/30/2018	06/04/2019		13,718,400	1.28794340				45,648		45,648	45,648				44,978		0002	
REC 24491384.98 USD PAY [19097000.00] GBP /111757	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES . 17331LVCZKQKX5T7XV54	11/30/2018	02/28/2019		24,491,385	1.28247290				85,146		85,146	85,146				48,982		0002	
REC 2418000.00 EUR PAY [2756428.12] USD /111779	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE . 1VUV7VQFKU00S21A208	11/30/2018	02/25/2019		2,756,428	1.13996200				28,061		28,061	28,061				5,338		0002	
REC 22151034.00 USD PAY [30000000.00] AUD /111807	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES . 17331LVCZKQKX5T7XV54	12/03/2018	01/04/2019		22,151,034	1.73836780				1,019,077		1,019,077	1,019,077				11,076		0002	
REC 50193832.10 USD PAY [66053000.00] CAD /111831	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES . 17331LVCZKQKX5T7XV54	12/03/2018	03/04/2019		50,193,832	1.75990238				1,682,920		1,682,920	1,682,920				106,478		0002	
REC 53323363.59 USD PAY [466476000.00] EUR /111854	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES . 17331LVCZKQKX5T7XV54	12/04/2018	03/04/2019		533,323,364	1.14330290				(3,267,952)		(3,267,952)	(3,267,952)				1,131,348		0002	
REC 3495809.83 USD PAY [2740000.00] GBP /111881	Portfolio Hedge	Scheduled	Currency	THE TORONTO- DOMINION BANK . PT3QB789TSU1DF371261	12/05/2018	02/14/2019		3,495,810	1.27584300				(3,122)		(3,122)	(3,122)				6,055		0002	
REC 28742357.25 USD PAY [22500000.00] GBP /111894	Portfolio Hedge	Scheduled	Currency	GOLDMAN SACHS BANK USA . K03XUN7C6T14#NAYLU02	12/06/2018	01/02/2019		28,742,357	1.27743810				71,780		71,780	71,780				14,372		0002	
REC 124450869.30 USD PAY [97315000.00] GBP /111930	ASSET HEDGE	Schedule BA, D	Currency	BARCLAYS BANK PLC . G5GSEF7VJP5170UK5573	12/07/2018	03/07/2019		124,450,869	1.27884570				22,227		22,227	22,227				271,234		0002	
REC 258830227.95 USD PAY [201666600.00] GBP /111958	Portfolio Hedge	Scheduled	Currency	JPMORGAN CHASE BANK, N.A. . 7H6GLXDRUGOFU57RNE97	12/07/2018	06/04/2019		258,830,228	1.28345610				(222,870)		(222,870)	(222,870)				848,633		0002	
REC 201666600.00 GBP PAY [259262580.96] USD /111959	Portfolio Hedge	Scheduled	Currency	DEUTSCHE BANK AG . 7LTFWZYI0NSX8D621K86	12/07/2018	06/04/2019		259,262,581	1.28560000				(353,555)		(353,555)	(353,555)				850,049		0002	
REC 17989475.00 USD PAY [25000000.00] AUD /112044	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE . 21G119DL770XHC3ZE78	12/11/2018	01/04/2019		17,989,475	1.71957900				383,980		383,980	383,980				8,995		0002	
REC 17894000.00 EUR PAY [20472344.67] USD /112133	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A. . 7H6GLXDRUGOFU57RNE97	12/13/2018	03/04/2019		20,472,345	1.14408990				130,036		130,036	130,036				43,428		0002	
REC 272250733.95 USD PAY [237732000.00] EUR /112134	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES . 17331LVCZKQKX5T7XV54	12/13/2018	03/15/2019		272,250,734	1.14520020				(1,469,097)		(1,469,097)	(1,469,097)				623,805		0002	
REC 97853191.70 USD PAY [135280000.00] AUD /112155	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A. . 7H6GLXDRUGOFU57RNE97	12/13/2018	03/08/2019		97,853,192	1.72333820				2,414,919		2,414,919	2,414,919				213,266		0002	

E18.220

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
REC 291715012.77 USD PAY [229337000.00] GBP /112164	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/13/2018	03/11/2019		291,715,013	1.27199280				(1,524,523)		(1,524,523)	(1,524,523)				652,295		0002	
REC 33350419.66 USD PAY [29213000.00] EUR /112181	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/13/2018	02/05/2019		33,350,420	1.14162940				(177,919)		(177,919)	(177,919)				52,731		0002	
REC 1028000.00 EUR PAY [1173595.02] USD /112183	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/13/2018	02/05/2019		1,173,595	1.14162940				6,261		6,261	6,261				1,855		0002	
REC 7005106.52 USD PAY [62980000.00] SEK /112196	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA ... KD3XUN7C6T14HNAYLU02	12/13/2018	03/13/2019		7,005,107	11122748				(131,867)		(131,867)	(131,867)				15,664		0002	
REC 11803900.97 USD PAY [11630000.00] CHF /112200	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/13/2018	03/13/2019		11,803,901	1.01495279				(94,949)		(94,949)	(94,949)				26,394		0002	
REC 4722000.00 AUD PAY [3415602.98] USD /112209	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A. ... 7H6GLXDRUGUFU57RNE97	12/13/2018	03/08/2019		3,415,603	72333820				(84,294)		(84,294)	(84,294)				7,444		0002	
REC 14149001.33 USD PAY [120623999.97] NOK /112211	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE ... 1VUV7VQFKU00S21A208	12/13/2018	03/13/2019		14,149,001	11729839				226,463		226,463	226,463				31,638		0002	
REC 8662149.12 USD PAY [11587000.00] CAD /112264	ASSET HEDGE	Scheduled	Currency	BARCLAYS BANK PLC ... G5GSEF7VJP5170UK5573	12/17/2018	03/19/2019		8,662,149	74757479				141,066		141,066	141,066				20,315		0002	
REC 24935000.00 EUR PAY [28582170.15] USD /112307	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/18/2018	03/20/2019		28,582,170	1.14626710				139,665		139,665	139,665				67,030		0002	
REC 22981558.40 USD PAY [32000000.00] AUD /112332	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/18/2018	03/08/2019		22,981,558	71817370				414,372		414,372	414,372				50,087		0002	
REC 18739000.00 EUR PAY [21580165.95] USD /112403	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/20/2018	02/25/2019		21,580,166	1.15161780				(36,495)		(36,495)	(36,495)				41,790		0002	
REC 13321022.79 USD PAY [17977000.00] CAD /112450	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/21/2018	03/25/2019		13,321,023	74100366				114,009		114,009	114,009				32,630		0002	
REC 180278694.53 USD PAY [254337000.00] AUD /112452	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/21/2018	03/25/2019		180,278,695	70881820				878,811		878,811	878,811				441,591		0002	
REC 14534000.00 EUR PAY [16644546.10] USD /112469	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/21/2018	03/20/2019		16,644,546	1.14521440				96,627		96,627	96,627				39,035		0002	
REC 29072000.00 EUR PAY [33078923.99] USD /112472	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/21/2018	01/02/2019		33,078,924	1.13782760				194,187		194,187	194,187				16,540		0002	
REC 20552822.88 USD PAY [16213000.00] GBP /112502	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE ... 1VUV7VQFKU00S21A208	12/21/2018	03/20/2019		20,552,823	1.26767550				(87,219)		(87,219)	(87,219)				48,201		0002	
REC 134000.00 GBP PAY [169868.52] USD /112503	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE ... 1VUV7VQFKU00S21A208	12/21/2018	03/20/2019		169,869	1.26767552				721		721	721				398		0002	
REC 94437199.93 USD PAY [133789000.00] AUD /112513	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/21/2018	03/25/2019		94,437,200	70586670				69,609		69,609	69,609				231,322		0002	
REC 116110438.42 USD PAY [165122000.00] AUD /112542	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331VCZKQKX5T7XV54	12/27/2018	04/08/2019		116,110,438	70317970				(379,536)		(379,536)	(379,536)				301,664		0002	

E18.221

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23				
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)				
REC 165122000.00 AUD PAY [115949494.01] USD /112548	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX57XV54	12/27/2018	01/02/2019		115,949,494	70220500				354,800		354,800	354,800					57,976	0002				
REC 1800000.00 GBP PAY [2275582.32] USD /112556	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/27/2018	01/02/2019		2,275,582	1.26421240				19,757		19,757	19,757					1,138	0002				
REC 2279645.10 USD PAY [1800000.00] GBP /112559	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/27/2018	02/07/2019		2,279,645	1.26646950				(19,693)		(19,693)	(19,693)					3,605	0002				
REC 224755074.29 USD PAY [176455000.00] GBP /112582	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/28/2018	04/03/2019		224,755,074	1.27372460				(1,253,757)		(1,253,757)	(1,253,757)					573,015	0002				
REC 176455000.00 GBP PAY [223764861.77] USD /112584	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/28/2018	01/03/2019		223,764,862	1.26811290				1,259,054		1,259,054	1,259,054					111,882	0002				
REC 182019000.00 GBP PAY [230998492.71] USD /112587	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/28/2018	01/02/2019		230,998,493	1.26909000				1,110,204		1,110,204	1,110,204					115,499	0002				
REC 232021166.46 USD PAY [182019000.00] GBP /112590	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/28/2018	04/02/2019		232,021,166	1.27470850				(1,104,542)		(1,104,542)	(1,104,542)					591,541	0002				
REC 24273000.00 EUR PAY [27822440.79] USD /112593	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/28/2018	01/02/2019		27,822,441	1.14623000				(16,313)		(16,313)	(16,313)					13,911	0002				
REC 18975000.00 EUR PAY [21749714.25] USD /112601	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/28/2018	01/02/2019		21,749,714	1.14623000				(12,752)		(12,752)	(12,752)					10,875	0002				
REC 31157532.53 USD PAY [26974000.00] EUR /112604	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/28/2018	04/02/2019		31,157,533	1.15509500				18,268		18,268	18,268					79,436	0002				
REC 21917927.63 USD PAY [18975000.00] EUR /112612	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	12/28/2018	04/02/2019		21,917,928	1.15509500				12,851		12,851	12,851					55,880	0002				
1229999999. Subtotal - Forwards - Hedging Other														93,831,762	XXX	93,831,762	93,850,212							13,812,443	XXX	XXX
REC 50000000.00 USD PAY [5326000000.00] JPY /96729/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/24/2017	03/28/2019		50,000,000	00938791						1,092,588						122,474	1Z	0002			
REC 50000000.00 USD PAY [5286500000.00] JPY /96791/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	03/28/2017	04/01/2019		50,000,000	00945805						1,421,126						125,000	1Z	0002			
REC 50000000.00 USD PAY [5264500000.00] JPY /97136/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	MORGAN STANLEY CAPITAL SERVICES ... 17331LVCZKQKX57XV54	04/11/2017	04/15/2019		50,000,000	00949758						1,605,156						134,629	1Z	0002			
REC 50000000.00 USD PAY [5350000000.00] JPY /97357/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQV1H4R804	05/01/2017	05/08/2019		50,000,000	00934579						718,122						150,000	1Z	0002			

E18.222

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)
REC 75000000.00 USD PAY [8055000000.00] JPY /97418/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/02/2017	05/09/2019		75,000,000	00931099						763,589					225,000	1Z	0002
REC 90000000.00 USD PAY [9688500000.00] JPY /97459/91283# AP8 Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	HSBC BANK USA, NATIONAL ASSOCIATION 11E8VN30JCEQ1H4R804	05/03/2017	05/09/2019		90,000,000	00928936						751,696					270,000	1	0002
REC 50000000.00 USD PAY [5459500000.00] JPY /97539/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	GOLDMAN SACHS BANK USA KD3XUN7C6T14#NAYLU02	05/10/2017	05/13/2019		50,000,000	00915835						(297,076)					152,069	1Z	0002
REC 50000000.00 USD PAY [5460000000.00] JPY /97542/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/11/2017	05/15/2019		50,000,000	00915751						(335,602)					154,110	1Z	0002
REC 25000000.00 USD PAY [2712250000.00] JPY /97602/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKXST7XV54	05/16/2017	05/20/2019		25,000,000	00921744						3,592					78,062	1Z	0002
REC 25000000.00 USD PAY [2681000000.00] JPY /97606/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/17/2017	05/20/2019		25,000,000	00932488						269,461					78,062	1Z	0002
REC 25000000.00 USD PAY [2664500000.00] JPY /97629/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/17/2017	05/20/2019		25,000,000	00938262						420,009					78,062	1Z	0002
REC 8057749999.54 JPY PAY [76207322.50] USD /106627/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/31/2018	05/20/2019		76,207,323	00945764						(1,868,148)					237,957	1Z	0002
REC 5264499999.62 JPY PAY [49665019.37] USD /106628/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGOFU57RNE97	05/31/2018	04/15/2019		49,665,019	00943395						(1,234,855)					133,727	1Z	0002
REC 17743499999.55 JPY PAY [167790724.70] USD /106631/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	THE TORONTO- DOMINION BANK PT30B789TSUI DF371261	05/31/2018	05/09/2019		167,790,725	00945646						(4,263,903)					503,372	1Z	0002
REC 5286500000.25 JPY PAY [49878193.99] USD /106634/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	THE TORONTO- DOMINION BANK PT30B789TSUI DF371261	05/31/2018	04/01/2019		49,878,194	00943501						(1,309,428)					124,695	1Z	0002

E18.223

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 1

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Open as of December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Current Year Income	Book/ Adjusted Carrying Value	Code	Fair Value	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Adjustment to Carrying Value of Hedged Item	Potential Exposure	Credit Quality of Reference Entity	Hedge Effectiveness at Inception and at Year-end (b)	
REC 5325999999.82 JPY PAY [50207106.67] USD /106638/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	.05/31/2018	.03/28/2019		.50,207,107	.00942679						(1,576,713)					122,982	1Z	0002	
REC 5349999999.88 JPY PAY [50616145.13] USD /106640/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	.05/31/2018	.05/08/2019		.50,616,145	.00946096						(1,590,683)					151,848	1Z	0002	
REC 5459499999.81 JPY PAY [51627893.34] USD /106643/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	.05/31/2018	.05/13/2019		.51,627,893	.00945652						(1,578,027)					157,020	1Z	0002	
REC 5460000000.36 JPY PAY [51630473.33] USD /106644/Awaiting PPN Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	.05/31/2018	.05/15/2019		.51,630,473	.00945613						(1,567,584)					159,136	1Z	0002	
1239999999. Subtotal - Forwards - Replication														XXX	(8,576,681)					3,158,205	XXX	XXX	
1269999999. Subtotal - Forwards													93,831,762	XXX	85,255,082	93,850,212				16,970,648	XXX	XXX	
1399999999. Subtotal - Hedging Effective														XXX								XXX	XXX
1409999999. Subtotal - Hedging Other										279,312,484	606,196,026	388,991,831	3,612,048,647	XXX	3,612,048,741	564,922,910					2,888,593,589	XXX	XXX
1419999999. Subtotal - Replication										607,391	17,404,600	62,175,495	16,556,484	XXX	(239,386,308)						1,521,171,037	XXX	XXX
1429999999. Subtotal - Income Generation														XXX								XXX	XXX
1439999999. Subtotal - Other														XXX								XXX	XXX
1449999999 - Totals										279,919,875	623,600,627	451,167,326	3,628,605,132	XXX	3,372,662,433	564,922,910		(988,845)			4,409,764,626	XXX	XXX

(a)

Code	Description of Hedged Risk(s)

(b)

Code	Financial or Economic Impact of the Hedge at the End of the Reporting Period
0001	Interest rate hedges reduced the portfolio's interest rate risk (duration, convexity, volatility, yield curve)
0002	Currency derivatives hedging foreign investments or liabilities back to USD
0003	Equity derivatives hedging portfolio's exposure to equity markets
0005	Bond index derivatives hedging portfolio's exposure to interest rates
0007	Credit default swaps replicate corporate credit positions
0008	Credit default swaps reduced credit risk through the purchase of credit protection
0013	MBS forward contracts, efficient investments in MBS through liquid TBA markt
0014	Interest rate swaps replicate corporate bond
0015	Interest rate swaps replicate corporate bank loan
0016	Interest rate swaps replicate asset backed securities, bonds and bank loan

E18.224

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)	
007999999 Subtotal	- Purchased Options -	- Hedging	Effective														XXX							XXX	
034068/4401	Call Options - 15 YEAR SWAP	VA Secondary Guarantees Clearly Defined Hedging Strategy	Interest	ROYAL BANK OF CANADA	04/14/2008	04/16/2018	04/10/2018	Amend Out		45,000,000	5.02000000	2,493,000		2,493,000				(11,601,944)						0001	
034330/13675	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	BARCLAYS BANK PLC	06/25/2009	05/15/2018	05/01/2018	Amend Out		95,000,000	4.40000000	3,120,750		3,120,750				(19,689,662)							0001
76269	Call Options - 30 YEAR SWAP	Portfolio Hedge	Interest	DEUTSCHE BANK AG/ MORGAN STANLEY/CLEARED THROUGH CIE	08/20/2014	08/20/2029	10/04/2018	Termination		50,000,000	3.51000000	5,352,500		6,780,000				(5,449,186)			1,427,500				0001
76572	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	DEUTSCHE BANK AG/ WELLSFARGOSEC/CLEARED THROUGH CIE	09/02/2014	09/04/2029	10/29/2018	Termination		50,000,000	3.54500000	3,627,500		4,015,000				(2,673,737)			387,500				0001
76578	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARED THROUGH CIE	09/03/2014	09/04/2029	11/09/2018	Termination		50,000,000	3.58000000	3,615,000		4,000,000				(2,935,061)			385,000				0001
81328	Call Options - 15 YEAR SWAP	VA Secondary Guarantees Clearly Defined Hedging Strategy	Interest	ROYAL BANK OF CANADA/ WELLSFARGOSEC/CLEARED THROUGH CIE	04/24/2015	03/20/2018	03/20/2018	Expiry		83,000,000	2.50000000	5,476,001						4,424,055			(5,476,001)				0001
81639	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	GOLDMAN SACHS BANK USA	05/13/2015	05/13/2030	09/18/2018	Termination		50,000,000	3.15000000	3,955,000		3,510,000				(1,155,716)			445,000				0001
81647	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	DEUTSCHE BANK AG	05/13/2015	05/13/2030	08/30/2018	Termination		125,000,000	3.15000000	9,900,000		9,975,000				(2,627,004)			75,000				0001
81994	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	JPMORGAN CHASE BANK, N.A.	06/05/2015	06/05/2030	09/19/2018	Termination		75,000,000	3.15500000	5,846,250		5,357,500				(1,968,613)			488,750				0001
82032	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	DEUTSCHE BANK AG	06/08/2015	06/10/2030	09/20/2018	Termination		75,000,000	3.17600000	5,820,000		5,150,000				(1,813,226)			670,000				0001
82037	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	JPMORGAN CHASE BANK, N.A.	06/09/2015	06/10/2030	09/20/2018	Termination		75,000,000	3.25500000	5,690,625		5,630,000				(2,601,519)			60,625				0001
95470	Call Options - 30 YEAR SWAP	Portfolio Hedge	Interest	MORGAN STANLEY CAPITAL SERVICES/ WELLSFARGOSEC/CLEARED THROUGH CIE	01/31/2017	01/30/2032	08/30/2018	Termination		36,500,000	2.68000000	4,872,750		3,958,600				12,224			914,150				0001
95794	Call Options - 30 YEAR SWAP	Portfolio Hedge	Interest	MORGAN STANLEY CAPITAL SERVICES	02/14/2017	02/16/2027	08/30/2018	Termination		47,000,000	2.80000000	6,509,500		5,029,000				706			1,480,500				0001
95870	Call Options - 30 YEAR SWAP	Portfolio Hedge	Interest	CREDIT AGRICOLE	02/16/2017	02/16/2024	08/30/2018	Termination		26,500,000	2.81000000	3,601,350		2,495,000				209,337			1,106,350				0001
96765	Call Options - 30 YEAR SWAP	Portfolio Hedge	Interest	MORGAN STANLEY CAPITAL SERVICES	03/24/2017	03/25/2024	09/06/2018	Assignment		11,000,000	2.77500000	1,444,300		990,440				40,048			453,860				0001
96784	Call Options - 30 YEAR SWAP	Portfolio Hedge	Interest	GOLDMAN SACHS BANK USA	03/27/2017	03/30/2027	09/06/2018	Termination		29,000,000	2.70000000	4,031,000		2,853,020				263,562			1,177,980				0001
98614	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	CREDIT AGRICOLE/ WELLSFARGOSEC/CLEARED THROUGH CIE	06/20/2017	06/21/2032	09/17/2018	Termination		60,000,000	2.58000000	5,025,000		3,255,000				748,567			1,770,000				0001
98618	Call Options - 15 YEAR SWAP	Portfolio Hedge	Interest	CREDIT AGRICOLE/ WELLSFARGOSEC/CLEARED THROUGH CIE	06/20/2017	06/21/2032	09/13/2018	Assignment		62,000,000	2.57500000	5,229,700		3,472,000				824,256			1,757,700				0001
98842	Call Options - 10 YEAR SWAP	Portfolio Hedge	Interest	MORGAN STANLEY CAPITAL SERVICES	06/30/2017	06/30/2032	09/11/2018	Termination		84,000,000	2.72500000	5,212,200		3,746,400				375,006			1,465,800				0001
103388	Call Options - ISAHRES EEM	Portfolio Hedge	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	01/30/2018	06/15/2018	06/15/2018	Expiry	50	50,000	55.00000000		40,000	(500)							40,500				0003
104200	Call Options - ISAHRES EEM	Portfolio Hedge	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	02/23/2018	06/15/2018	06/15/2018	Expiry	100	100,000	52.00000000		114,000	(2,000)							116,000				0003
104223	Call Options - SPDR Trust Series 1	Portfolio Hedge	Equity/Index	CLEARED THROUGH CITI GLOBAL MARK	02/26/2018	04/20/2018	04/20/2018	Expiry	30	30,000	286.00000000		43,500	(600)							44,100				0003

E19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
104300 Call Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/02/2018	06/15/2018	06/15/2018	Expiry	100	100,000	72.00000000		119,916	(2,000)							(121,916)			0003
034068/105303 Call Options - 15 YEAR SWAP	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5, Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	04/10/2018	04/16/2018	04/16/2018	Exercise		45,000,000	5.02000000		2,293,000								(2,293,000)			0001
034330/105895 Call Options - 15 YEAR SWAP	Portfolio Hedge	Exhibit 5	Interest	BARCLAYS BANK PLC CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	05/01/2018	05/15/2018	05/15/2018	Exercise		95,000,000	4.40000000		2,663,750								(2,663,750)			0001
108778 Call Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	08/15/2018	09/21/2018	08/16/2018	Assignment	100	100,000	42.00000000		80,000	102,999							22,999			0003
108795 Call Options - MWEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	08/15/2018	12/21/2018	09/26/2018	Termination	15	15,000	1950.00000000		540,000	1,181,198							641,198			0003
110798 Call Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/24/2018	12/21/2018	10/25/2018	Part Term	10	10,000	280.00000000		27,702	32,700							4,987			0003
110798 Call Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/24/2018	12/21/2018	10/25/2018	Termination	20	20,000	280.00000000		55,405	72,799							17,394			0003
110870 Call Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/26/2018	12/21/2018	10/29/2018	Termination	30	30,000	275.00000000		113,876	147,898							34,022			0003
110955 Call Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/29/2018	12/21/2018	10/30/2018	Termination	50	50,000	275.00000000		186,584	204,196							17,612			0003
110991 Call Options - MWEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	03/15/2019	12/03/2018	Termination	8	7,500	1850.00000000		352,500	370,950							18,450			0003
110992 Call Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	03/15/2019	11/28/2018	Termination	3	2,500	7050.00000000		657,500	630,150							(27,350)			0003
110993 Call Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	03/15/2019	12/03/2018	Termination	10	10,000	1570.00000000		490,000	459,600							(30,400)			0003
110994 Call Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	03/15/2019	11/30/2018	Part Term	5	5,000	2750.00000000		396,000	512,300							116,300			0003
110994 Call Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	03/15/2019	12/03/2018	Termination	10	10,000	2750.00000000		792,000	1,119,600							327,600			0003
111112 Call Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/06/2018	12/21/2018	12/21/2018	Expiry	75	75,000	293.00000000		50,764	(750)							(51,514)			0003
111262 Call Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES/ CLEARED THROUGH CITI GLOBAL MARK	11/14/2018	12/21/2018	11/15/2018	Part Term	100	100,000	41.00000000		66,000	117,148							51,148			0003
111262 Call Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES/ CLEARED THROUGH CITI GLOBAL MARK	11/14/2018	12/21/2018	11/28/2018	Assignment	100	100,000	41.00000000		66,000	104,176							38,176			0003
111490 Call Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/23/2018	12/21/2018	11/28/2018	Termination	100	100,000	41.00000000		55,000	104,176							49,176			0003
111494 Call Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/23/2018	12/21/2018	11/28/2018	Termination	4	3,700	41.00000000		1,850	3,855							2,005			0003
008999999. Subtotal - Purchased Options - Hedging Other - Call Options and Warrants												90,822,426	9,205,347	80,988,604			XXX	(45,617,907)			(19,039,169)		XXX	
9140 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL/ CLEARED THROUGH CITI GLOBAL MARK	12/17/2008	12/17/2018	12/17/2018	Amend Out		50,000,000	2.59250000	3,225,000		3,225,000							2,429,714			0001

E19.1

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
9143 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC / CLEARED THROUGH CITI GLOBAL MARK	12/17/2008	12/17/2018	12/17/2018	Expiry		90,000,000	3.65000000	3,555,000						3,454,120			(3,555,000)			0001
72994 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	HSC BANK USA, NATIONAL ASSOCIATION/ GOLDMAN SACHS/CLEARED THROUGH CME	03/07/2014	03/07/2024	05/31/2018	Termination		10,000,000	78.00000000	1,463,000		1,534,500				(384,535)			71,500			0002
73627 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	HSC BANK USA, NATIONAL ASSOCIATION	04/01/2014	04/01/2024	05/31/2018	Termination		25,000,000	78.00000000	3,736,750		3,812,500				(857,229)			75,750			0002
73730 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	HSC BANK USA, NATIONAL ASSOCIATION	04/08/2014	04/08/2024	05/31/2018	Termination		25,000,000	77.20000000	3,735,625		3,873,750				(999,958)			138,125			0002
74922 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	HSC BANK USA, NATIONAL ASSOCIATION	06/09/2014	06/07/2024	05/31/2018	Termination		25,000,000	78.00000000	3,500,000		3,662,500				(1,017,110)			152,500			0002
76268 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG/ MORGAN STANLEY/CLEARED THROUGH CME	08/20/2014	08/20/2029	10/04/2018	Termination		50,000,000	3.51000000	5,352,500		4,350,000				2,253,386			(1,002,500)			0001
76271 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	JPMORGAN CHASE BANK, N.A.	08/20/2014	08/22/2024	05/31/2018	Termination		25,000,000	79.20000000	3,617,500		3,371,450				(635,226)			1246,050			0002
76573 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG/ WELLSFARGOSEC/CLEARED THROUGH CME	09/02/2014	09/04/2029	10/29/2018	Termination		50,000,000	3.54500000	3,627,500		3,150,000				1,539,617			(477,500)			0001
76577 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARED THROUGH CME	09/03/2014	09/04/2029	11/09/2018	Termination		50,000,000	3.58000000	3,615,000		3,065,000				1,658,910			(550,000)			0001
77554 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	10/24/2014	10/28/2024	05/31/2018	Termination		25,000,000	84.50000000	3,600,000		2,458,575				305,979			(1,141,425)			0002
78851 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	DEUTSCHE BANK AG/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2014	12/19/2019	03/02/2018	Termination		6,475,000	1850.00000000	974,164		173,460				812,939			(800,704)			0003
78853 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	DEUTSCHE BANK AG/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2014	12/19/2019	03/02/2018	Termination		7,650,000	1700.00000000	1,009,429		161,528				860,168			(847,901)			0003
81154 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	HSC BANK USA, NATIONAL ASSOCIATION	04/14/2015	12/20/2019	02/12/2018	Termination		9,750,000	1950.00000000	1,610,250		325,000				1,322,900			(1,285,250)			0003
81626 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	GOLDMAN SACHS BANK USA	05/12/2015	05/12/2020	05/31/2018	Termination		25,000,000	107.60000000	2,218,000		600,000				1,127,629			(1,618,000)			0002
81640 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	05/13/2015	05/13/2030	09/18/2018	Termination		50,000,000	3.15000000	3,955,000		3,500,000				1,314,419			(455,000)			0001
81646 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	05/13/2015	05/13/2030	08/30/2018	Termination		125,000,000	3.15000000	9,900,000		8,775,000				3,042,971			(1,125,000)			0001
81993 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	06/05/2015	06/05/2030	09/19/2018	Termination		75,000,000	3.15500000	5,846,250		5,357,500				1,813,460			(488,750)			0001
82031 Put Options - 15 YEAR SWAP	Portfolio Hedge	Exhibit 5	Interest	DEUTSCHE BANK AG	06/08/2015	06/10/2030	09/20/2018	Termination		75,000,000	3.17600000	5,820,000		5,372,500				1,779,986			(447,500)			0001
82038 Put Options - 15 YEAR SWAP	Portfolio Hedge	Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	06/09/2015	06/10/2030	09/20/2018	Termination		75,000,000	3.25500000	5,690,625		4,939,000				1,920,886			(751,625)			0001
86547 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC	01/13/2016	12/18/2020	06/13/2018	Termination		9,625,000	1925.00000000	1,909,400		265,100				1,487,402			(1,644,300)			0003
86592 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	ROYAL BANK OF CANADA	01/15/2016	12/20/2019	02/08/2018	Assignment		28,500,000	1900.00000000	5,328,338		844,500				4,561,735			(4,483,838)			0003
86593 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC	01/15/2016	12/20/2019	02/12/2018	Assignment		19,000,000	1900.00000000	3,554,100		581,200				3,034,072			(2,972,900)			0003

E19.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/(Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
87087 Put Options - S&P 500 90420 Put Options - USD/JPY	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	HSEC BANK USA, NATIONAL ASSOCIATION/ CR SUI5 SEC USA/CLEARED THROUGH CMC	02/11/2016	12/20/2019	03/02/2018	Termination		4,845,000	1700.00000000	855,000		102,386				758,908			(752,614)			0003
90421 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	JPMORGAN CHASE BANK, N.A.	06/29/2016	05/06/2020	05/31/2018	Termination		25,000,000	108.10000000	2,275,000		568,000				1,243,925			(1,707,000)			0002
90422 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	JPMORGAN CHASE BANK, N.A.	06/29/2016	05/06/2020	05/31/2018	Termination		25,000,000	108.10000000	2,271,250		568,000				1,240,175			(1,703,250)			0002
90423 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	JPMORGAN CHASE BANK, N.A.	06/29/2016	05/07/2020	05/31/2018	Termination		25,000,000	107.00000000	2,230,000		652,500				1,084,986			(1,577,500)			0002
90546 Put Options - Rate- Levered Put Sprd-S&P 500 Index	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CR SUI5 SEC USA/CLEARED THROUGH CMC	06/29/2016	05/08/2020	05/31/2018	Termination		25,000,000	107.80000000	2,240,000		590,250				1,179,864			(1,649,750)			0002
90547 Put Options - Rate- Levered Put Sprd-S&P 500 Index	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CR SUI5 SEC USA/CLEARED THROUGH CMC	06/29/2016	06/04/2018	06/04/2018	Expiry		100,000,000	1923.85000000	1,320,000						1,320,000			(1,320,000)			0003
90548 Put Options - HYB Equity OTC	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CR SUI5 SEC USA/CLEARED THROUGH CMC	06/29/2016	07/30/2018	07/30/2018	Expiry		100,000,000	1974.50000000	2,100,000						2,099,970			(2,100,000)			0003
91037 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	ROYAL BANK OF CANADA	08/11/2016	12/20/2019	02/08/2018	Assignment		46,250,000	1850.00000000	4,988,750		1,270,750				3,839,173			(3,718,000)			0003
91038 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	ROYAL BANK OF CANADA	08/11/2016	12/20/2019	02/08/2018	Assignment		48,750,000	1950.00000000	5,861,750		1,556,250				4,444,570			(4,305,500)			0003
92300 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/04/2016	09/21/2018	02/05/2018	Termination	150	150,000	180.00000000	1,689,750		243,695				1,563,750			(1,446,055)			0003
92404 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/11/2016	09/21/2018	02/05/2018	Part Term	150	150,000	180.00000000	1,708,275		243,695				1,582,275			(1,464,580)			0003
92404 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/11/2016	09/21/2018	02/06/2018	Termination	50	50,000	180.00000000	569,425		132,961				527,425			(436,464)			0003
92919 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC/ CLEARED THROUGH CITI GLOBAL MARK	11/03/2016	12/18/2020	08/08/2018	Termination		48,125,000	1925.00000000	7,203,625		1,120,000				5,083,347			(6,083,625)			0003
93487 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/29/2016	09/21/2018	02/06/2018	Part Term	20	20,000	180.00000000	180,960		53,184				164,160			(127,776)			0003
93487 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/29/2016	09/21/2018	02/08/2018	Assignment	130	130,000	180.00000000	1,176,240		249,020				1,067,040			(927,220)			0003
93487 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/29/2016	09/21/2018	02/08/2018	Part Term	50	50,000	180.00000000	452,400		93,634				410,400			(358,766)			0003
93827 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2016	12/21/2018	12/21/2018	Expiry	150	150,000	190.00000000	1,787,250						1,518,750			(1,787,250)			0003
94005 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/09/2016	12/21/2018	12/21/2018	Expiry	150	150,000	190.00000000	1,758,243						1,489,743			(1,758,243)			0003
94322 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/13/2016	12/21/2018	12/21/2018	Expiry	150	150,000	190.00000000	1,757,176						1,488,676			(1,757,176)			0003
94536 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/16/2016	12/21/2018	12/21/2018	Expiry	150	150,000	190.00000000	1,746,999						1,478,499			(1,746,999)			0003

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
94552 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL/ CLEARED THROUGH CITI GLOBAL MARK	12/16/2016	12/18/2020	06/29/2018	Termination	16,340,000	2150.00000000	2,196,020		722,912					1,254,139			(1,473,108)			0003
94553 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC/ CLEARED THROUGH CITI GLOBAL MARK	12/16/2016	12/18/2020	06/13/2018	Termination	22,500,000	2250.00000000	3,398,500		986,700					1,945,447			(2,411,800)			0003
94646 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC/ CLEARED THROUGH CITI GLOBAL MARK	12/20/2016	12/17/2021	09/25/2018	Termination	22,500,000	2250.00000000	3,870,300		1,052,000					1,989,484			(2,818,300)			0003
94691 Put Options - SPDR	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEARED THROUGH CITI GLOBAL MARK	12/27/2016	12/21/2018	12/21/2018	Expiry	150	150,000	190.00000000		1,698,030					1,429,530			(1,698,030)			0003
94817 Put Options - SPDR	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC	01/03/2017	12/21/2018	02/02/2018	Part Term	62	62,300	205.00000000		985,586					813,015			(855,640)			0003
94817 Put Options - SPDR	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC	01/03/2017	12/21/2018	08/15/2018	Assignment	38	37,700	205.00000000		596,414					491,985			(571,437)			0003
95471 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES/ WELLSFARGOSEC/CLEARED THROUGH CME	01/31/2017	01/30/2032	08/30/2018	Termination	100,000,000	2.58000000	13,350,000		13,460,000					2,545,839			110,000			0001
95793 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	02/14/2017	02/16/2027	08/30/2018	Termination	100,000,000	2.80000000	13,850,000		13,020,000					3,797,276			(830,000)			0001
95869 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE HSC BANK USA, NATIONAL ASSOCIATION	02/16/2017	02/16/2024	08/30/2018	Termination	50,000,000	2.81000000	6,795,000		6,020,000					2,166,773			(775,000)			0001
95910 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	11EBVNSJCEQV1H4R804	02/17/2017	02/21/2018	02/21/2018	Expiry	18,265,500,000	110.70000000	7,000,000							3,803,609			(7,000,000)			0002
96715 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ WELLSFARGOSEC/CLEARED THROUGH CME	03/23/2017	12/20/2019	04/30/2018	Termination	5	5,000	2300.00000000		1,200,000					479,900			(720,100)			0003
96764 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARED THROUGH CME	03/24/2017	03/25/2024	09/06/2018	Assignment	19,500,000	2.77500000	2,560,350		2,473,575					717,039			(86,775)			0001
96781 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLSFARGOSEC/CLEARED THROUGH CME	03/27/2017	03/30/2027	09/06/2018	Termination	62,000,000	2.70000000	8,568,400		8,771,140					1,736,785			202,740			0001
96831 Put Options - 30 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	03/29/2017	03/30/2032	10/02/2018	Termination	83,000,000	2.64750000	11,092,950		11,688,000					1,661,689			595,050			0001
97259 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ WELLSFARGOSEC/CLEARED THROUGH CME	04/24/2017	12/20/2019	04/30/2018	Termination	10	10,000	2300.00000000		2,130,000					959,800			(1,170,200)			0003
97502 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC.	05/05/2017	12/20/2019	11/27/2018	Termination	10	10,000	2400.00000000		2,475,000					979,800			(1,495,200)			0003
97624 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ LEERINK SIYANN/ WELLSFARGOSEC/CLEARED THROUGH CME	05/17/2017	12/20/2019	03/26/2018	Termination	1	1,300	1400.00000000		250,900					127,140			(122,980)			0003
97633 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLSFARGOSEC/CLEARED THROUGH CME	05/17/2017	03/16/2018	02/08/2018	Termination	50	50,000	115.00000000		161,806					14,266			(147,540)			0003
97644 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLSFARGOSEC/CLEARED THROUGH CME	05/18/2017	03/16/2018	02/08/2018	Termination	50	50,000	115.00000000		167,500					159,500			(153,234)			0003
97774 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. GOLDMAN SACHS	05/22/2017	12/20/2019	03/26/2018	Termination	15	15,000	1400.00000000		2,853,650					1,476,000			(1,377,650)			0003
97870 Put Options - IXEA	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	WELLSFARGOSEC/CLEARED THROUGH CME	05/23/2017	12/20/2019	03/01/2018	Termination	17,500,000	1750.00000000	1,588,000		879,500					681,417			(708,500)			0003
97875 Put Options - IXEA	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC/ WELLSFARGOSEC/CLEARED THROUGH CME	05/23/2017	12/20/2019	02/28/2018	Termination	17,500,000	1750.00000000	1,567,300		766,800					670,065			(800,500)			0003
98571 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	DEUTSCHE BANK SECURITIES	06/16/2017	03/16/2018	02/05/2018	Assignment	70	70,000	120.00000000		232,400					216,300			(204,982)			0003

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A./C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
98615 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE/ WELLSFARGOSEC/CLEAR D THROUGH CIE	06/20/2017	06/21/2032	09/17/2018	Termination	135,000,000	2.58000000	11,306,250		12,622,500					974,101			1,316,250			0001
98617 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE/ WELLSFARGOSEC/CLEAR D THROUGH CIE	06/20/2017	06/21/2032	09/13/2018	Assignment	139,500,000	2.57500000	11,766,825		12,994,425					1,056,163			1,227,600			0001
98841 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES CITIGROUP GLOBAL MARKETS INC./ WELLSFARGOSEC/CLEAR D THROUGH CIE	06/30/2017	06/30/2032	09/11/2018	Termination	184,800,000	2.72500000	11,466,840		12,178,320					1,677,106			711,480			0001
98977 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ WELLSFARGOSEC/CLEAR D THROUGH CIE	07/11/2017	12/20/2019	03/26/2018	Part Term	4	3,700	1400.00000000	615,310		364,080				263,070			251,230			0003
98977 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ WELLSFARGOSEC/CLEAR D THROUGH CIE	07/11/2017	12/20/2019	04/30/2018	Termination	11	11,300	1400.00000000	1,879,190		824,674				803,430			1,054,516			0003
99002 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	07/12/2017	07/12/2032	10/25/2018	Termination	140,000,000	3.25000000	6,664,000		7,532,000					1,278,706			868,000			0001
99014 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC.	07/13/2017	12/20/2019	04/30/2018	Part Term	4	3,700	1400.00000000	594,031		270,026				241,791			324,005			0003
99014 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC.	07/13/2017	12/20/2019	05/16/2018	Termination	5	5,000	1400.00000000	802,745		279,900				326,745			522,845			0003
99162 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC	05/06/2017	12/18/2020	10/26/2018	Assignment	14,000,000	1400.00000000	1,877,200		1,203,280					608,779			673,920			0003
99198 Put Options - MMEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A.	04/18/2017	12/18/2020	12/19/2018	Termination	26,250,000	1750.00000000	2,574,420		2,572,500					821,491			1,920			0003
99202 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC	05/06/2017	12/18/2020	10/26/2018	Assignment	14,000,000	1400.00000000	1,841,600		1,203,280					573,179			638,320			0003
99215 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ WELLSFARGOSEC/CLEAR D THROUGH CIE	07/21/2017	03/15/2019	02/09/2018	Termination	111	111,000	220.00000000	1,135,258		1,160,664				549,178			25,406			0003
99223 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON/ WELLSFARGOSEC/CLEAR D THROUGH CIE	07/24/2017	12/18/2020	10/18/2018	Termination	21,000,000	1400.00000000	2,784,750		1,309,200					905,950			1,475,550			0003
99231 Put Options - MMEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A.	07/25/2017	12/18/2020	12/19/2018	Termination	26,250,000	1750.00000000	2,592,450		2,572,500					839,521			19,950			0003
99237 Put Options - S&P 500	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BNP PARIBAS LONDON LEERINK SIANN/ WELLSFARGOSEC/CLEAR D THROUGH CIE	07/26/2017	12/17/2021	08/21/2018	Termination	50,000,000	2000.00000000	4,463,000		1,961,500					1,406,994			2,501,500			0003
99255 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ WELLSFARGOSEC/CLEAR D THROUGH CIE	07/27/2017	03/15/2019	02/09/2018	Part Term	39	39,000	220.00000000	366,676		407,801				160,756			41,125			0003
99255 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ WELLSFARGOSEC/CLEAR D THROUGH CIE	07/27/2017	03/15/2019	02/23/2018	Termination	41	41,000	220.00000000	385,480		207,458				169,000			178,022			0003
99256 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ WELLSFARGOSEC/CLEAR D THROUGH CIE	07/28/2017	03/15/2019	02/23/2018	Termination	70	70,000	220.00000000	679,376		354,196				309,776			325,180			0003
99351 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC	08/01/2017	03/16/2018	02/05/2018	Part Term	30	30,000	120.00000000	55,500		11,750				48,600			143,750			0003
99351 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC	08/01/2017	03/16/2018	02/08/2018	Assignment	20	20,000	120.00000000	37,000		9,100				32,400			127,900			0003
99351 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC	08/01/2017	03/16/2018	02/08/2018	Part Term	50	50,000	120.00000000	92,500		20,803				81,000			171,698			0003
99353 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC	08/15/2017	03/16/2018	02/08/2018	Assignment	100	100,000	120.00000000	238,000		45,499				215,000			192,501			0003
99993 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/06/2017	06/21/2019	03/15/2018	Termination	150	150,000	220.00000000	1,742,465		920,915				705,965			182,550			0003
100182 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/12/2017	06/21/2019	03/23/2018	Termination	180	180,000	225.00000000	2,186,141		1,598,160				800,141			587,981			0003
100280 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	09/14/2017	06/15/2018	01/16/2018	Assignment	250	250,000	82.00000000	425,000		92,498				300,000			332,502			0003

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
100283 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/14/2017	06/21/2019	03/23/2018	Termination	120	120,000	225.00000000	1,434,652		1,065,440				510,652			369,212			0003
100306 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/15/2018	01/16/2018	Part Term	150	150,000	62.00000000	258,000		55,499				183,000			(202,501)			0003
100306 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/15/2018	02/13/2018	Part Term	250	250,000	62.00000000	430,000		247,494				305,000			182,506			0003
100306 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/15/2018	04/06/2018	Part Term	170	170,000	62.00000000	292,400		52,231				207,400			(240,169)			0003
100306 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/15/2018	06/15/2018	Expiry	44	44,000	62.00000000	75,680						53,680			(75,680)			0003
100307 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	03/23/2018	Part Term	20	20,000	225.00000000	238,879		177,573				84,879			(61,305)			0003
100307 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	05/16/2018	Part Term	100	100,000	225.00000000	1,194,394		524,088				424,394			(670,306)			0003
100307 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	05/23/2018	Termination	80	80,000	225.00000000	955,515		418,915				339,515			(536,600)			0003
100314 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	05/23/2018	Part Term	120	120,000	225.00000000	1,431,572		628,372				507,572			(803,200)			0003
100314 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	06/12/2018	Termination	80	80,000	225.00000000	954,381		336,334				338,381			(618,047)			0003
100316 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/15/2018	02/05/2018	Assignment	100	100,000	120.00000000	258,427		127,350				175,427			(131,077)			0003
100317 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	03/16/2018	02/08/2018	Part Term	30	30,000	40.00000000	24,000		6,920				19,200			(17,080)			0003
100317 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	03/16/2018	02/14/2018	Termination	470	470,000	40.00000000	376,000		49,349				300,800			(326,651)			0003
100337 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	09/18/2017	12/20/2019	02/14/2018	Termination	15	15,000	2200.00000000	1,882,500		1,377,200				475,500			(505,300)			0003
100345 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/20/2017	03/16/2018	02/14/2018	Part Term	30	30,000	40.00000000	22,800		3,150				18,000			(19,650)			0003
100345 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/20/2017	03/16/2018	02/14/2018	Termination	470	470,000	40.00000000	357,200		32,899				282,000			(324,301)			0003
100392 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	09/25/2017	06/15/2018	02/05/2018	Assignment	100	100,000	120.00000000	225,000		127,350				142,000			(97,650)			0003
100396 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/26/2017	06/15/2018	01/23/2018	Part Term	200	200,000	60.00000000	250,000		53,999				180,000			(196,001)			0003
100396 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/26/2017	06/15/2018	03/19/2018	Assignment	300	300,000	60.00000000	375,000		119,997				270,000			(255,003)			0003
100397 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	09/26/2017	12/20/2019	02/08/2018	Termination	20	20,000	2100.00000000	2,060,000		1,919,600				508,000			(140,400)			0003
100399 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/26/2017	06/21/2019	06/12/2018	Part Term	50	50,000	225.00000000	586,592		210,209				201,592			(376,383)			0003
100399 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/26/2017	06/21/2019	06/15/2018	Termination	50	50,000	225.00000000	586,592		220,747				201,592			(365,844)			0003
100415 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC.	09/26/2017	09/27/2032	09/25/2018	Termination		425,000,000	3.13600000	20,028,125		22,525,000				2,342,310			(2,496,875)			0001

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
100500 Put Options - MNEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	GOLDMAN SACHS INTERNATIONAL W22LROWP21HZNBBK528	09/27/2017	12/18/2020	12/07/2018	Termination		37,000,000	1850.00000000	4,013,600		4,160,400				907,365			146,800			0003
100634 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/06/2017	03/16/2018	02/14/2018	Part Term	30	30,000	40.00000000	20,100		2,100				15,300			(18,000)			0003
100634 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/06/2017	03/16/2018	03/16/2018	Expiry	470	470,000	40.00000000	314,900						239,700			(314,900)			0003
100678 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5, Schedule B, D, Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/10/2017	12/21/2018	01/17/2018	Termination	10	10,000	2400.00000000	1,005,000		452,800				322,000			(552,200)			0003
100717 Put Options - 10 YEAR SWAP	Portfolio Hedge	Exhibit 5	Interest	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/11/2017	10/12/2032	10/18/2018	Termination		149,000,000	3.23000000	6,955,320		8,060,900				1,074,275			1,105,580			0001
100719 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5, Schedule B, D, Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/12/2017	06/21/2019	06/15/2018	Termination	150	150,000	225.00000000	1,505,942		662,241				350,942			(843,701)			0003
100720 Put Options - 10 YEAR SWAP	Portfolio Hedge	Page 2 & Exhibit 5	Interest	USA/ CLEARED THROUGH CITI GLOBAL MARK	10/12/2017	10/12/2032	10/18/2018	Termination		149,000,000	3.21200000	6,906,150		7,980,650				1,068,650			1,074,500			0001
100794 Put Options - ISHARES Russell 2000	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/19/2017	06/15/2018	02/05/2018	Termination	80	80,000	120.00000000	122,296		101,880				55,896			(20,416)			0003
100978 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	10/26/2017	06/15/2018	03/19/2018	Part Term	100	100,000	60.00000000	84,000		39,999				49,000			(44,001)			0003
100978 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	10/26/2017	06/15/2018	03/28/2018	Termination	200	200,000	60.00000000	168,000		63,998				98,000			(104,002)			0003
101084 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	11/02/2017	06/21/2019	06/29/2018	Part Term	100	100,000	225.00000000	961,875		493,176				191,875			(468,699)			0003
101084 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	11/02/2017	06/21/2019	07/11/2018	Termination	100	100,000	225.00000000	961,875		405,495				191,875			(556,380)			0003
101217 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5, Schedule B, D, Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/09/2017	03/16/2018	01/16/2018	Assignment	100	100,000	65.00000000	79,000		11,000				53,000			(68,000)			0003
101227 Put Options - 10 YEAR SWAP	Portfolio Hedge	Page 2 & Exhibit 5, Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA/ CLEARED THROUGH CITI GLOBAL MARK	11/10/2017	11/10/2032	10/05/2018	Assignment		190,000,000	3.29000000	8,531,000		9,770,750				1,448,792			1,239,750			0001
101238 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES/ CLEARED THROUGH CITI GLOBAL MARK	11/10/2017	11/10/2032	10/04/2018	Termination		185,000,000	3.29500000	9,315,750		9,332,000				1,422,844			1,016,250			0001
101268 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	11/14/2017	12/21/2018	01/29/2018	Termination	10	10,000	2550.00000000	1,425,000		632,800				428,000			(792,200)			0003
101274 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	11/15/2017	12/21/2018	01/29/2018	Termination	10	10,000	2550.00000000	1,448,000		632,800				451,000			(815,200)			0003
101275 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/15/2017	06/15/2018	06/15/2018	Expiry	200	200,000	62.00000000	250,000						150,000			(250,000)			0003
101386 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/20/2017	03/16/2018	03/16/2018	Expiry	500	500,000	40.00000000	185,000						105,000			(185,000)			0003
101407 Put Options - Best of Put SPY-IIM-EFA-EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL/ CLEARED THROUGH CITI GLOBAL MARK	11/20/2017	11/20/2018	11/20/2018	Expiry		200,000,000	80.00000000	1,150,000						385,179			(1,150,000)			0003
101439 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/21/2017	03/16/2018	03/16/2018	Expiry	1,000	1,000,000	40.00000000	320,000						160,000			(320,000)			0003
101462 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A./ CLEARED THROUGH CITI GLOBAL MARK	11/21/2017	03/16/2018	01/16/2018	Part Term	100	100,000	65.00000000	79,000		11,000				53,000			(68,000)			0003

E19.7

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
101462 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	11/21/2017	03/16/2018	02/02/2018	Assignment	100	100,000	65.00000000	79,000		16,000				53,000			(63,000)			0003
101536 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	11/22/2017	12/21/2018	01/25/2018	Termination	10	10,000	2500.00000000	1,121,000		569,800				242,000			(551,200)			0003
101537 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	11/22/2017	12/21/2018	01/25/2018	Termination	10	10,000	2500.00000000	1,122,000		569,800				243,000			(552,200)			0003
101554 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	11/22/2017	12/21/2018	02/07/2018	Termination	10	10,000	1500.00000000	990,000		958,800				144,000			(31,200)			0003
101561 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC / CLEARED THROUGH CITI GLOBAL MARK	11/27/2017	12/21/2018	09/20/2018	Termination	500	500,000	40.00000000	875,000		369,995				225,000			(505,005)			0003
101582 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	11/28/2017	12/21/2018	02/07/2018	Termination	10	10,000	1500.00000000	976,000		958,800				130,000			(17,200)			0003
101583 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC / CLEARED THROUGH CITI GLOBAL MARK	11/28/2017	06/15/2018	06/15/2018	Expiry	200	200,000	62.00000000	173,000						73,000			(173,000)			0003
101591 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEARED THROUGH CITI GLOBAL MARK	11/28/2017	12/20/2019	03/23/2018	Termination	100	100,000	230.00000000	1,233,228		1,252,032				97,228			18,804			0003
101626 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC / CLEARED THROUGH CITI GLOBAL MARK	11/28/2017	12/17/2021	12/19/2018	Assignment		27,250,000	2500.00000000	3,124,594		3,329,950				282,698			205,356			0003
101654 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEARED THROUGH CITI GLOBAL MARK	11/30/2017	12/20/2019	03/23/2018	Termination	100	100,000	230.00000000	1,190,632		1,252,032				54,632			61,400			0003
101799 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	06/15/2018	03/12/2018	Part Term	500	500,000	40.00000000	500,000		119,997				250,000			(380,003)			0003
101799 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	06/15/2018	03/16/2018	Assignment	500	500,000	40.00000000	500,000		119,997				250,000			(380,003)			0003
101848 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC. / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	09/21/2018	03/27/2018	Part Term	250	250,000	60.00000000	320,000		234,995				122,500			(85,005)			0003
101848 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC. / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	09/21/2018	06/08/2018	Assignment	250	250,000	60.00000000	320,000		54,999				122,500			(265,001)			0003
101852 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	03/16/2018	02/02/2018	Part Term	100	100,000	65.00000000	61,181		16,000				35,181			(45,181)			0003
101852 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	03/16/2018	02/05/2018	Assignment	100	100,000	65.00000000	61,181		79,028				35,181			(17,847)			0003
101852 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	03/16/2018	02/05/2018	Part Term	100	100,000	65.00000000	61,181		29,073				35,181			(32,107)			0003
101862 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Equity/Index	NOMURA GLOBAL FINANCIAL PRODUCTS INC. / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	12/06/2032	09/28/2018	Termination		189,000,000	3.21000000	8,316,000		9,285,950				819,059			969,950			0003
101869 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON / CLEARED THROUGH CITI GLOBAL MARK	12/05/2017	12/06/2032	10/19/2018	Termination		193,000,000	3.22250000	8,434,100		10,518,500				799,961			2,084,400			0001
101884 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC / CLEARED THROUGH CITI GLOBAL MARK	12/05/2017	09/21/2018	06/20/2018	Assignment	300	300,000	40.00000000	439,500		122,998				166,500			(316,502)			0003

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
101937 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	09/21/2018	06/08/2018	Assignment	250	250,000	60.00000000	332,500		54,999				135,000			(277,501)			0003
101937 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	09/21/2018	06/08/2018	Part Term	250	250,000	60.00000000	332,500		54,999				135,000			(277,501)			0003
101939 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	12/20/2019	09/26/2018	Part Term	100	100,000	235.00000000	1,283,795		486,111				37,795			(797,684)			0003
101939 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	12/20/2019	09/27/2018	Termination	50	50,000	235.00000000	641,897		247,503				18,897			(394,394)			0003
101940 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	03/16/2018	02/08/2018	Part Term	200	200,000	65.00000000	132,000		177,996				80,000			45,996			0003
101940 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	03/16/2018	02/16/2018	Part Term	300	300,000	65.00000000	198,000		56,999				120,000			(141,001)			0003
101940 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	03/16/2018	02/21/2018	Assignment	500	500,000	65.00000000	330,000		64,998				200,000			(265,002)			0003
102005 Put Options - MNEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC / CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	09/21/2018	02/05/2018	Termination	10	10,000	1950.00000000	850,000		649,800				350,000			(200,200)			0003
102017 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/08/2017	12/20/2019	09/27/2018	Part Term	50	50,000	235.00000000	627,153		247,503				4,153			(379,649)			0003
102017 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/08/2017	12/20/2019	12/19/2018	Termination	50	50,000	235.00000000	627,153		595,231				4,153			(31,922)			0003
102090 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/11/2017	12/21/2018	09/20/2018	Part Term	500	500,000	40.00000000	850,000		369,995				200,000			(480,005)			0003
102090 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/11/2017	12/21/2018	10/08/2018	Part Term	200	200,000	40.00000000	340,000		276,042				80,000			(63,958)			0003
102090 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/11/2017	12/21/2018	10/23/2018	Assignment	250	250,000	40.00000000	425,000		567,493				100,000			(342,493)			0003
102127 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/11/2017	09/21/2018	06/08/2018	Assignment	18	18,100	60.00000000	21,339		3,982				7,040			(17,357)			0003
102170 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/12/2017	12/20/2019	12/19/2018	Termination	100	100,000	235.00000000	1,207,678		1,190,462				(38,322)			(17,216)			0003
102172 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/12/2017	06/15/2018	03/16/2018	Assignment	500	500,000	40.00000000	385,000		119,997				135,000			(265,003)			0003
102183 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/12/2017	09/21/2018	06/08/2018	Assignment	182	182,300	60.00000000	211,468		40,105				67,451			(171,363)			0003
102184 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/12/2017	09/21/2018	06/08/2018	Part Term	50	49,600	60.00000000	56,544		10,912				17,360			(45,632)			0003
102184 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/12/2017	09/21/2018	06/19/2018	Assignment	205	204,800	60.00000000	233,472		77,823				71,680			(155,649)			0003
102185 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	12/12/2017	09/21/2018	06/19/2018	Assignment	50	49,600	60.00000000	58,999		18,848				19,815			(40,151)			0003
102199 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/13/2017	06/15/2018	03/19/2018	Termination	500	500,000	40.00000000	355,000		134,997				105,000			(220,003)			0003
102201 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/13/2017	06/15/2018	04/18/2018	Assignment	500	500,000	40.00000000	330,000		39,999				80,000			(290,001)			0003
102208 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/13/2017	09/21/2018	06/19/2018	Part Term	146	145,600	60.00000000	160,160		55,327				45,136			(104,833)			0003

E19.9

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
102208 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/13/2017	09/21/2018	06/22/2018	Assignment	104	104,400	60.00000000	114,840		27,144				32,364			(87,696)			0003
102248 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC/ CLEARED THROUGH CITI GLOBAL MARK	12/13/2017	12/17/2021	12/19/2018	Termination		20,750,000	2500.00000000	2,181,489		2,548,100				(3,331)			366,611			0003
102252 Put Options - Best of Put SPY-IHM-EFA-EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL/ CLEARED THROUGH CITI GLOBAL MARK	12/14/2017	12/18/2018	12/18/2018	Expiry		200,000,000	80.00000000	1,110,000						315,670			(1,110,000)			0003
102263 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/14/2017	09/21/2018	06/22/2018	Part Term	296	295,600	60.00000000	328,116		76,855				94,592			(251,261)			0003
102263 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/14/2017	09/21/2018	07/06/2018	Assignment	204	204,400	60.00000000	226,884		49,055				85,408			(177,829)			0003
102271 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	12/21/2018	06/14/2018	Termination	146	145,600	60.00000000	232,960		81,535				49,504			(151,425)			0003
102278 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	06/15/2018	04/26/2018	Termination	500	500,000	40.00000000	332,500		49,999				82,500			(282,501)			0003
102279 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	12/21/2018	06/14/2018	Part Term	354	354,400	60.00000000	567,040		198,461				120,496			(368,579)			0003
102279 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	12/21/2018	08/14/2018	Assignment	146	145,600	60.00000000	232,960		85,903				49,504			(147,057)			0003
102280 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	09/21/2018	06/20/2018	Part Term	100	100,000	40.00000000	122,000		40,999				31,000			(81,001)			0003
102280 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	09/21/2018	07/24/2018	Part Term	250	250,000	40.00000000	305,000		59,999				77,500			(245,001)			0003
102280 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	09/21/2018	07/27/2018	Part Term	500	500,000	40.00000000	610,000		69,999				155,000			(540,001)			0003
102280 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	09/21/2018	09/21/2018	Expiry	150	150,000	40.00000000	183,000						46,500			(183,000)			0003
102282 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN/ CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	12/20/2019	12/19/2018	Termination	200	200,000	235.00000000	2,428,038		2,380,923				(63,962)			(47,115)			0003
102326 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	12/18/2017	09/21/2018	09/21/2018	Expiry	750	750,000	40.00000000	821,250						138,750			(821,250)			0003
102329 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/18/2017	12/21/2018	08/14/2018	Part Term	354	354,400	60.00000000	496,160		209,093				49,616			(287,067)			0003
102329 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/18/2017	12/21/2018	09/20/2018	Termination	146	145,600	60.00000000	203,840		27,664				20,384			(176,176)			0003
102362 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2017	03/15/2019	03/01/2018	Part Term	150	150,000	235.00000000	1,125,230		1,314,120				(8,770)			188,890			0003
102362 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2017	03/15/2019	03/02/2018	Part Term	100	100,000	235.00000000	750,153		942,807				(5,847)			192,654			0003
102362 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2017	03/15/2019	03/16/2018	Termination	50	50,000	235.00000000	375,077		333,260				(2,923)			(41,817)			0003

E19.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
102364 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	NOMURA GLOBAL FINANCIAL PRODUCTS INC. / CLEARED THROUGH CITI GLOBAL MARK	12/19/2017	12/20/2032	09/21/2018	Termination		348,000,000	3.00000000	16,695,300		19,595,000				1,039,086			2,899,700			0001
102369 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC. / CLEARED THROUGH CITI GLOBAL MARK	12/20/2017	03/16/2018	03/16/2018	Expiry	500	500,000	40.00000000	100,000						20,000			(100,000)			0003
102370 Put Options - Russell 2000	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BARCLAYS BANK PLC / CLEARED THROUGH CITI GLOBAL MARK	12/20/2017	12/17/2021	12/20/2018	Termination		17,500,000	1750.00000000	3,106,200		3,816,300				57,184			710,100			0003
102371 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEAR THROUGH CITI LEERINK SIANN / CLEARED THROUGH CITI GLOBAL MARK	12/20/2017	03/15/2019	03/16/2018	Part Term	350	350,000	235.00000000	2,624,354		2,332,820				(21,646)			(291,534)			0003
102371 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEAR THROUGH CITI LEERINK SIANN / CLEARED THROUGH CITI GLOBAL MARK	12/20/2017	03/15/2019	03/20/2018	Termination	275	275,000	235.00000000	2,061,993		2,039,506				(17,007)			(22,487)			0003
102425 Put Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	12/21/2017	12/21/2018	02/02/2018	Part Term	4	4,200	6200.00000000	1,257,900		1,045,716				(120,960)			(212,184)			0003
102425 Put Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	12/21/2017	12/21/2018	02/06/2018	Termination	1	800	6200.00000000	239,600		259,984				(23,040)			20,384			0003
102463 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEAR THROUGH CITI LEERINK SIANN / CLEARED THROUGH CITI GLOBAL MARK	12/27/2017	09/20/2019	03/22/2018	Part Term	50	50,000	240.00000000	612,200		665,442				20,200			53,242			0003
102463 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEAR THROUGH CITI LEERINK SIANN / CLEARED THROUGH CITI GLOBAL MARK	12/27/2017	09/20/2019	09/17/2018	Part Term	100	100,000	240.00000000	1,224,400		488,244				40,400			(736,156)			0003
102463 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEAR THROUGH CITI LEERINK SIANN / CLEARED THROUGH CITI GLOBAL MARK	12/27/2017	09/20/2019	09/21/2018	Termination	200	200,000	240.00000000	2,448,800		873,885				80,800			(1,574,915)			0003
102465 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC / CLEARED THROUGH CITI GLOBAL MARK	12/28/2017	12/21/2018	10/23/2018	Part Term	250	250,000	40.00000000	325,000		567,493							242,493			0003
102465 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC / CLEARED THROUGH CITI GLOBAL MARK	12/28/2017	12/21/2018	10/24/2018	Assignment	250	250,000	40.00000000	325,000		622,492							297,492			0003
102466 Put Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	12/28/2017	12/21/2018	02/06/2018	Termination	4	4,200	6200.00000000	1,331,400		1,364,916				(47,460)			33,516			0003
102471 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC / CLEARED THROUGH CITI GLOBAL MARK	12/29/2017	09/20/2019	09/21/2018	Assignment	100	100,000	240.00000000	1,196,000		436,942				12,000			(759,058)			0003
102572 Put Options - Best of Put SPY-IHM-EPA-EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL	01/04/2018	01/04/2019	02/09/2018	Termination		200,000,000	80.00000000			980,000							1,220,000			0003
102648 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE	01/10/2018	01/10/2033	10/19/2018	Termination		152,000,000	3.25000000			7,774,800							2,725,200			0001
102653 Put Options - 15 YEAR SWAP	Portfolio Hedge	Exhibit 5	Interest	GOLDMAN SACHS BANK USA	01/11/2018	01/11/2033	10/01/2018	Termination		172,500,000	3.26500000			8,797,500							2,102,500			0001
102726 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC - Credit Suisse Securities (USA) LLC	01/16/2018	12/21/2018	03/01/2018	Assignment	200	200,000	65.00000000			314,000							278,986			0003
102727 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC - Credit Suisse Securities (USA) LLC	01/16/2018	12/21/2018	11/20/2018	Part Term	200	200,000	62.00000000			226,000							148,995			0003
102727 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC - Credit Suisse Securities (USA) LLC	01/16/2018	12/21/2018	11/30/2018	Assignment	200	200,000	62.00000000			226,000							(33,003)			0003
102744 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	01/17/2018	12/21/2018	02/05/2018	Termination	10	10,000	2700.00000000			1,000,000							709,600			0003
102748 Put Options - 15 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	01/18/2018	01/18/2033	09/25/2018	Termination		157,000,000	3.09500000			8,635,000							2,433,497			0001

E19.11

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/(Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
103219 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC / CLEARED THROUGH CITI GLOBAL MARK	01/23/2018	06/15/2018	02/05/2018	Part Term	100	100,000	70.00000000		93,000	190,996							97,996			0003
103219 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC / CLEARED THROUGH CITI GLOBAL MARK	01/23/2018	06/15/2018	02/13/2018	Assignment	100	100,000	70.00000000		93,000	296,014							203,014			0003
103275 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	01/25/2018	12/21/2018	02/05/2018	Termination	20	20,000	2800.00000000		2,455,000	3,239,200							784,200			0003
103520 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC / CLEARED THROUGH CITI GLOBAL MARK	02/02/2018	12/21/2018	04/02/2018	Termination	200	200,000	65.00000000		370,000	544,987							174,987			0003
103529 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CLEARED THROUGH CITI GLOBAL MARK	02/02/2018	09/20/2019	09/21/2018	Part Term	50	50,000	240.00000000		500,750	217,721							283,029			0003
103529 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN / CLEARED THROUGH CITI GLOBAL MARK	02/02/2018	09/20/2019	09/21/2018	Termination	12	12,300	240.00000000		123,185	53,134							70,050			0003
103550 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC / CLEARED THROUGH CITI GLOBAL MARK	02/05/2018	12/21/2018	09/06/2018	Assignment	200	200,000	65.00000000		464,000	335,996							128,004			0003
103649 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	02/07/2018	06/21/2019	06/11/2018	Termination	20	20,000	1500.00000000		2,478,000	899,200							1,578,800			0003
103674 Put Options - S&P 500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CREDIT SUISSE INTERNATIONAL CREDIT SUISSE SECURITIES USA LLC / CLEARED THROUGH CITI GLOBAL MARK	02/08/2018	12/18/2020	06/29/2018	Termination		39,000,000	2600.00000000		3,958,350	3,039,000							919,350			0003
103681 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC / CLEARED THROUGH CITI GLOBAL MARK	02/08/2018	12/21/2018	09/20/2018	Termination	200	200,000	60.00000000		396,000	34,999							361,001			0003
103682 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	02/08/2018	12/20/2019	05/16/2018	Termination	10	10,000	1400.00000000		1,250,000	559,600							690,400			0003
103683 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN / CLEARED THROUGH CITI GLOBAL MARK	02/08/2018	12/21/2018	10/26/2018	Termination	30	30,000	40.00000000		55,222	83,660							28,438			0003
103791 Put Options - Russell 2000	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	HSCB BANK USA NATIONAL ASSOCIATION	02/12/2018	12/18/2020	12/07/2018	Termination		15,500,000	1550.00000000		2,129,600	1,783,900							345,700			0003
103822 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC	02/13/2018	12/21/2018	11/30/2018	Part Term	100	100,000	62.00000000		245,000	96,499							148,501			0003
103822 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC	02/13/2018	12/21/2018	12/06/2018	Assignment	150	150,000	62.00000000		367,500	297,746							69,754			0003
103824 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	DEUTSCHE BANK SECURITIES	02/13/2018	12/21/2018	12/06/2018	Part Term	50	50,000	62.00000000		124,990	99,249							25,741			0003
103824 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	DEUTSCHE BANK SECURITIES	02/13/2018	12/21/2018	12/11/2018	Assignment	50	50,000	62.00000000		124,990	98,524							26,466			0003
103844 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC	02/14/2018	12/21/2018	10/26/2018	Part Term	170	170,000	40.00000000		246,500	474,074							227,574			0003
103844 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC	02/14/2018	12/21/2018	11/08/2018	Assignment	330	330,000	40.00000000		478,500	356,395							122,105			0003
103846 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC	02/14/2018	12/21/2018	11/08/2018	Part Term	420	420,000	40.00000000		579,600	453,594							126,006			0003
103846 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC	02/14/2018	12/21/2018	11/19/2018	Assignment	80	80,000	40.00000000		110,400	98,799							11,601			0003
103901 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC.	02/15/2018	12/20/2019	12/20/2018	Termination	10	10,000	1550.00000000		1,570,000	2,454,000							884,000			0003
103923 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC	02/16/2018	06/15/2018	02/28/2018	Part Term	200	200,000	65.00000000		174,000	169,996							4,004			0003
103923 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC	02/16/2018	06/15/2018	06/15/2018	Expiry	100	100,000	65.00000000		87,000	1,000							88,000			0003
104101 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC / CLEARED THROUGH CITI GLOBAL MARK	02/21/2018	06/15/2018	06/15/2018	Expiry	500	500,000	65.00000000		395,000	5,000							400,000			0003
104197 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN / CLEARED THROUGH CITI GLOBAL MARK	02/23/2018	09/20/2019	09/21/2018	Termination	111	111,000	240.00000000		1,246,577	479,503							767,074			0003

E19.12

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
104199 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	02/23/2018	01/18/2019	03/02/2018	Termination	10	10,000	2700.00000000		1,380,000	1,779,600							399,600			0003
104253 Put Options - MMEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC ... 4PQUHNSJFFGFNF388653	02/27/2018	12/20/2019	06/19/2018	Termination	20	20,000,000	2000.00000000		1,520,650	1,590,000							69,350			0003
104264 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	02/28/2018	09/21/2018	04/02/2018	Assignment	200	200,000	65.00000000		342,000	392,991							50,991			0003
104297 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	INC/ CLEARED THROUGH CITI GLOBAL MARK	03/01/2018	12/21/2018	09/20/2018	Assignment	200	200,000	60.00000000		386,000	34,999							(351,001)			0003
104307 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	03/02/2018	01/18/2019	03/26/2018	Termination	10	10,000	2500.00000000		1,150,000	1,139,600							(10,400)			0003
104333 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/02/2018	12/21/2018	09/20/2018	Part Term	204	204,400	60.00000000		369,964	34,747							(335,217)			0003
104333 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/02/2018	12/21/2018	10/15/2018	Termination	46	45,600	60.00000000		82,536	31,920							(50,616)			0003
104568 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	03/12/2018	09/21/2018	05/02/2018	Assignment	500	500,000	42.00000000		402,500	399,991							(2,509)			0003
104643 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	INC/ CLEARED THROUGH CITI GLOBAL MARK	03/14/2018	09/21/2018	04/06/2018	Part Term	100	100,000	63.00000000		122,000	123,497							1,497			0003
104643 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	03/14/2018	09/21/2018	09/21/2018	Expiry	150	150,000	63.00000000		183,000	(3,000)							(186,000)			0003
104667 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/15/2018	09/20/2019	09/21/2018	Termination	150	150,000	240.00000000		1,617,568	647,978							(969,590)			0003
104684 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	03/15/2018	01/18/2019	04/04/2018	Termination	5	5,000	2750.00000000		757,500	1,209,500							452,000			0003
104685 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/15/2018	09/21/2018	05/29/2018	Assignment	4	4,000	43.00000000		4,000	4,400							400			0003
104703 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/21/2018	09/06/2018	Part Term	300	300,000	63.00000000		535,500	323,996							(211,504)			0003
104703 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/21/2018	10/10/2018	Assignment	100	100,000	63.00000000		178,500	109,774							(68,726)			0003
104705 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	09/21/2018	05/29/2018	Part Term	496	496,000	43.00000000		505,920	543,113							37,193			0003
104705 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	09/21/2018	06/01/2018	Assignment	504	504,000	43.00000000		514,080	385,555							(128,525)			0003
104706 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/21/2018	05/15/2018	Assignment	750	750,000	43.00000000		1,203,750	1,214,971							11,221			0003
104709 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/21/2018	05/15/2018	Assignment	500	500,000	43.00000000		800,000	809,981							9,981			0003
104710 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/20/2019	12/18/2018	Part Term	100	100,000	245.00000000		1,301,227	1,550,268							249,041			0003
104710 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/20/2019	12/21/2018	Termination	200	200,000	245.00000000		2,602,453	3,740,459							1,138,006			0003

E19.13

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
104710 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMN/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/20/2019	12/24/2018	Termination	100	100,000	245.00000000		1,301,227	2,254,061							952,854			0003
104715 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/19/2018	06/15/2018	04/24/2018	Part Term	250	250,000	45.00000000		195,000	182,512							(12,488)			0003
104715 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/19/2018	06/15/2018	05/29/2018	Assignment	150	150,000	45.00000000		117,000	89,999							(27,001)			0003
104715 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	03/19/2018	06/15/2018	05/29/2018	Part Term	100	100,000	45.00000000		78,000	55,999							(22,001)			0003
104724 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	03/19/2018	09/21/2018	07/06/2018	Part Term	96	95,600	60.00000000		95,600	21,510							(74,090)			0003
104724 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	03/19/2018	09/21/2018	07/25/2018	Assignment	304	304,400	60.00000000		304,400	28,918							(275,482)			0003
104795 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMN/ CLEARED THROUGH CITI GLOBAL MARK	03/20/2018	03/20/2020	05/29/2018	Part Term	50	50,000	245.00000000		756,434	720,413							(36,022)			0003
104795 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMN/ CLEARED THROUGH CITI GLOBAL MARK	03/20/2018	03/20/2020	12/20/2018	Assignment	225	225,000	245.00000000		3,403,955	4,765,783							1,361,829			0003
104905 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMN/ CLEARED THROUGH CITI GLOBAL MARK	03/23/2018	12/20/2019	12/21/2018	Part Term	100	100,000	245.00000000		1,652,425	1,870,230							217,805			0003
104905 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMN/ CLEARED THROUGH CITI GLOBAL MARK	03/23/2018	12/20/2019	12/27/2018	Termination	100	100,000	245.00000000		1,652,425	2,047,770							395,345			0003
104907 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMN/ CLEARED THROUGH CITI GLOBAL MARK	03/23/2018	06/21/2019	06/25/2018	Part Term	200	200,000	245.00000000		2,691,411	1,817,176							(874,235)			0003
104907 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMN/ CLEARED THROUGH CITI GLOBAL MARK	03/23/2018	06/21/2019	06/27/2018	Termination	120	120,000	245.00000000		1,614,847	958,635							(656,211)			0003
104915 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	03/26/2018	01/18/2019	06/15/2018	Termination	10	10,000	2650.00000000		1,628,000	689,600							(938,400)			0003
104923 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	03/26/2018	12/20/2019	12/20/2018	Termination	20	20,000	1550.00000000		3,058,400	4,908,000							1,849,600			0003
105013 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	03/27/2018	03/15/2019	10/23/2018	Assignment	250	250,000	60.00000000		447,500	428,744							(18,756)			0003
105050 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	03/28/2018	03/15/2019	10/23/2018	Part Term	150	150,000	60.00000000		270,000	257,247							(12,753)			0003
105050 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	03/28/2018	03/15/2019	12/20/2018	Assignment	50	50,000	60.00000000		90,000	132,748							42,748			0003
105054 Put Options - MXEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	03/28/2018	06/15/2018	05/01/2018	Termination	10	10,000	1990.00000000		635,000	149,600							(485,400)			0003
105095 Put Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	03/29/2018	06/15/2018	05/01/2018	Termination	3	2,500	6550.00000000		677,750	386,650							(291,100)			0003
105096 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	04/02/2018	03/15/2019	12/20/2018	Assignment	200	200,000	60.00000000		386,000	530,993							144,993			0003
105100 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	04/02/2018	03/15/2019	12/20/2018	Assignment	200	200,000	60.00000000		398,000	530,993							132,993			0003

E19.14

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
105140	Put Options - S&P 500 Index Listed	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	04/04/2018	01/18/2019	04/17/2018	Termination	10	10,000	2550.00000000		1,524,700	849,600							(675,100)			0003
105175	Put Options - ISHARES EAFE	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	04/05/2018	03/15/2019	12/20/2018	Termination	300	300,000	60.00000000		480,000	794,990							314,990			0003
105186	Put Options - ISHARES EAFE	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	04/05/2018	03/15/2019	12/20/2018	Assignment	100	100,000	60.00000000		152,000	264,997							112,997			0003
105434	Put Options - NASDAQ 100 Index Listed	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	04/12/2018	08/17/2018	06/25/2018	Termination	3	2,500	6550.00000000		682,500	219,900							462,600			0003
105564	Put Options - S&P 500 Index Listed	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	04/17/2018	03/15/2019	04/25/2018	Termination	10	10,000	2750.00000000		1,640,000	2,017,600							377,600			0003
105575	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	04/18/2018	06/15/2018	05/29/2018	Part Term	300	300,000	45.00000000		120,000	385,998							65,998			0003
105575	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	04/18/2018	06/15/2018	06/15/2018	Termination	200	200,000	45.00000000		80,000	16,000							(64,000)			0003
105723	Put Options - S&P 500 Index Listed	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	04/25/2018	06/21/2019	08/17/2018	Termination	10	10,000	2650.00000000		1,800,000	824,600							975,400			0003
105750	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	04/26/2018	03/15/2019	10/12/2018	Part Term	200	200,000	42.00000000		372,000	672,014							300,014			0003
105750	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	04/26/2018	03/15/2019	10/16/2018	Part Term	200	200,000	42.00000000		372,000	578,992							206,992			0003
105750	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	04/26/2018	03/15/2019	11/09/2018	Assignment	100	100,000	42.00000000		186,000	338,496							152,496			0003
105884	Put Options - Russell 2000 Index Listed	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	04/30/2018	12/20/2019	10/25/2018	Termination	15	15,000	1600.00000000		2,130,000	2,423,397							293,397			0003
105885	Put Options - S&P 500 Index Listed	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	04/30/2018	12/20/2019	12/04/2018	Termination	15	15,000	2600.00000000		2,583,000	2,089,400							483,600			0003
105893	Put Options - NASDAQ 100 Index Listed	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	05/01/2018	09/21/2018	06/08/2018	Termination	3	2,500	6550.00000000		710,500	200,900							(509,600)			0003
105894	Put Options - MXXE Index	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	05/01/2018	09/21/2018	05/24/2018	Termination	10	10,000	2030.00000000		612,500	549,600							(62,900)			0003
105917	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	05/02/2018	03/15/2019	11/09/2018	Part Term	100	100,000	42.00000000		183,000	338,496							155,496			0003
105917	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	05/02/2018	03/15/2019	11/20/2018	Part Term	300	300,000	42.00000000		549,000	1,117,485							568,485			0003
105917	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	05/02/2018	03/15/2019	12/06/2018	Assignment	100	100,000	42.00000000		183,000	330,903							147,903			0003
106254	Put Options - ISHARES EEM	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	05/15/2018	03/15/2019	12/06/2018	Part Term	200	200,000	42.00000000		358,000	661,805							303,805			0003

E19.15

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
106254 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	05/15/2018	03/15/2019	12/10/2018	Part Term	200	200,000	42.00000000		358,000	704,628							346,628			0003
106254 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	05/15/2018	03/15/2019	12/14/2018	Part Term	500	500,000	42.00000000		895,000	1,559,979							664,979			0003
106254 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	05/15/2018	03/15/2019	12/20/2018	Assignment	350	350,000	42.00000000		626,500	1,266,983							640,483			0003
106273 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	05/16/2018	03/20/2020	12/20/2018	Assignment	100	100,000	245.00000000		1,268,300	2,118,126							849,826			0003
106278 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	05/16/2018	12/18/2020	12/28/2018	Termination	15	15,000	1600.00000000		2,175,000	4,239,590							2,064,590			0003
106507 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	05/23/2018	03/20/2020	12/20/2018	Assignment	200	200,000	245.00000000		2,560,800	4,236,252							1,675,452			0003
106549 Put Options - MNEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	05/24/2018	12/21/2018	06/19/2018	Termination	10	10,000	1975.00000000		587,500	799,600							212,100			0003
106584 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	05/25/2018	09/21/2018	06/28/2018	Termination	10	10,000	2700.00000000		649,300	699,600							50,300			0003
106600 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	05/29/2018	12/21/2018	11/19/2018	Part Term	20	20,000	40.00000000		23,000	24,700							1,700			0003
106600 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	05/29/2018	12/21/2018	11/30/2018	Assignment	230	230,000	40.00000000		264,500	192,047							(72,453)			0003
106601 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	05/29/2018	12/21/2018	11/30/2018	Part Term	70	70,000	40.00000000		81,200	58,449							(22,751)			0003
106601 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	05/29/2018	12/21/2018	12/06/2018	Assignment	430	430,000	40.00000000		498,800	554,693							55,893			0003
106706 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/01/2018	03/15/2019	12/20/2018	Assignment	504	504,000	42.00000000		846,720	1,824,456							977,736			0003
107034 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/08/2018	03/15/2019	12/20/2018	Assignment	500	500,000	60.00000000		467,500	1,329,983							862,483			0003
107035 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/08/2018	03/15/2019	12/20/2018	Assignment	54	54,400	60.00000000		50,864	143,070							92,206			0003
107035 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/08/2018	03/15/2019	12/20/2018	Part Term	446	445,600	60.00000000		416,636	1,185,280							768,644			0003
107085 Put Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	06/08/2018	03/15/2019	07/27/2018	Termination	3	2,500	7150.00000000		968,500	793,150							(175,350)			0003
107138 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	06/11/2018	06/21/2019	07/27/2018	Part Term	6	6,100	1650.00000000		523,380	542,816							19,436			0003
107138 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	06/11/2018	06/21/2019	07/30/2018	Termination	14	13,900	1650.00000000		1,192,620	1,245,501							52,881			0003
107167 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	06/12/2018	03/20/2020	12/20/2018	Assignment	130	130,000	245.00000000		1,434,800	2,753,564							1,318,764			0003
107219 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/14/2018	03/15/2019	12/20/2018	Assignment	500	500,000	60.00000000		450,000	1,314,983							864,983			0003

E19.16

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
107230 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	06/25/2018	Part Term	100	100,000	43.00000000		92,500	148,887							56,387			0003
107230 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	06/27/2018	Termination	100	100,000	43.00000000		92,500	160,998							68,498			0003
107231 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	06/25/2018	Part Term	200	200,000	65.00000000		128,000	204,185							76,185			0003
107231 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	06/28/2018	Assignment	300	300,000	65.00000000		192,000	356,995							164,995			0003
107237 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	06/28/2018	Assignment	500	500,000	43.00000000		470,000	897,488							427,488			0003
107238 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	06/28/2018	Part Term	100	100,000	65.00000000		61,000	118,998							57,998			0003
107238 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	09/21/2018	Expiry	400	400,000	65.00000000		244,000	(4,000)							1,248,000			0003
107252 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	08/14/2018	Part Term	50	50,000	43.00000000		45,500	51,499							5,999			0003
107252 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	08/15/2018	Part Term	50	50,000	43.00000000		45,500	91,999							46,499			0003
107252 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	09/04/2018	Part Term	250	250,000	43.00000000		227,500	267,496							39,996			0003
107252 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	09/21/2018	09/05/2018	Assignment	150	150,000	43.00000000		136,500	219,402							82,902			0003
107256 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SWANN/ CLEARED THROUGH CITI GROUP GLOBAL MARKETS INC./	06/15/2018	03/20/2020	12/20/2018	Assignment	200	200,000	245.00000000		2,285,950	4,236,252							1,950,302			0003
107257 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	12/20/2019	10/26/2018	Termination	10	10,000	2800.00000000		1,938,000	2,594,600							656,600			0003
107258 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	03/15/2019	09/19/2018	Termination	300	300,000	40.00000000		414,000	419,994							5,994			0003
107302 Put Options - MNEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	06/19/2018	06/21/2019	10/24/2018	Termination	10	10,000	1850.00000000		835,000	1,226,200							391,200			0003
107303 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/19/2018	12/21/2018	10/15/2018	Assignment	400	400,000	60.00000000		352,000	283,996							(68,004)			0003
108052 Put Options - MNEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	MORGAN STANLEY & CO. INTERNATIONAL PLC	06/19/2018	12/18/2020	09/26/2018	Termination	19,000	190,000,000	1900.00000000		1,590,000	1,280,100							(309,900)			0003
107313 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	06/20/2018	03/15/2019	09/19/2018	Assignment	400	400,000	40.00000000		608,000	561,993							(46,007)			0003
107432 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/22/2018	12/21/2018	10/10/2018	Part Term	100	100,000	63.00000000		116,000	110,274							(5,726)			0003
107432 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/22/2018	12/21/2018	10/23/2018	Part Term	125	125,000	63.00000000		145,000	283,121							138,121			0003
107432 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/22/2018	12/21/2018	10/24/2018	Assignment	175	175,000	63.00000000		203,000	378,870							175,870			0003

E19.17

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)	
107468 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMM/ CLEARED THROUGH CITI GLOBAL MARK	06/25/2018	06/19/2020	12/20/2018	Assignment	200	200,000	250.00000000		3,278,300	4,848,937							1,570,637			0003	
107549 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMM/ CLEARED THROUGH CITI GLOBAL MARK	06/27/2018	06/19/2020	12/20/2018	Assignment	120	120,000	250.00000000		1,822,296	2,909,362							1,087,066				0003
107565 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	06/28/2018	09/21/2018	09/21/2018	Expiry	500	500,000	40.00000000		395,000	(5,000)							400,000				0003
107566 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/28/2018	12/21/2018	12/19/2018	Assignment	100	100,000	62.00000000		139,000	304,906							165,906				0003
107566 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/28/2018	12/21/2018	12/20/2018	Assignment	300	300,000	62.00000000		417,000	914,314							497,314				0003
107619 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	06/28/2018	03/15/2019	07/27/2018	Termination	10	10,000	2700.00000000		1,322,000	759,600							562,400				0003
107676 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMM/ CLEARED THROUGH CITI GLOBAL MARK	06/29/2018	06/19/2020	12/20/2018	Assignment	100	100,000	250.00000000		1,506,184	2,424,468							918,284				0003
107693 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	06/29/2018	03/15/2019	09/19/2018	Assignment	250	250,000	40.00000000		427,500	349,995							(77,505)				0003
107692 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC	07/06/2018	06/21/2019	12/20/2018	Assignment	300	300,000	60.00000000		486,000	1,157,989							671,989				0003
108006 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAMM/ CLEARED THROUGH CITI GLOBAL MARK	07/11/2018	06/19/2020	12/20/2018	Assignment	100	100,000	250.00000000		1,364,500	2,423,968							1,059,468				0003
108215 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	07/24/2018	09/21/2018	09/05/2018	Part Term	50	50,000	43.00000000		37,500	73,134							35,634				0003
108215 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	07/24/2018	09/21/2018	09/06/2018	Assignment	200	200,000	43.00000000		150,000	313,068							163,068				0003
108233 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	07/25/2018	06/21/2019	12/20/2018	Assignment	304	304,400	60.00000000		392,676	1,174,973							782,297				0003
108385 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	07/27/2018	12/21/2018	12/06/2018	Part Term	170	170,000	40.00000000		118,150	220,147							101,997				0003
108385 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	07/27/2018	12/21/2018	12/07/2018	Part Term	300	300,000	40.00000000		208,500	361,495							152,995				0003
108385 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	07/27/2018	12/21/2018	12/19/2018	Assignment	30	30,000	40.00000000		20,850	22,280							1,430				0003
108388 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	07/27/2018	12/20/2019	12/04/2018	Termination	10	10,000	2800.00000000		1,687,000	1,799,600							112,600				0003
108392 Put Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	07/27/2018	12/20/2019	10/10/2018	Termination	3	2,500	7300.00000000		1,380,750	1,537,400							156,650				0003
108399 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	07/27/2018	12/18/2020	10/10/2018	Termination	6	6,100	1700.00000000		1,011,992	1,201,456							189,464				0003
108417 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	07/30/2018	12/18/2020	10/10/2018	Part Term	4	3,900	1700.00000000		657,175	768,144							110,969				0003

E19.18

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
108417 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	07/30/2018	12/18/2020	12/14/2018	Termination	10	10,000	1700.00000000		1,685,063	2,843,500							1,158,437			0003
108708 Put Options - MXEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	08/10/2018	12/21/2018	09/26/2018	Termination	8	7,500	1950.00000000		442,500	178,200							(264,300)			0003
108712 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	08/10/2018	09/21/2018	09/05/2018	Termination	10	10,000	1675.00000000		219,000	44,600							(174,400)			0003
108745 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	08/14/2018	06/21/2019	12/20/2018	Assignment	396	395,600	60.00000000		589,444	1,527,002							937,558			0003
108745 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	08/14/2018	06/21/2019	12/21/2018	Assignment	104	104,400	60.00000000		155,556	434,820							279,264			0003
108796 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	08/15/2018	12/21/2018	10/11/2018	Part Term	20	20,000	265.00000000		96,650	121,498							24,848			0003
108796 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	08/15/2018	12/21/2018	10/23/2018	Termination	18	17,700	265.00000000		85,536	112,984							27,448			0003
108809 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	08/16/2018	12/21/2018	12/19/2018	Assignment	200	200,000	40.00000000		254,000	146,534							(107,466)			0003
108810 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	08/16/2018	12/21/2018	10/23/2018	Part Term	12	12,300	265.00000000		45,723	78,452							32,730			0003
108810 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	08/16/2018	12/21/2018	10/24/2018	Part Term	20	20,000	265.00000000		74,346	138,030							63,684			0003
108810 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	08/16/2018	12/21/2018	10/25/2018	Termination	18	17,700	265.00000000		65,796	102,305							36,508			0003
108838 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	08/17/2018	06/19/2020	12/21/2018	Termination	10	10,000	2750.00000000		1,780,000	3,449,600							1,669,600			0003
109233 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/04/2018	06/21/2019	12/20/2018	Assignment	250	250,000	40.00000000		530,000	778,740							248,740			0003
109278 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	09/05/2018	01/18/2019	10/02/2018	Termination	10	10,000	1700.00000000		470,000	699,600							229,600			0003
109297 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/06/2018	03/15/2019	09/19/2018	Assignment	200	200,000	40.00000000		385,447	280,996							(104,451)			0003
109298 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	09/06/2018	06/21/2019	12/21/2018	Assignment	200	200,000	60.00000000		308,000	832,989							524,989			0003
109299 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/06/2018	06/21/2019	12/21/2018	Assignment	300	300,000	60.00000000		465,000	1,249,484							784,484			0003
109609 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/17/2018	06/19/2020	12/20/2018	Assignment	100	100,000	250.00000000		998,750	2,424,468							1,425,718			0003
109692 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/19/2018	06/21/2019	12/20/2018	Assignment	650	650,000	40.00000000		1,254,500	2,044,223							789,723			0003
109692 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/19/2018	06/21/2019	12/20/2018	Part Term	500	500,000	40.00000000		965,000	1,557,480							592,480			0003
109735 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/20/2018	06/21/2019	12/20/2018	Assignment	1,000	1,000,000	40.00000000		1,780,000	3,144,959							1,364,959			0003

E19.19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
109750 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/20/2018	03/15/2019	12/20/2018	Assignment	500	500,000	40.00000000		641,933	1,199,984							558,051			0003
109750 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/20/2018	03/15/2019	12/21/2018	Assignment	200	200,000	40.00000000		256,773	451,994							195,221			0003
109751 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/20/2018	06/21/2019	12/21/2018	Part Term	396	395,600	60.00000000		474,720	1,647,652							1,172,932			0003
109751 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/20/2018	06/21/2019	12/21/2018	Termination	354	354,400	60.00000000		425,280	1,476,057							1,050,777			0003
109752 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/20/2018	06/21/2019	12/21/2018	Assignment	300	300,000	60.00000000		288,000	1,250,984							962,984			0003
109786 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	12/21/2018	10/24/2018	Part Term	125	125,000	63.00000000		47,500	271,246							223,746			0003
109786 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	12/21/2018	10/29/2018	Part Term	200	200,000	63.00000000		76,000	577,485							501,485			0003
109786 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	12/21/2018	10/30/2018	Part Term	100	100,000	63.00000000		38,000	257,338							219,338			0003
109786 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	12/21/2018	11/09/2018	Assignment	75	75,000	63.00000000		28,500	96,602							68,102			0003
109798 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	03/15/2019	12/21/2018	Assignment	500	500,000	40.00000000		600,000	1,129,985							529,985			0003
109799 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	06/21/2019	12/20/2018	Assignment	500	500,000	40.00000000		845,000	1,569,979							724,979			0003
109809 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	06/19/2020	12/13/2018	Part Term	73	73,300	260.00000000		824,853	1,517,524							692,672			0003
109809 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	06/19/2020	12/14/2018	Part Term	100	100,000	260.00000000		1,125,311	2,179,817							1,054,506			0003
109809 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	06/19/2020	12/20/2018	Termination	100	100,000	260.00000000		1,125,311	2,944,854							1,819,543			0003
109810 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	09/18/2020	12/20/2018	Termination	350	350,000	260.00000000		4,417,198	10,818,694							6,401,496			0003
109969 Put Options - MNEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	09/26/2018	03/15/2019	10/10/2018	Termination	18	18,000	2000.00000000		1,161,000	2,249,280							1,088,280			0003
109972 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/26/2018	09/18/2020	12/11/2018	Termination	100	100,000	265.00000000		1,380,923	2,539,713							1,158,790			0003
109973 Put Options - MNEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	SOCIETE GENERAL C2RNE81BXP4ROTDBPU41 LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/26/2018	12/17/2021	10/11/2018	Termination	38,000,000	1900.00000000		3,183,800	5,800,000								2,616,200			0003
110001 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/27/2018	09/18/2020	12/20/2018	Termination	100	100,000	265.00000000		1,398,202	3,288,648							1,890,446			0003
110093 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/02/2018	06/21/2019	10/10/2018	Termination	15	15,000	1600.00000000		975,000	1,342,800							367,800			0003
110214 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	12/21/2018	10/26/2018	Part Term	100	100,000	245.00000000		109,314	328,496							219,182			0003

E19.20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
110214 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	12/21/2018	10/30/2018	Part Term	300	300,000	245.00000000		327,942	850,273							522,331			0003
110214 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	12/21/2018	11/20/2018	Part Term	50	50,000	245.00000000		54,657	88,549							33,892			0003
110214 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	12/21/2018	12/06/2018	Part Term	200	200,000	245.00000000		218,628	253,318							34,691			0003
110214 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	12/21/2018	12/17/2018	Termination	106	105,800	245.00000000		115,654	77,372							(38,283)			0003
110233 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	12/21/2018	12/17/2018	Termination	116	116,300	245.00000000		116,850	85,050							(31,800)			0003
110235 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	03/15/2019	12/10/2018	Part Term	100	100,000	245.00000000		258,386	526,643							268,258			0003
110235 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	03/15/2019	12/17/2018	Part Term	100	100,000	245.00000000		258,386	692,090							433,704			0003
110235 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	03/15/2019	12/17/2018	Termination	50	50,000	245.00000000		129,193	342,232							213,039			0003
110236 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	06/21/2019	12/17/2018	Part Term	158	157,500	245.00000000		693,610	1,638,182							944,572			0003
110236 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	06/21/2019	12/17/2018	Termination	93	92,500	245.00000000		407,358	973,812							566,454			0003
110267 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/08/2018	03/15/2019	12/17/2018	Termination	100	100,000	245.00000000		245,800	684,464							438,664			0003
110269 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/08/2018	06/21/2019	12/17/2018	Termination	100	100,000	245.00000000		423,105	1,052,770							629,665			0003
110272 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/08/2018	03/15/2019	12/17/2018	Termination	100	100,000	245.00000000		249,186	684,464							435,278			0003
110273 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/08/2018	06/21/2019	12/17/2018	Termination	100	100,000	245.00000000		431,596	1,052,770							621,174			0003
110287 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	06/21/2019	12/17/2018	Termination	400	400,000	245.00000000		1,676,592	4,211,078							2,534,486			0003
110289 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	09/20/2019	12/17/2018	Assignment	1,000	1,000,000	230.00000000		4,179,276	8,784,885							4,605,609			0003
110295 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	03/15/2019	12/17/2018	Part Term	383	382,500	245.00000000		922,694	2,647,416							1,724,723			0003
110295 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	03/15/2019	12/18/2018	Termination	75	75,000	245.00000000		180,920	511,918							330,998			0003
110297 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	06/21/2019	12/17/2018	Termination	58	57,500	245.00000000		245,630	605,343							259,713			0003
110300 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	12/21/2018	12/17/2018	Termination	45	45,000	245.00000000		37,350	33,358							(3,991)			0003
110301 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	09/20/2019	12/17/2018	Termination	70	70,000	245.00000000		403,468	877,935							474,467			0003
110305 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	03/15/2019	12/21/2018	Assignment	200	200,000	40.00000000		378,000	451,994							73,994			0003
110318 Put Options - MNEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC./ CLEARED THROUGH CITI GLOBAL MARK	10/10/2018	06/21/2019	10/18/2018	Termination	18	18,000	1900.00000000		1,890,000	2,321,280							431,280			0003

El 9.21

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
110320 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITI GROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	10/10/2018	12/20/2019	12/04/2018	Termination	15	15,000	1530.00000000		1,365,900	1,658,520							292,620			0003
110372 Put Options - NASDAQ 100 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITI GROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	10/11/2018	01/18/2019	10/24/2018	Termination	3	2,500	7000.00000000		742,500	874,900							132,400			0003
110417 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/12/2018	06/21/2019	12/20/2018	Assignment	200	200,000	38.00000000		407,665	434,994							27,329			0003
110426 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/15/2018	03/15/2019	12/20/2018	Termination	446	445,600	60.00000000		592,648	1,169,685							577,037			0003
110455 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/16/2018	06/21/2019	12/20/2018	Termination	400	400,000	38.00000000		700,000	869,989							169,989			0003
110734 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/23/2018	03/15/2019	12/19/2018	Assignment	500	500,000	37.00000000		785,000	427,494							357,506			0003
110739 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/23/2018	09/20/2019	12/21/2018	Assignment	125	125,000	57.00000000		288,750	403,120							114,370			0003
110757 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES/ CLEARED THROUGH CITI GLOBAL MARK	10/23/2018	06/21/2019	12/21/2018	Assignment	400	400,000	57.00000000		660,000	1,125,985							465,985			0003
110782 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/24/2018	06/21/2019	12/21/2018	Termination	300	300,000	60.00000000		705,000	1,249,484							544,484			0003
110789 Put Options - MXEA Index	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITI GROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	10/24/2018	09/20/2019	12/31/2018	Termination	10	10,000	1750.00000000		956,600	1,213,600							257,000			0003
110801 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/24/2018	12/21/2018	11/01/2018	Assignment	250	250,000	37.00000000		280,000	158,748							121,252			0003
110830 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITI GROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	10/25/2018	12/20/2019	12/04/2018	Termination	15	15,000	1400.00000000		1,229,009	1,214,400							14,609			0003
110837 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/25/2018	06/21/2019	12/21/2018	Part Term	200	200,000	35.00000000		284,000	259,402							124,598			0003
110837 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/25/2018	06/21/2019	12/31/2018	Termination	100	100,000	35.00000000		142,000	104,499							137,501			0003
110857 Put Options - S&P 500 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITI GROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	10/26/2018	06/21/2019	12/21/2018	Termination	10	10,000	2600.00000000		1,400,000	1,989,600							589,600			0003
110876 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/29/2018	12/21/2018	12/20/2018	Termination	200	200,000	60.00000000		291,673	277,226							14,447			0003
110877 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/29/2018	09/20/2019	12/17/2018	Termination	52	51,900	245.00000000		506,969	649,938							142,969			0003
110883 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	12/21/2018	12/20/2018	Termination	100	100,000	60.00000000		125,054	138,613							13,559			0003
110884 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIVANN/ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	03/15/2019	12/17/2018	Assignment	250	250,000	235.00000000		1,112,542	984,987							127,555			0003
110990 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	06/21/2019	12/21/2018	Assignment	204	204,400	60.00000000		504,868	823,721							318,853			0003
110990 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	06/21/2019	12/21/2018	Part Term	46	45,600	60.00000000		112,632	189,694							77,062			0003

E19.22

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
111003 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	10/31/2018	06/21/2019	12/20/2018	Assignment	400	400,000	38.00000000		932,000	867,989							(64,011)			0003
111005 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	BARCLAYS CAPITAL INC/ CLEARED THROUGH CITI GLOBAL MARK	10/31/2018	09/20/2019	12/21/2018	Termination	125	125,000	57.00000000		257,500	402,495							144,995			0003
111007 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/31/2018	09/20/2019	12/17/2018	Termination	80	80,000	245.00000000		741,334	1,001,832							260,498			0003
111077 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/01/2018	06/21/2019	12/20/2018	Termination	300	300,000	38.00000000		546,000	650,991							104,991			0003
111078 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/01/2018	06/21/2019	12/21/2018	Assignment	250	250,000	58.00000000		386,614	789,990							403,376			0003
111111 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/06/2018	09/20/2019	12/17/2018	Termination	30	30,000	245.00000000		248,057	375,687							127,630			0003
111162 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES/ CLEARED THROUGH CITI GLOBAL MARK	11/08/2018	03/15/2019	12/21/2018	Termination	750	750,000	40.00000000		1,361,250	1,694,978							333,728			0003
111163 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/08/2018	12/21/2018	11/09/2018	Termination	20	20,000	270.00000000		53,000	64,584							11,584			0003
111173 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/09/2018	09/20/2019	12/17/2018	Termination	20	20,000	245.00000000		139,085	250,558							111,473			0003
111233 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/09/2018	12/21/2018	12/20/2018	Termination	75	75,000	60.00000000		36,913	104,335							67,422			0003
111403 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES/ CLEARED THROUGH CITI GLOBAL MARK	11/20/2018	12/21/2018	12/20/2018	Assignment	200	200,000	60.00000000		200,000	277,226							77,226			0003
111749 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/30/2018	06/21/2019	12/20/2018	Assignment	300	300,000	38.00000000		489,000	652,491							163,491			0003
111750 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	11/30/2018	09/20/2019	12/21/2018	Assignment	300	300,000	57.00000000		576,000	967,487							391,487			0003
111866 Put Options - Russell 2000 Index Listed	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIGROUP GLOBAL MARKETS INC. / CLEARED THROUGH CITI GLOBAL MARK	12/04/2018	12/18/2020	12/28/2018	Termination	15	15,000	1550.00000000		2,343,761	3,752,859							1,409,099			0003
111910 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/06/2018	06/21/2019	12/20/2018	Assignment	600	600,000	38.00000000		1,176,000	1,301,983							125,983			0003
111912 Put Options - ISAHRES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	12/06/2018	09/20/2019	12/21/2018	Assignment	200	200,000	57.00000000		500,000	644,992							144,992			0003
111913 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/06/2018	03/15/2019	12/17/2018	Assignment	200	200,000	235.00000000		781,258	787,990							6,732			0003
111983 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2018	06/21/2019	12/20/2018	Assignment	300	300,000	38.00000000		606,000	650,991							44,991			0003
112121 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/13/2018	06/19/2020	12/31/2018	Termination	73	73,300	230.00000000		854,606	1,092,763							238,157			0003
112229 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/14/2018	06/19/2020	12/31/2018	Termination	100	100,000	230.00000000		1,232,803	1,490,809							258,006			0003
112230 Put Options - ISAHRES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/14/2018	09/20/2019	12/27/2018	Assignment	500	500,000	37.00000000		1,035,000	1,212,484							177,484			0003

E19.23

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
112276 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAM/ CLEARED THROUGH CITI GLOBAL MARK	12/17/2018	03/15/2019	12/20/2018	Termination	75	75,000	230.00000000		284,559	400,007							115,448			0003
112287 Put Options - 10 YEAR SWAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL/ CLEARED THROUGH CITI GLOBAL MARK	12/17/2018	12/17/2018	12/17/2018	Exercise		50,000,000	2.59250000		3,310,625								(3,310,625)			0001
112383 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2018	06/21/2019	12/21/2018	Assignment	100	100,000	60.00000000		378,410	403,495							25,085			0003
112396 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	12/20/2018	03/15/2019	12/20/2018	Assignment	600	600,000	58.00000000		1,002,000	1,109,985							107,985			0003
112412 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES/ CLEARED THROUGH CITI GLOBAL MARK	12/20/2018	03/20/2020	12/27/2018	Part Term	100	100,000	225.00000000		1,410,650	1,318,434							(92,216)			0003
112422 Put Options - ISHARES EEM	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	WELLS FARGO SECURITIES/ CLEARED THROUGH CITI GLOBAL MARK	12/20/2018	06/21/2019	12/31/2018	Part Term	400	400,000	35.00000000		528,000	419,994							108,006			0003
112423 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/20/2018	03/15/2019	12/21/2018	Part Term	400	400,000	55.00000000		404,000	448,283							44,283			0003
112424 Put Options - ISHARES EAFE	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIAM/ CLEARED THROUGH CITI GLOBAL MARK	12/20/2018	06/21/2019	12/27/2018	Part Term	500	500,000	53.00000000		778,056	892,488							114,432			0003
009999999. Subtotal - Purchased Options - Hedging Other - Put Options												455,677,087	225,285,924	655,851,151		XXX	138,068,574				(25,111,860)		XXX	
106014 Caps - 10-20MS QUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	05/07/2018	05/09/2019	05/29/2018	Termination		1,500,000,000	06700000		1,935,000	2,700,000							765,000			0001
106085 Caps - 10-20MS QUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	05/09/2018	05/09/2019	08/31/2018	Termination		1,500,000,000	07500000		1,980,000	1,293,750							(686,250)			0001
106086 Caps - 10-20MS QUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	05/09/2018	05/09/2019	08/31/2018	Termination		1,500,000,000	07500000		1,942,500	1,293,750							(648,750)			0001
106699 Caps - 10-20MS QUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	05/31/2018	05/31/2019	08/31/2018	Termination		1,500,000,000	08500000		2,085,000	1,331,250							(753,750)			0001
106700 Caps - 10-20MS QUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	05/31/2018	06/04/2019	08/31/2018	Termination		1,500,000,000	09200000		2,122,500	1,270,000							(852,500)			0001
107205 Caps - 10-20MS QUV CAP	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	06/13/2018	06/15/2019	08/31/2018	Termination		1,500,000,000	03500000		2,070,000	1,575,000							(495,000)			0001
010999999. Subtotal - Purchased Options - Hedging Other - Caps													12,135,000	9,463,750		XXX					(2,671,250)		XXX	
014999999. Subtotal - Purchased Options - Hedging Other												546,499,512	246,626,271	746,303,504		XXX	92,450,667				(46,822,279)		XXX	
021999999. Subtotal - Purchased Options - Replications																XXX								XXX
028999999. Subtotal - Purchased Options - Income Generation																XXX								XXX
035999999. Subtotal - Purchased Options - Other																XXX								XXX
036999999. Total Purchased Options - Call Options and Warrants												90,822,426	9,205,347	80,988,604		XXX	(45,617,907)				(19,039,169)		XXX	
037999999. Total Purchased Options - Put Options												455,677,087	225,285,924	655,851,151		XXX	138,068,574				(25,111,860)		XXX	
038999999. Total Purchased Options - Caps													12,135,000	9,463,750		XXX					(2,671,250)		XXX	
039999999. Total Purchased Options - Floors																XXX								XXX
040999999. Total Purchased Options - Collars																XXX								XXX
041999999. Total Purchased Options - Collars																XXX								XXX
042999999. Total Purchased Options - Other																XXX								XXX
049999999. Subtotal - Written Options - Hedging Effective												546,499,512	246,626,271	746,303,504		XXX	92,450,667				(46,822,279)		XXX	
93488 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK	11/29/2016	09/21/2018	02/08/2018	Assignment	50	50,000	105.00000000		(50,000)	(10,884)							(46,000)			0003

E19.24

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
93580 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/01/2016	12/21/2018	02/02/2018	Assignment	50	50,000	110.00000000	(80,887)		(3,673)				(76,387)			77,213			0003
93828 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/07/2016	12/21/2018	02/02/2018	Part Term	12	12,300	110.00000000	(17,571)		904				(16,464)			16,667			0003
93828 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/07/2016	12/21/2018	02/05/2018	Assignment	88	87,700	110.00000000	125,279		(7,893)				(117,386)			117,386			0003
93828 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/07/2016	12/21/2018	02/05/2018	Part Term	100	100,000	110.00000000	142,850		(7,000)				(133,850)			135,850			0003
94006 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/09/2016	12/21/2018	02/05/2018	Part Term	12	12,300	110.00000000	(17,627)		(1,107)				(16,520)			16,520			0003
94006 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/09/2016	12/21/2018	03/01/2018	Termination	138	137,700	110.00000000	197,332		(32,721)				(184,939)			164,611			0003
94323 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/13/2016	12/21/2018	03/01/2018	Part Term	62	62,300	110.00000000	(93,680)		(14,804)				(88,073)			78,876			0003
94323 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/13/2016	12/21/2018	03/19/2018	Termination	88	87,700	110.00000000	131,874		(16,698)				(123,981)			115,176			0003
94537 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/16/2016	12/21/2018	03/19/2018	Part Term	21	21,300	110.00000000	(32,973)		(4,055)				(31,056)			28,917			0003
94537 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/16/2016	12/21/2018	03/22/2018	Part Term	91	91,000	110.00000000	140,869		(16,969)				(132,679)			123,900			0003
94537 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/16/2016	12/21/2018	03/23/2018	Termination	38	37,700	110.00000000	(58,360)		(9,101)				(54,967)			49,259			0003
94692 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/27/2016	12/21/2018	03/23/2018	Part Term	112	112,300	110.00000000	163,385		(27,110)				(153,278)			136,275			0003
94692 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	12/27/2016	12/21/2018	10/25/2018	Termination	38	37,700	110.00000000	(54,850)		(1,131)				(51,457)			53,719			0003
96577 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	03/14/2017	09/21/2018	02/05/2018	Termination	100	100,000	115.00000000	(65,900)		(16,154)				(58,900)			49,746			0003
96651 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	03/17/2017	09/21/2018	02/05/2018	Part Term	200	200,000	115.00000000	126,844		(32,307)				(112,844)			94,537			0003
96651 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	03/17/2017	09/21/2018	02/06/2018	Part Term	70	70,000	115.00000000	(44,395)		(29,100)				(39,495)			15,295			0003
96651 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	03/17/2017	09/21/2018	02/08/2018	Termination	80	80,000	115.00000000	(50,738)		(22,209)				(45,138)			28,529			0003
97590 Put Options - USD/JPY	Portfolio Hedge	Page 2	Currency	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	05/02/2017	02/21/2018	02/21/2018	Expiry	18,265,500	500,000	110.70000000	(5,329,500)						(2,056,812)			5,329,500			0002
99216 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	07/21/2017	03/15/2019	02/09/2018	Termination	111	111,000	120.00000000	(64,008)		(93,743)				(28,488)			(29,735)			0003
99254 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	07/27/2017	03/15/2019	02/09/2018	Part Term	39	39,000	120.00000000	(18,975)		(32,937)				(6,495)			(13,961)			0003
99254 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	07/27/2017	03/15/2019	02/23/2018	Termination	41	41,000	120.00000000	(19,949)		(14,070)				(6,829)			5,879			0003
99257 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	JONES TRADING INSTITUTIONAL SERVICES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	07/28/2017	03/15/2019	02/23/2018	Termination	70	70,000	120.00000000	(36,508)		(24,021)				(14,108)			12,487			0003
99492 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK LEERINK SIANN/	08/10/2017	09/21/2018	02/08/2018	Assignment	50	50,000	150.00000000	(50,000)		(47,210)				(33,500)			2,790			0003

E19.25

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
99992 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/06/2017	06/21/2019	03/15/2018	Termination	150	150,000	125.00000000	135,548		77,067				(42,548)			58,481			0003
100183 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/12/2017	06/21/2019	05/16/2018	Part Term	100	100,000	125.00000000	84,415		33,500				(22,415)			50,915			0003
100183 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/12/2017	06/21/2019	05/23/2018	Termination	80	80,000	125.00000000	67,532		25,200				(17,932)			42,332			0003
100282 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/14/2017	06/21/2019	05/23/2018	Termination	120	120,000	125.00000000	100,372		37,800				(25,972)			62,572			0003
100308 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	06/12/2018	Part Term	130	130,000	125.00000000	107,213		30,700				(26,613)			76,513			0003
100308 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	06/15/2018	Termination	70	70,000	125.00000000	57,730		16,800				(14,330)			40,930			0003
100315 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	06/15/2018	Part Term	130	130,000	125.00000000	107,757		31,200				(27,157)			76,557			0003
100315 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/15/2017	06/21/2019	06/25/2018	Termination	70	70,000	125.00000000	58,023		22,400				(14,623)			35,623			0003
100400 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/26/2017	06/21/2019	06/25/2018	Termination	100	100,000	125.00000000	79,597		32,000				(17,597)			47,597			0003
100718 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/12/2017	06/21/2019	06/25/2018	Part Term	30	30,000	125.00000000	22,699		9,600				(4,099)			13,099			0003
100718 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/12/2017	06/21/2019	06/27/2018	Termination	120	120,000	125.00000000	90,798		30,000				(16,398)			60,798			0003
101083 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/02/2017	06/21/2019	06/29/2018	Part Term	100	100,000	125.00000000	77,265		26,000				(15,265)			51,265			0003
101083 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/02/2017	06/21/2019	07/11/2018	Termination	100	100,000	125.00000000	77,265		21,000				(15,265)			56,265			0003
101590 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/28/2017	12/20/2019	12/19/2018	Termination	100	100,000	130.00000000	124,636		54,861				7,364			69,775			0003
101655 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	11/30/2017	12/20/2019	12/19/2018	Termination	100	100,000	130.00000000	125,102		54,861				6,898			70,241			0003
101938 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/07/2017	12/20/2019	12/19/2018	Termination	150	150,000	130.00000000	177,732		82,291				20,268			95,441			0003
102016 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/08/2017	12/20/2019	12/21/2018	Termination	100	100,000	130.00000000	114,595		79,272				17,405			35,323			0003
102171 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/12/2017	12/20/2019	12/21/2018	Termination	100	100,000	130.00000000	109,675		79,272				22,325			30,403			0003
102281 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	12/20/2019	12/21/2018	Part Term	100	100,000	130.00000000	110,029		79,272				21,971			30,757			0003
102281 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/15/2017	12/20/2019	12/27/2018	Termination	100	100,000	130.00000000	110,029		86,486				21,971			23,543			0003
102363 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2017	03/15/2019	03/01/2018	Part Term	150	150,000	135.00000000	73,021		112,196				4,980			(39,176)			0003
102363 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2017	03/15/2019	03/02/2018	Part Term	100	100,000	135.00000000	48,680		82,972				3,320			(34,292)			0003
102363 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/19/2017	03/15/2019	03/16/2018	Termination	50	50,000	135.00000000	24,340		23,813				1,660			528			0003
102372 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/20/2017	03/15/2019	03/16/2018	Part Term	350	350,000	135.00000000	162,444		166,688				19,556			(4,244)			0003

El 9.26

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
102372 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/20/2017	03/15/2019	03/20/2018	Termination	275	275,000	135.00000000	(127,634)		(149,515)				15,366			(21,881)			0003
102464 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/27/2017	09/20/2019	03/22/2018	Part Term	50	50,000	135.00000000	(52,916)		(56,838)				9,084			(3,922)			0003
102464 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/27/2017	09/20/2019	09/17/2018	Part Term	100	100,000	135.00000000	(105,833)		(28,500)				18,167			(77,333)			0003
102464 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/27/2017	09/20/2019	09/21/2018	Termination	200	200,000	135.00000000	(211,666)		(57,883)				36,334			(153,782)			0003
102472 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	CREDIT SUISSE SECURITIES USA LLC/ CLEARED THROUGH CITI GLOBAL MARK	12/29/2017	09/20/2019	09/21/2018	Assignment	100	100,000	135.00000000	(107,000)		(28,942)				17,000			(78,058)			0003
103528 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	02/02/2018	09/20/2019	09/21/2018	Part Term	50	50,000	135.00000000		(36,895)	(14,972)							(21,923)			0003
103528 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	02/02/2018	09/20/2019	09/21/2018	Termination	12	12,300	135.00000000		(9,076)	(3,487)							(5,589)			0003
103566 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	02/05/2018	12/21/2018	10/30/2018	Termination	100	100,000	160.00000000		(70,000)	(12,949)							(57,051)			0003
103567 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	UBS SECURITIES LLC/ CLEARED THROUGH CITI GLOBAL MARK	02/05/2018	12/21/2018	10/30/2018	Assignment	100	100,000	160.00000000		(86,000)	(12,949)							(73,051)			0003
104198 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	02/23/2018	09/20/2019	09/21/2018	Termination	111	111,000	135.00000000		(104,917)	(31,468)							(73,449)			0003
104296 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/01/2018	12/21/2018	10/30/2018	Part Term	50	50,000	160.00000000		(52,091)	(6,725)							(45,366)			0003
104296 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/01/2018	12/21/2018	12/21/2018	Expiry	150	150,000	160.00000000		(156,274)	(2,254)							(154,020)			0003
104666 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/15/2018	09/20/2019	09/21/2018	Termination	150	150,000	135.00000000		(129,368)	(42,524)							(86,844)			0003
104711 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/20/2019	09/26/2018	Part Term	100	100,000	135.00000000		(100,856)	(37,194)							(63,662)			0003
104711 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/20/2019	09/27/2018	Part Term	100	100,000	135.00000000		(100,856)	(39,140)							(61,716)			0003
104711 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/20/2019	12/18/2018	Part Term	100	100,000	135.00000000		(100,856)	(73,489)							(27,367)			0003
104711 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/16/2018	12/20/2019	12/21/2018	Termination	100	100,000	135.00000000		(100,856)	(98,862)							(1,994)			0003
104743 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/19/2018	12/21/2018	12/21/2018	Expiry	109	109,000	160.00000000		(96,341)	(1,082)							(95,249)			0003
104794 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/20/2018	03/20/2020	05/29/2018	Part Term	50	50,000	135.00000000		(64,872)	(61,940)							(2,932)			0003
104794 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/20/2018	03/20/2020	12/27/2018	Part Term	100	100,000	135.00000000		(129,744)	(123,924)							(5,820)			0003
104870 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/22/2018	12/21/2018	12/21/2018	Expiry	91	91,000	160.00000000		(82,967)	(912)							(82,055)			0003
104910 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	03/23/2018	12/21/2018	12/21/2018	Expiry	150	150,000	160.00000000		(159,678)	(2,254)							(157,424)			0003
109797 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/21/2018	09/18/2020	12/20/2018	Termination	350	350,000	145.00000000		(391,676)	(934,053)							(542,377)			0003
109971 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	09/26/2018	09/18/2020	12/20/2018	Termination	100	100,000	145.00000000		(102,375)	(260,995)							(158,620)			0003

E19127

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25			
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)			
110234 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	03/15/2019	12/17/2018	Assignment	250	250,000	170.00000000		(70,384)	(57,501)							12,883			0003			
110237 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/05/2018	06/21/2019	12/17/2018	Termination	250	250,000	170.00000000		(142,269)	(216,315)							(74,046)			0003			
110268 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/08/2018	03/15/2019	12/17/2018	Assignment	100	100,000	170.00000000		(26,000)	(23,000)							3,000			0003			
110270 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/08/2018	06/21/2019	12/17/2018	Termination	100	100,000	170.00000000		(52,105)	(86,526)							(34,421)			0003			
110271 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/08/2018	06/21/2019	12/17/2018	Termination	100	100,000	175.00000000		(62,678)	(102,563)							(39,885)			0003			
110274 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/08/2018	03/15/2019	12/17/2018	Termination	100	100,000	175.00000000		(29,186)	(31,960)							(2,774)			0003			
110285 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	06/21/2019	12/17/2018	Termination	400	400,000	170.00000000		(204,484)	(346,104)							(141,620)			0003			
110288 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	09/20/2019	12/17/2018	Assignment	1,000	1,000,000	170.00000000		(879,484)	(1,485,011)							(605,527)			0003			
110296 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	03/15/2019	12/17/2018	Termination	458	457,500	175.00000000		(134,785)	(146,215)							(11,430)			0003			
110298 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	06/21/2019	12/17/2018	Termination	58	57,500	175.00000000		(35,666)	(58,974)							(23,308)			0003			
110299 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/09/2018	09/20/2019	12/17/2018	Termination	70	70,000	175.00000000		(68,823)	(120,503)							(51,680)			0003			
110355 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/10/2018	12/21/2018	11/06/2018	Termination	300	300,000	175.00000000		(42,000)	(24,001)							(17,999)			0003			
110357 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/10/2018	12/21/2018	12/17/2018	Termination	200	200,000	170.00000000		(28,000)	(6,000)							22,000			0003			
110390 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/11/2018	12/21/2018	12/17/2018	Part Term	67	67,100	170.00000000		(14,930)	(2,013)							12,917			0003			
110390 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/11/2018	12/21/2018	12/21/2018	Expiry	133	132,900	170.00000000		(29,570)	(1,329)							28,241			0003			
110885 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	10/30/2018	03/15/2019	11/14/2018	Termination	250	250,000	165.00000000		(111,020)	(70,001)							41,019			0003			
111903 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/06/2018	09/20/2019	12/17/2018	Termination	182	181,900	170.00000000		(246,701)	(265,654)							(18,953)			0003			
111914 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/06/2018	03/15/2019	12/17/2018	Part Term	100	100,000	170.00000000		(29,501)	(23,000)							6,500			0003			
111914 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/06/2018	03/15/2019	12/17/2018	Termination	100	100,000	170.00000000		(29,501)	(26,709)							2,791			0003			
112531 Put Options - SPDR Trust Series 1	Portfolio Hedge	Page 2 & Exhibit 5	Equity/Index	LEERINK SIANN/ CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	09/20/2019	12/24/2018	Termination	100	100,000	245.00000000		(1,666,517)	(2,067,066)							(400,549)			0003			
051999999	Subtotal - Written Options - Hedging Other - Put Options																	XXX	(3,646,190)			6,940,840			XXX		
056999999	Subtotal - Written Options - Hedging Other																										XXX
063999999	Subtotal - Written Options - Replications																									XXX	
070999999	Subtotal - Written Options - Income Generation																									XXX	
077999999	Subtotal - Written Options - Other																								XXX		
078999999	Total Written Options - Call Options and Warrants																								XXX		
079999999	Total Written Options - Put Options																								XXX		
080999999	Total Written Options - Caps																								XXX		
081999999	Total Written Options - Floors																								XXX		
082999999	Total Written Options - Collars																								XXX		

E19.28

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25													
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/(Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)													
0839999999. Total Written Options - Other																												XXX							XXX		
0849999999. Total Written Options																																					XXX
0909999999. Subtotal - Swaps - Hedging Effective																																					XXX
Interest Rate Swap 020361 /166/(At Maturity) FIXED [5.483%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG	BFMBT61CT2L10CEMIK50	02/19/2003	07/15/2020	03/23/2018	Amend Out	69,880,398	LIBOR [5.483%]				(51,133,061)											0001											
Interest Rate Swap 020367 /171/(At Maturity) FIXED [5.32982%]/At Maturity LIBOR 2.43631%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG	BFMBT61CT2L10CEMIK50	03/04/2003	10/15/2020	03/23/2018	Amend Out	94,544,734	LIBOR [5.32982%]				(65,197,091)											0001											
Interest Rate Swap 015151 /927/(Semi-Annual) FIXED [4.904%]/Quarterly LIBOR 1.32%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14HNAYLU02	04/15/2003	04/17/2018	04/17/2018	Expiry	50,000,000	LIBOR [4.904%]				(475,488)			479,780								0001											
Interest Rate Swap 015440 /940/(Semi-Annual) FIXED [4.279%]/Quarterly LIBOR 1.065%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUG0F057RNE57	06/18/2003	06/20/2018	06/20/2018	Expiry	17,000,000	LIBOR [4.279%]				(185,962)			203,576								0001											
Interest Rate Swap 015483 /34508/(Semi-Annual) FIXED [4.47%]/Quarterly LIBOR 0.24575%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	G5GSEF7VJPS170UK5573	06/27/2003	07/01/2018	07/02/2018	Expiry	37,000,000	LIBOR [4.47%]				(458,185)			501,878								0001											
Interest Rate Swap 016792 /977/(Semi-Annual) FIXED [5.035%]/Quarterly LIBOR 1.17%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	G5GSEF7VJPS170UK5573	12/17/2003	12/19/2018	12/19/2018	Expiry	58,000,000	LIBOR [5.035%]				(1,612,420)			1,755,851								0001											
Interest Rate Swap 016804 /978/(Semi-Annual) FIXED [5.02%]/Quarterly LIBOR 1.17%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A.	B4TYDEB6G0Z0031MB27	12/22/2003	12/24/2018	12/24/2018	Expiry	29,000,000	LIBOR [5.02%]				(801,989)			881,536								0001											
Interest Rate Swap 024226 /1147/(Quarterly) LIBOR [5.14563%]/Semi-Annual FIXED 5.683%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	GDWITX03601TB7D1K3U69	05/02/2006	05/04/2018	05/04/2018	Expiry	15,000,000	5.683% [LIBOR]				205,440			(207,571)								0001											
Interest Rate Swap 032699 /1283/(Quarterly) LIBOR [4.72875%]/Semi-Annual FIXED 4.72%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	GDWITX03601TB7D1K3U69	12/28/2007	01/02/2018	01/02/2018	Expiry	50,000,000	4.72% [LIBOR]				4,701			(4,557)								0001											
Interest Rate Swap 032749 /1285/(Quarterly) LIBOR [4.505%]/Semi-Annual FIXED 4.463%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	7LTIWFZY1QNSXB0621K86	01/08/2008	01/10/2018	01/10/2018	Expiry	20,000,000	4.463% [LIBOR]				15,564			(15,390)								0001											
Interest Rate Swap 032999 /1297/(Semi-Annual) FIXED [4.18%]/Quarterly LIBOR 3.7175%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	G5GSEF7VJPS170UK5573	01/22/2008	01/24/2018	01/24/2018	Expiry	350,000,000	LIBOR [4.18%]				(629,519)			623,331								0001											
Interest Rate Swap 033116 /1303/(Semi-Annual) FIXED [4.327%]/Quarterly LIBOR 3.23638%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14HNAYLU02	01/30/2008	02/01/2018	02/01/2018	Expiry	50,000,000	LIBOR [4.327%]				(121,014)			119,821								0001											
Interest Rate Swap 033172 /1305/(Quarterly) LIBOR [3.1188%]/Semi-Annual FIXED 4.23%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	G5GSEF7VJPS170UK5573	01/31/2008	02/04/2018	02/05/2018	Expiry	20,000,000	4.23% [LIBOR]				52,845			(52,319)								0001											
Interest Rate Swap 033198 /1310/(Semi-Annual) FIXED [4.7425%]/Quarterly LIBOR 2.68925%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG	BFMBT61CT2L10CEMIK50	02/05/2008	02/07/2038	03/23/2018	Amend Out	57,000,000	LIBOR [4.7425%]				(220,468)											0001											
Interest Rate Swap 033460 /1319/(Quarterly) LIBOR [3.08938%]/Semi-Annual FIXED 4.638%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES	GDWITX03601TB7D1K3U69	02/25/2008	02/27/2018	02/27/2018	Expiry	20,000,000	4.638% [LIBOR]				97,995			(97,099)								0001											
Interest Rate Swap 033726 /584/(At Maturity) FIXED [4.864%]/At Maturity LIBOR 2.80363%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG	BFMBT61CT2L10CEMIK50	03/17/2008	03/19/2029	03/23/2018	Amend Out	103,292,540	LIBOR [4.864%]				(51,999,415)											0001											
Interest Rate Swap 033821 /3791/(Quarterly) LIBOR [4.69625%]/Semi-Annual FIXED 4.208%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC	G5GSEF7VJPS170UK5573	03/27/2008	03/31/2018	03/29/2018	Expiry	40,000,000	4.208% [LIBOR]				247,755			(245,373)								0001											

E19.29

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
Interest Rate Swap 033871 /4043/(Semi-Annual) FIXED [4.189%]/Quarterly LIBOR	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN70G14HNAYLU02	04/01/2008	04/03/2018	04/03/2018	Expiry		28,000,000	LIBOR [4.189%]				(179,072)			177,336						0001
Interest Rate Swap 033946 /4125/(Semi-Annual) FIXED [4.24%]/Quarterly LIBOR	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG BFMBT61CT2L10CEMIK50	04/03/2008	04/07/2018	04/09/2018	Expiry		27,000,000	LIBOR [4.24%]				(188,266)			189,758						0001
Interest Rate Swap 034038 /4296/(Quarterly) LIBOR [2.71563%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	04/09/2008	04/11/2018	04/11/2018	Expiry		20,000,000	4.1175% [LIBOR]				135,986			(135,195)						0001
Interest Rate Swap 034188 /4895/(Quarterly) LIBOR [2.87281%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN70G14HNAYLU02	04/29/2008	05/01/2018	05/01/2018	Expiry		20,000,000	4.4275% [LIBOR]				183,771			(186,994)						0001
Interest Rate Swap 034266 /5135/(Quarterly) LIBOR [2.7575%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL ES80KGMJYYJLN8C3868	05/06/2008	05/08/2018	05/08/2018	Expiry		57,000,000	5.1% [LIBOR]				689,131			(701,241)						0001
Interest Rate Swap 034331 /5284/(Quarterly) LIBOR [2.72%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN70G14HNAYLU02	05/14/2008	05/16/2018	05/16/2018	Expiry		20,000,000	4.545% [LIBOR]				213,140			(219,197)						0001
Interest Rate Swap 034404 /5456/(Quarterly) LIBOR [2.64938%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJPS170UK5573	05/28/2008	05/30/2018	05/30/2018	Expiry		20,000,000	4.631% [LIBOR]				235,381			(247,063)						0001
Interest Rate Swap 034425 /5548/(Quarterly) LIBOR [2.68063%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJPS170UK5573	05/30/2008	06/03/2018	06/04/2018	Expiry		150,000,000	5.27% [LIBOR]				2,201,538			(2,297,203)						0001
Interest Rate Swap 034479 /5759/(Quarterly) LIBOR [2.8125%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MERRILL LYNCH CAPITAL SERVICES G0W1X03601T87D13U69	06/11/2008	06/13/2018	06/13/2018	Expiry		4,500,000	4.78% [LIBOR]				58,899			(62,424)						0001
Interest Rate Swap 034496 /5810/(Quarterly) LIBOR [2.80125%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA K03XUN70G14HNAYLU02	06/16/2008	06/18/2018	06/18/2018	Expiry		40,000,000	4.939% [LIBOR]				559,365			(597,105)						0001
Interest Rate Swap 034505 /6167/(Quarterly) LIBOR [2.81%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	06/19/2008	06/23/2018	06/25/2018	Expiry		40,000,000	4.8475% [LIBOR]				549,264			(596,213)						0001
Interest Rate Swap 034505 /6505/(Quarterly) LIBOR [2.80438%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	07/23/2008	07/25/2018	07/25/2018	Expiry		50,000,000	4.862% [LIBOR]				815,616			(879,751)						0001
Interest Rate Swap 034505 /6893/(Quarterly) LIBOR [2.815%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTIWFZY1CNSX8D621K86	08/12/2008	08/14/2018	08/14/2018	Expiry		50,000,000	4.6675% [LIBOR]				831,742			(903,614)						0001
Interest Rate Swap 034505 /7025/(Quarterly) LIBOR [2.81625%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	09/04/2008	09/08/2018	09/10/2018	Expiry		50,000,000	4.326% [LIBOR]				791,900			(873,614)						0001
Interest Rate Swap 034505 /7127/(Semi-Annual) FIXED [4.275%]/Quarterly LIBOR	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJPS170UK5573	09/15/2008	09/17/2018	09/17/2018	Expiry		40,000,000	4.16% [LIBOR]				590,132			(666,711)						0001
Interest Rate Swap 034505 /7148/(Quarterly) LIBOR [3.21%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GMZ0031MB27	09/18/2008	09/22/2018	09/24/2018	Expiry		350,000,000	LIBOR [4.275%]				(5,499,521)			6,228,887						0001
Interest Rate Swap 034505 /7150/(Quarterly) LIBOR [3.21%]/Semi-Annual FIXED	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GMZ0031MB27	09/19/2008	09/23/2018	09/24/2018	Expiry		28,000,000	4.41% [LIBOR]				465,276			(524,654)						0001
Interest Rate Swap 034505 /7150/(Quarterly) LIBOR [4.4275%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB6GMZ0031MB27	09/19/2008	09/23/2018	09/24/2018	Expiry		28,000,000	4.4275% [LIBOR]				468,856			(528,198)						0001

1930

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
Interest Rate Swap /7408/(Quarterly) LIBOR [4.33375%]/Semi-Annual FIXED 4.33%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	10/03/2008	10/07/2018	10/09/2018	Expiry		50,000,000	4.33% (LIBOR)				850,000			(958,652)						0001
Interest Rate Swap /7585/(Quarterly) LIBOR [0.24355%]/Semi-Annual FIXED 5.3725%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	10/15/2008	10/17/2018	10/17/2018	Expiry		50,000,000	5.3725% (LIBOR)				1,291,728			(1,400,781)						0001
Interest Rate Swap /7791/(Semi-Annual) FIXED [4.175%]/Quarterly LIBOR 3.51625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG ... 7LTWIFY1ONSX8D621K86	10/24/2008	10/28/2018	10/29/2018	Expiry		10,500,000	LIBOR [4.175%]				(180,218)			203,585						0001
Interest Rate Swap /8054/(Semi-Annual) FIXED [4.4425%]/Quarterly LIBOR 2.85875%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. B4TYDEB69QM20031MB27	11/03/2008	11/05/2018	11/05/2018	Expiry		11,400,000	LIBOR [4.4425%]				(225,388)			250,256						0001
Interest Rate Swap /9374/(Semi-Annual) FIXED [2.777%]/Quarterly LIBOR 1.42125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	01/05/2009	01/07/2018	01/08/2018	Expiry		50,000,000	LIBOR [2.777%]				(13,871)			13,623						0001
Interest Rate Swap /9375/(Semi-Annual) FIXED [2.783%]/Quarterly LIBOR 1.42125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	01/05/2009	01/07/2018	01/08/2018	Expiry		50,000,000	LIBOR [2.783%]				(13,929)			13,752						0001
Interest Rate Swap /28610/(Semi-Annual) FIXED [3.0225%]/Quarterly LIBOR 0.3105%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	02/03/2011	02/07/2018	02/07/2018	Expiry		62,000,000	LIBOR [3.0225%]				(98,697)			97,692						0001
Interest Rate Swap /30772/(Semi-Annual) FIXED [2.48375%]/Quarterly LIBOR 0.2455%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7CGT14HNAYLU02	06/22/2011	06/24/2018	06/25/2018	Expiry		47,000,000	LIBOR [2.48375%]				(109,035)			167,650						0001
Interest Rate Swap /30802/(Semi-Annual) FIXED [2.445%]/Quarterly LIBOR 0.2465%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7CGT14HNAYLU02	06/23/2011	06/27/2018	06/27/2018	Expiry		3,000,000	LIBOR [2.445%]				(6,429)			10,247						0001
Interest Rate Swap /31226/(Quarterly) LIBOR [0.24575%]/Semi-Annual FIXED 2.61%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	07/06/2011	07/08/2018	07/09/2018	Expiry		10,000,000	2.61% (LIBOR)				31,693			(45,071)						0001
Interest Rate Swap /32155/(Semi-Annual) FIXED [2.0%]/Quarterly LIBOR 0.26939%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	08/04/2011	08/08/2018	08/08/2018	Expiry		20,000,000	LIBOR [2.0%]				(2,296)			33,166						0001
Interest Rate Swap /32945/(Semi-Annual) FIXED [1.71%]/Quarterly LIBOR 0.303%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	08/19/2011	08/23/2018	08/23/2018	Expiry		155,000,000	LIBOR [1.71%]				284,172			(26,727)						0001
Interest Rate Swap /33253/(Semi-Annual) FIXED [1.84%]/Quarterly LIBOR 0.319%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	08/25/2011	08/30/2018	08/30/2018	Expiry		75,000,000	LIBOR [1.84%]				83,002			47,067						0001
Interest Rate Swap /33265/(Semi-Annual) FIXED [1.869%]/Quarterly LIBOR 0.319%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	08/25/2011	08/30/2018	08/30/2018	Expiry		150,000,000	LIBOR [1.869%]				137,124			118,981						0001
Interest Rate Swap /33275/(Quarterly) LIBOR [0.32278%]/Semi-Annual FIXED 1.82%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCKQKX5T7XV54	08/26/2011	08/31/2018	08/31/2018	Expiry		200,000,000	1.82% (LIBOR)				(243,214)			(95,270)						0001
Interest Rate Swap /34028/(Semi-Annual) FIXED [1.76125%]/Quarterly LIBOR 0.35133%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA KD3XUN7CGT14HNAYLU02	09/16/2011	09/20/2018	09/20/2018	Expiry		175,000,000	LIBOR [1.76125%]				423,190			(49,004)						0001
Interest Rate Swap /35450/(Semi-Annual) FIXED [1.91875%]/Quarterly LIBOR 0.42222%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES 17331LVCKQKX5T7XV54	10/25/2011	10/27/2018	10/29/2018	Expiry		30,000,000	LIBOR [1.91875%]				47,118			26,899						0001
Interest Rate Swap /35605/(Semi-Annual) FIXED [0.42944%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	10/28/2011	11/01/2018	11/01/2018	Expiry		20,000,000	LIBOR [2.0325%]				12,929			36,269						0001

E1931

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/(Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
Interest Rate Swap /35097/(Semi-Annual) FIXED [1.72%/Quarterly LIBOR 0.44917%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	11/09/2011	11/14/2018	11/14/2018	Expiry		150,000,000	LIBOR [1.72%]				487,537			(120,141)						0001
Interest Rate Swap /36059/(Quarterly) LIBOR [2.629%/Semi-Annual FIXED 2.855%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	11/14/2011	11/16/2041	03/23/2018	Termination		20,000,000	2.855% [LIBOR]			(319,697)	60,059			(1,188,640)			(319,697)			0001
Interest Rate Swap /36066/(Semi-Annual) FIXED [1.80375%/Quarterly LIBOR 0.46056%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA	11/14/2011	11/16/2018	11/16/2018	Expiry		300,000,000	LIBOR [1.80375%]				742,498			(26,343)						0001
Interest Rate Swap /37121/(Quarterly) LIBOR [0.54%/Semi-Annual FIXED 1.695%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	12/08/2011	12/12/2018	12/12/2018	Expiry		200,000,000	1.695% [LIBOR]				(819,032)			284,273						0001
Interest Rate Swap /58054/(Quarterly) LIBOR [0.2731%/Semi-Annual FIXED 0.82%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A.	05/01/2013	05/03/2018	05/03/2018	Expiry		210,000,000	0.82% [LIBOR]				(606,062)			551,205						0001
Interest Rate Swap /58786/(Semi-Annual) FIXED [0.97%/Quarterly LIBOR 0.274%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	05/14/2013	05/16/2018	05/16/2018	Expiry		57,000,000	LIBOR [0.97%]				156,708			(133,588)						0001
Interest Rate Swap /63533/(Quarterly) LIBOR [0.3031%/Semi-Annual FIXED 1.532%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES/ GOLDMAN SACHS/CLEARED THROUGH CME	07/26/2013	08/02/2018	08/02/2018	Expiry		600,000,000	1.532% [LIBOR]	(1,104,000)			(1,742,443)			(239,262)			1,104,000			0001
Interest Rate Swap /64826/(Semi-Annual) FIXED [1.76%/Quarterly LIBOR 0.2621%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES/ GOLDMAN SACHS/CLEARED THROUGH CME	08/21/2013	08/23/2018	08/23/2018	Expiry		77,000,000	LIBOR [1.76%]				116,358			5,081						0001
Interest Rate Swap /64828/(Semi-Annual) FIXED [1.7625%/Quarterly LIBOR 0.2621%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS/CLEARED THROUGH CME	08/21/2013	08/23/2018	08/23/2018	Expiry		120,000,000	LIBOR [1.7625%]				179,404			9,833						0001
Interest Rate Swap /66505/(Quarterly) LIBOR [0.2544%/Semi-Annual FIXED 1.8435%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	09/12/2013	09/16/2018	09/17/2018	Expiry		100,000,000	1.8435% [LIBOR]				(168,283)			(34,038)						0001
Interest Rate Swap /67307/(Quarterly) LIBOR [0.2481%/Semi-Annual FIXED 1.576%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	09/26/2013	09/30/2018	09/28/2018	Expiry		42,000,000	1.576% [LIBOR]				(175,870)			76,912						0001
Interest Rate Swap /67829/(Quarterly) LIBOR [0.24285%/Semi-Annual FIXED 1.56125%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	10/04/2013	10/08/2018	10/09/2018	Expiry		26,500,000	1.56125% [LIBOR]				(116,094)			53,711						0001
Interest Rate Swap /68794/(Quarterly) LIBOR [0.24055%/Semi-Annual FIXED 1.498%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON	10/18/2013	10/22/2018	10/22/2018	Expiry		22,000,000	1.498% [LIBOR]				(109,967)			57,555						0001
Interest Rate Swap /68882/(Quarterly) LIBOR [0.23835%/Semi-Annual FIXED 1.5085%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	10/22/2013	10/24/2018	10/24/2018	Expiry		18,000,000	1.5085% [LIBOR]				(88,115)			45,832						0001
Interest Rate Swap /68904/(Quarterly) LIBOR [0.2424%/Semi-Annual FIXED 1.4235%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA	10/31/2013	11/04/2018	11/05/2018	Expiry		17,700,000	1.4235% [LIBOR]				(102,419)			60,142						0001
Interest Rate Swap /69656/(Quarterly) LIBOR [0.2377%/Semi-Annual FIXED 1.51%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	11/05/2013	11/07/2018	11/07/2018	Expiry		15,000,000	1.51% [LIBOR]				(75,605)			40,364						0001
Interest Rate Swap /70377/(Quarterly) LIBOR [0.23845%/Semi-Annual FIXED 1.455%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	11/14/2013	11/18/2018	11/19/2018	Expiry		10,000,000	1.455% [LIBOR]				(56,394)			32,886						0001

E1932

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)	
Interest Rate Swap /70517/(Quarterly) LIBOR [0.2391%]/Semi-Annual FIXED 1.4435%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA/ GOLDMAN SACHS/CLEARED THROUGH CIE	11/19/2013	11/21/2018	11/21/2018	Expiry		10,000,000	1.4435% [LIBOR]				(57,534)			34,199						0001	
Interest Rate Swap /71316/(Semi-Annual) FIXED [1.617%]/Quarterly LIBOR 0.2451%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. / GOLDMAN SACHS/CLEARED THROUGH CIE	12/18/2013	12/20/2018	12/20/2018	Expiry		82,000,000	LIBOR [1.617%]				436,421			(198,173)							0001
Interest Rate Swap /71371/(Quarterly) LIBOR [0.24585%]/Semi-Annual FIXED 1.694%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. / GOLDMAN SACHS/CLEARED THROUGH CIE	12/19/2013	12/23/2018	12/24/2018	Expiry		500,000,000	1.694% [LIBOR]				(2,485,783)			911,349							0001
Interest Rate Swap /71396/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED 3.22%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL/ GOLDMAN SACHS/CLEARED THROUGH CIE	12/20/2013	12/24/2025	06/27/2018	Termination		100,000,000	3.22% [LIBOR]		2,103,345		585,217			(6,327,417)			2,103,345				0001
Interest Rate Swap /72092/(Quarterly) LIBOR [2.52663%]/Semi-Annual FIXED 1.65%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA/ WELLSFARGOSEC/CLEARED THROUGH CIE	01/29/2014	01/31/2019	08/20/2018	TSFR OUT		60,000,000	1.65% [LIBOR]														0001
Interest Rate Swap /74344/(Quarterly) LIBOR [2.629%]/Semi-Annual FIXED 3.061%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON/ MORGAN STANLEY/CLEARED THROUGH CIE	05/14/2014	05/16/2029	04/20/2018	Termination		200,000,000	3.061% [LIBOR]		549,838		863,658			(12,329,953)			549,838				0001
Interest Rate Swap /74859/(Quarterly) LIBOR [2.76713%]/Semi-Annual FIXED 2.9115%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA/ GOLDMAN SACHS/CLEARED THROUGH CIE	06/05/2014	06/09/2026	03/21/2018	Termination		11,000,000	2.9115% [LIBOR]		19,180		32,441			(460,078)			(19,180)				0001
Interest Rate Swap /76355/(Quarterly) LIBOR [2.70681%]/Semi-Annual FIXED 2.8463%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC/ WELLSFARGOSEC/CLEARED THROUGH CIE	08/26/2014	08/28/2029	01/09/2018	Termination		200,000,000	2.8463% [LIBOR]		5,210,459		68,934			(8,063,937)			5,210,459				0001
Interest Rate Swap /77143/(Quarterly) LIBOR [2.797%]/Semi-Annual FIXED 2.929%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG 7LTIWFZY1QNSX8D621K86	09/29/2014	10/01/2029	04/20/2018	Termination		100,000,000	2.929% [LIBOR]		1,085,877		350,944			(5,193,965)			1,085,877				0001
Interest Rate Swap /77258/(Quarterly) LIBOR [2.41425%]/Semi-Annual FIXED 2.953%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. / WELLSFARGOSEC/CLEARED THROUGH CIE	10/08/2014	10/10/2034	12/27/2018	Termination		100,000,000	2.953% [LIBOR]		580,210		751,166			(5,872,100)			580,210				0001
Interest Rate Swap /77365/(Quarterly) LIBOR [2.43644%]/Semi-Annual FIXED 2.795%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA/ WELLSFARGOSEC/CLEARED THROUGH CIE	10/14/2014	10/16/2034	04/24/2018	Termination		77,000,000	2.795% [LIBOR]		3,146,496		261,322			(2,814,812)			3,146,496				0001
Interest Rate Swap /77386/(Quarterly) LIBOR [2.43644%]/Semi-Annual FIXED 2.693%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. / WELLSFARGOSEC/CLEARED THROUGH CIE	10/14/2014	10/16/2029	01/24/2018	Termination		26,000,000	2.693% [LIBOR]		110,688		20,764			(626,330)			110,688				0001
Interest Rate Swap /77410/(Semi-Annual) FIXED [4.53%]/Quarterly LIBOR 2.52663%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC/ MORGAN STANLEY/CLEARED THROUGH CIE	10/15/2014	10/31/2028	08/20/2018	TSFR OUT		52,000,000	LIBOR [4.53%]														0001
Interest Rate Swap /77437/(Quarterly) LIBOR [2.44881%]/Semi-Annual FIXED 2.334%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A./ MORGAN STANLEY/CLEARED THROUGH CIE	10/15/2014	10/17/2026	08/20/2018	TSFR OUT		20,000,000	2.334% [LIBOR]														0001
Interest Rate Swap /77450/(Semi-Annual) FIXED [1.71875%]/Quarterly LIBOR 0.2291%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC/ WELLSFARGOSEC/CLEARED THROUGH CIE	10/16/2014	11/09/2018	11/09/2018	Expiry		200,000,000	LIBOR [1.71875%]				660,455			(189,135)							0001
Interest Rate Swap /77515/(Quarterly) LIBOR [2.47719%]/Semi-Annual FIXED 2.5285%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A./ MORGAN STANLEY/CLEARED THROUGH CIE	10/21/2014	10/23/2026	01/26/2018	Termination		24,000,000	2.5285% [LIBOR]				249,549			(279,596)			249,549				0001
Interest Rate Swap /77551/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 2.4175%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	10/23/2014	10/27/2024	01/26/2018	Termination		5,000,000	2.4175% [LIBOR]				77,079			(32,031)			77,079				0001
Interest Rate Swap /77555/(Quarterly) LIBOR [0.2331%]/Semi-Annual FIXED 1.386%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSBC BANK USA, NATIONAL ASSOCIATION	10/24/2014	10/28/2018	08/20/2018	TSFR OUT		55,000,000	1.386% [LIBOR]														0001

E19133

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/(Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
Interest Rate Swap /77797/(Semi-Annual) FIXED [2.8505%]/Quarterly LIBOR [2.8925%]	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	11/05/2014	11/07/2034	05/29/2018	Termination		135,000,000	LIBOR [2.9505%]			242,912	(655,213)			7,913,508			242,912			0001
Interest Rate Swap /77999/(Quarterly) LIBOR [2.64581%]/Semi-Annual FIXED 3.0205%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	11/19/2014	11/21/2044	03/21/2018	Termination		15,000,000	3.0205% [LIBOR]			(75,633)	48,464			(1,362,935)			(75,633)			0001
Interest Rate Swap /78306/(Quarterly) LIBOR [2.75125%]/Semi-Annual FIXED 2.09%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. / WELLSFARGOSEC/CLEARING THROUGH CME	12/03/2014	12/05/2021	08/20/2018	TSFR OUT		145,000,000	2.099% [LIBOR]													0001
Interest Rate Swap /78837/(Quarterly) LIBOR [2.82375%]/Semi-Annual FIXED 2.77%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A.	12/18/2014	12/22/2044	01/24/2018	Termination		15,000,000	2.772% [LIBOR]			(162,112)	11,141			(605,020)			(162,112)			0001
Interest Rate Swap /78904/(Quarterly) LIBOR [2.803%]/Semi-Annual FIXED 2.617%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	12/23/2014	12/29/2029	01/05/2018	Termination		25,000,000	2.6175% [LIBOR]			386,210	4,492			(400,443)			386,210			0001
Interest Rate Swap /79309/(Quarterly) LIBOR [2.508%]/Semi-Annual FIXED 2.463%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	ROYAL BANK OF CANADA / WELLSFARGOSEC/CLEARING THROUGH CME	01/22/2015	01/26/2045	07/20/2018	Termination		9,000,000	2.463% [LIBOR]			(884,701)	24,428			202,500			(884,701)			0001
Interest Rate Swap /79400/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 2.255%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. / MORGAN STANLEY/CLEARED THROUGH CME	01/27/2015	01/29/2035	01/05/2018	Termination		10,000,000	2.2555% [LIBOR]			(500,738)	1,706			400,718			(500,738)			0001
Interest Rate Swap /79436/(Quarterly) LIBOR [2.52038%]/Semi-Annual FIXED 2.2315%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. / WELLSFARGOSEC/CLEARING THROUGH CME	01/28/2015	01/30/2045	08/21/2018	Amend Out		50,000,000	2.2315% [LIBOR]													0001
Interest Rate Swap /78538/(Semi-Annual) FIXED [2.27705%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. / WELLSFARGOSEC/CLEARING THROUGH CME	02/03/2015	02/05/2045	08/21/2018	Amend Out		25,000,000	LIBOR [2.27705%]													0001
Interest Rate Swap /80977/(Semi-Annual) FIXED [1.074%]/Quarterly LIBOR 0.2737%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF MONTREAL	04/07/2015	04/09/2018	04/09/2018	Expiry		58,000,000	LIBOR [1.074%]				94,901			(96,084)						0001
Interest Rate Swap /82119/(Semi-Annual) FIXED [1.364%]/Quarterly LIBOR 0.2858%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. / MORGAN STANLEY/CLEARED THROUGH CME	06/11/2015	06/15/2018	06/15/2018	Expiry		150,000,000	LIBOR [1.364%]				365,491			(225,365)						0001
Interest Rate Swap /82417/(Semi-Annual) FIXED [2.944%]/Quarterly LIBOR 2.8216%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLSFARGOSEC/CLEARING THROUGH CME	06/23/2015	06/25/2045	05/29/2018	Termination		125,000,000	LIBOR [2.944%]			1,401,053	(518,834)			9,543,164			1,401,053			0001
Interest Rate Swap /82418/(Semi-Annual) FIXED [2.941%]/Quarterly LIBOR 2.8216%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES/ WELLSFARGOSEC/CLEARING THROUGH CME	06/23/2015	06/25/2045	05/29/2018	Termination		125,000,000	LIBOR [2.941%]			1,473,673	(517,282)			9,465,852			1,473,673			0001
Interest Rate Swap /82419/(Semi-Annual) FIXED [2.8575%]/Quarterly LIBOR 2.8216%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSC BANK USA, NATIONAL ASSOCIATION/ WELLSFARGOSEC/CLEARING THROUGH CME	06/23/2015	06/25/2035	05/29/2018	Termination		125,000,000	LIBOR [2.8575%]			1,844,972	(474,082)			5,743,913			1,844,972			0001
Interest Rate Swap /82528/(Semi-Annual) FIXED [2.832%]/Quarterly LIBOR 2.803%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	DEUTSCHE BANK AG	06/26/2015	06/30/2030	01/23/2018	Termination		65,000,000	LIBOR [2.832%]			(713,413)	(47,284)			2,543,643			(713,413)			0001
Interest Rate Swap /82569/(Semi-Annual) FIXED [2.96625%]/Quarterly LIBOR 2.79%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES/ OR SUIS SEC USA/CLEARED THROUGH CME	06/29/2015	07/01/2045	05/29/2018	Termination		200,000,000	LIBOR [2.96625%]			(798,050)	(860,373)			13,922,707			(798,050)			0001
Interest Rate Swap /83077/(Quarterly) LIBOR [2.52663%]/Semi-Annual FIXED 2.7%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARING THROUGH CME	07/29/2015	07/31/2035	01/24/2018	Termination		54,000,000	2.7% [LIBOR]			(830,443)	47,517			(1,256,875)			(830,443)			0001
Interest Rate Swap /83077/(Quarterly) LIBOR [2.52663%]/Semi-Annual FIXED 2.7%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARING THROUGH CME	07/29/2015	07/31/2035	08/21/2018	Amend Out		159,000,000	2.7% [LIBOR]													0001

E1934

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
Interest Rate Swap /83080/(Quarterly) LIBOR [2.52663%]/Semi-Annual FIXED 2.791%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. / CR SUIIS SEC USA/CLEARED THROUGH CME	07/29/2015	07/31/2045	07/20/2018	Termination		85,000,000	2.791% [LIBOR]			(3,038,540)	393,152			(3,847,037)			(3,038,540)			0001
Interest Rate Swap /83082/(Quarterly) LIBOR [2.52663%]/Semi-Annual FIXED 2.7905%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. / CR SUIIS SEC USA/CLEARED THROUGH CME	07/29/2015	07/31/2045	03/21/2018	Termination		45,000,000	2.7905% [LIBOR]			(2,218,037)	120,019			(2,032,015)			(2,218,037)			0001
Interest Rate Swap /83084/(Quarterly) LIBOR [2.52663%]/Semi-Annual FIXED 2.7815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC/ CR SUIIS SEC USA/CLEARED THROUGH CME	07/29/2015	07/31/2045	07/20/2018	Termination		32,000,000	2.7815% [LIBOR]			(1,202,654)	146,304			(1,385,447)			(1,202,654)			0001
Interest Rate Swap /83085/(Quarterly) LIBOR [2.52663%]/Semi-Annual FIXED 2.793%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. / CR SUIIS SEC USA/CLEARED THROUGH CME	07/29/2015	07/31/2045	01/24/2018	Termination		13,000,000	2.793% [LIBOR]			(84,449)	12,245			(593,746)			(84,449)			0001
Interest Rate Swap /83146/(Semi-Annual) FIXED [2.6925%]/Quarterly LIBOR 2.5815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES/ WELLSFARGOSEC/CLEARED THROUGH CME	07/31/2015	08/04/2035	08/21/2018	Amend Out		400,000,000	LIBOR [2.6925%]													0001
Interest Rate Swap /83771/(Quarterly) LIBOR [2.73613%]/Semi-Annual FIXED 2.63%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. / WELLSFARGOSEC/CLEARED THROUGH CME	09/02/2015	09/04/2035	01/05/2018	Termination		20,000,000	2.63% [LIBOR]			44,544	4,444			(259,383)			44,544			0001
Interest Rate Swap /83772/(Quarterly) LIBOR [2.73613%]/Semi-Annual FIXED 2.7265%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	HSCB BANK USA, NATIONAL ASSOCIATION/ WELLSFARGOSEC/CLEARED THROUGH CME	09/02/2015	09/04/2045	01/24/2018	Termination		10,000,000	2.7265% [LIBOR]			(197,531)	8,261			(319,073)			(197,531)			0001
Interest Rate Swap /83841/(Quarterly) LIBOR [2.76713%]/Semi-Annual FIXED 2.7085%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT AGRICOLE/ WELLSFARGOSEC/CLEARED THROUGH CME	09/08/2015	09/10/2045	06/05/2018	Termination		27,500,000	2.7085% [LIBOR]			(1,780,584)	102,478			(774,232)			(1,780,584)			0001
Interest Rate Swap /84213/(Quarterly) LIBOR [2.80069%]/Semi-Annual FIXED 2.8215%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E5700ZIZ7F32TIEFA76	09/16/2015	09/18/2045	06/05/2018	Termination		23,300,000	2.8215% [LIBOR]			(997,703)	91,956			(1,200,488)			(997,703)			0001
Interest Rate Swap /84585/(Quarterly) LIBOR [2.40806%]/Semi-Annual FIXED 2.5665%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. / MORGAN STANLEY/CLEARED THROUGH CME	10/07/2015	10/09/2040	01/05/2018	Termination		21,000,000	2.5665% [LIBOR]			(283,966)	4,966			9,278			(283,966)			0001
Interest Rate Swap /84863/(Quarterly) LIBOR [0.3219%]/Semi-Annual FIXED 0.9905%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL/ CR SUIIS SEC USA/CLEARED THROUGH CME	10/28/2015	10/30/2018	10/30/2018	Expiry		45,000,000	0.9905% [LIBOR]				(415,810)			308,255						0001
Interest Rate Swap /85622/(Quarterly) LIBOR [2.77106%]/Semi-Annual FIXED 2.6315%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	GOLDMAN SACHS INTERNATIONAL/ WELLSFARGOSEC/CLEARED THROUGH CME	12/09/2015	12/11/2045	06/27/2018	Termination		35,000,000	2.6315% [LIBOR]			(2,260,259)	126,578			(430,580)			(2,260,259)			0001
Interest Rate Swap /90209/(Quarterly) LIBOR [2.82163%]/Semi-Annual FIXED 2.111%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES	06/23/2016	06/27/2046	01/05/2018	Termination		75,000,000	2.111% [LIBOR]			(8,479,971)	6,364			7,333,230			(8,479,971)			0001
Interest Rate Swap /90931/(Quarterly) LIBOR [0.7676%]/Semi-Annual FIXED 0.92%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. E5700ZIZ7F32TIEFA76	08/02/2016	08/04/2018	08/06/2018	Expiry		26,000,000	0.92% [LIBOR]				(166,306)			126,661						0001
Interest Rate Swap /92112/(Semi-Annual) FIXED [4.47%]/Quarterly LIBOR 0.83769%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC/ WELLSFARGOSEC/CLEARED THROUGH CME	09/28/2016	11/05/2018	11/05/2018	Expiry		20,000,000	LIBOR [4.47%]	(643)			(400,062)			440,014				643		0001
Interest Rate Swap /92127/(Semi-Annual) FIXED [4.269%]/Quarterly LIBOR 0.83511%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE ROYAL BANK OF SCOTLAND PLC/ WELLSFARGOSEC/CLEARED THROUGH CME	09/28/2016	06/03/2018	06/04/2018	Expiry		20,000,000	LIBOR [4.269%]	(556)			(208,453)			219,524				556		0001
Interest Rate Swap /93601/(Semi-Annual) FIXED [2.5661%]/Quarterly LIBOR 2.73888%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BARCLAYS BANK PLC/ WELLSFARGOSEC/CLEARED THROUGH CME	12/02/2016	12/06/2046	08/21/2018	Amend Out		75,000,000	LIBOR [2.5661%]													0001
Interest Rate Swap /94411/(Quarterly) LIBOR [2.80363%]/Semi-Annual FIXED 2.541%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	UBS AG/ CR SUIIS SEC USA/CLEARED THROUGH CME	12/15/2016	12/19/2026	02/28/2018	Termination		38,000,000	2.541% [LIBOR]			(1,081,878)	60,457			(473,818)			(1,081,878)			0001

E19.35

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
Interest Rate Swap /95301/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 1.73%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. / WELLSFARGOSEC/CLEARINGHOUSE	01/25/2017	01/27/2020	03/21/2018	Termination		90,000,000	1.733% [LIBOR]			(1,440,763)	25,880			627,821			(1,440,763)			0001
Interest Rate Swap /95307/(Quarterly) LIBOR [2.50925%]/Semi-Annual FIXED 1.906%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	SOCIETE GENERAL/ WELLSFARGOSEC/CLEARINGHOUSE	01/25/2017	01/27/2021	03/21/2018	Termination		90,000,000	1.906% [LIBOR]			(2,089,640)	60,913			706,907			(2,089,640)			0001
Interest Rate Swap /95679/(Quarterly) LIBOR [2.61813%]/Semi-Annual FIXED 2.275%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CITIBANK N.A. / WELLSFARGOSEC/CLEARINGHOUSE	02/08/2017	02/10/2027	01/09/2018	Termination		200,000,000	2.275% [LIBOR]			(4,149,813)	43,285			1,937,707			(4,149,813)			0001
Interest Rate Swap /102593/(Quarterly) LIBOR [2.40806%]/Semi-Annual FIXED 2.494%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	MORGAN STANLEY CAPITAL SERVICES/ WELLSFARGOSEC/CLEARINGHOUSE	01/05/2018	01/09/2028	06/14/2018	Termination		107,000,000	2.494% [LIBOR]			(5,004,572)	236,696						(5,004,572)			0001
Interest Rate Swap /102591/(Quarterly) LIBOR [2.41425%]/Semi-Annual FIXED 2.405%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A. / WELLSFARGOSEC/CLEARINGHOUSE	01/08/2018	01/10/2025	01/24/2018	Termination		125,000,000	2.405% [LIBOR]			(1,602,295)	36,301						(1,602,295)			0001
Interest Rate Swap /102660/(Semi-Annual) FIXED [2.603%]/Quarterly LIBOR 2.43644%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BANK OF AMERICA, N.A. / WELLSFARGOSEC/CLEARINGHOUSE	01/12/2018	01/16/2028	01/23/2018	Termination		500,000,000	LIBOR [2.603%]			3,514,605	(97,942)						3,514,605			0001
Interest Rate Swap /103205/(Quarterly) LIBOR [2.48738%]/Semi-Annual FIXED 2.709%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON/ WELLSFARGOSEC/CLEARINGHOUSE	01/22/2018	01/24/2028	06/14/2018	Termination		100,000,000	2.709% [LIBOR]			(2,888,172)	284,922						(2,888,172)			0001
Interest Rate Swap /103205/(Quarterly) LIBOR [2.48738%]/Semi-Annual FIXED 2.709%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON/ WELLSFARGOSEC/CLEARINGHOUSE	01/22/2018	01/24/2028	10/18/2018	Termination		200,000,000	2.709% [LIBOR]			(9,217,157)	793,124						(9,217,157)			0001
Interest Rate Swap /103829/(Quarterly) LIBOR [2.61613%]/Semi-Annual FIXED 2.8625%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	02/13/2018	02/15/2028	06/27/2018	Termination		38,000,000	2.8625% [LIBOR]			(237,546)	120,327						(237,546)			0001
Interest Rate Swap /103873/(Quarterly) LIBOR [2.629%]/Semi-Annual FIXED 2.9595%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	THE TORONTO-DOMINION BANK	02/14/2018	02/16/2028	05/02/2018	Termination		44,000,000	2.9595% [LIBOR]			(348,765)	106,677						(348,765)			0001
Interest Rate Swap /103902/(Quarterly) LIBOR [2.6445%]/Semi-Annual FIXED 2.839%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	JPMORGAN CHASE BANK, N.A.	02/15/2018	02/20/2025	02/28/2018	Termination		30,000,000	2.839% [LIBOR]			(34,292)	11,887						(34,292)			0001
Interest Rate Swap /103903/(Quarterly) LIBOR [2.6445%]/Semi-Annual FIXED 2.9815%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	CREDIT SUISSE INTERNATIONAL	02/15/2018	02/20/2030	05/02/2018	Termination		25,000,000	2.9815% [LIBOR]			(237,784)	56,898						(237,784)			0001
Interest Rate Swap /103905/(Quarterly) LIBOR [2.6445%]/Semi-Annual FIXED 3.046%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A.	02/15/2018	02/20/2038	02/28/2018	Termination		18,000,000	3.046% [LIBOR]			78,708	8,271						78,708			0001
Interest Rate Swap /104305/(Semi-Annual) FIXED [2.936%]/Quarterly LIBOR 2.73889%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	BNP PARIBAS LONDON/ WELLSFARGOSEC/CLEARINGHOUSE	03/02/2018	03/06/2030	04/19/2018	Termination		130,000,000	LIBOR [2.936%]			707,193	(137,404)						707,193			0001
Interest Rate Swap /104414/(Quarterly) LIBOR [2.76713%]/Semi-Annual FIXED 3.0265%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. / WELLSFARGOSEC/CLEARINGHOUSE	03/07/2018	03/09/2048	06/05/2018	Termination		22,000,000	3.0265% [LIBOR]			(23,650)	49,017						(23,650)			0001
Interest Rate Swap /104416/(Quarterly) LIBOR [2.76713%]/Semi-Annual FIXED 3.043%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. / WELLSFARGOSEC/CLEARINGHOUSE	03/07/2018	03/09/2038	06/05/2018	Termination		29,000,000	3.043% [LIBOR]			(100,604)	85,770						(100,604)			0001
Interest Rate Swap /104417/(Quarterly) LIBOR [2.76713%]/Semi-Annual FIXED 2.936%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. / WELLSFARGOSEC/CLEARINGHOUSE	03/07/2018	03/09/2028	05/02/2018	Termination		102,000,000	2.936% [LIBOR]			(998,720)	128,620						(998,720)			0001
Interest Rate Swap /104620/(Semi-Annual) FIXED [2.965%]/Quarterly LIBOR 2.78819%	Portfolio Hedge	Schedule B, D, Exhibit 5	Interest	WELLS FARGO BANK, N.A. / WELLSFARGOSEC/CLEARINGHOUSE	03/14/2018	03/16/2030	03/19/2018	Termination		77,000,000	LIBOR [2.965%]			134,509	(7,016)						134,509			0001

E19.36

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
Currency Swap /61119/EUR/USD [Quarterly] E-BOR [2.450%]/Quarterly LIBOR 5.82819%	Portfolio Hedge	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	06/14/2013	06/15/2020	09/12/2018	Part Term		41,358,600	LIBOR [E-BOR]			5,544,761	847,228			(4,248,886)			5,544,761			0002
Currency Swap /61137/[Quarterly] BPLib [1.82%]/Quarterly LIBOR 4.71694%	Portfolio Hedge	Schedule D	Currency	DEUTSCHE BANK AG 7LWTFZY1ONSX8D621K86	06/14/2013	06/15/2020	09/05/2018	Termination		117,054,900	LIBOR [BPLib]			21,630,781	1,543,234			(16,848,122)			21,630,781			0002
Currency Swap /73428/[Quarterly] FIXED [2.41%]/Quarterly FIXED 3.22%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA/ MORGAN STANLEY/CLEARED THROUGH CME 17331LVCKQKXST7XV54	03/21/2014	04/15/2018	04/16/2018	Expiry		11,730,000	3.22% [2.41%]			1,206,150	36,202			(1,500,202)			1,206,150			0002
Currency Swap /76131/[Semi-Annual] FIXED [5.64%]/Semi-Annual FIXED 6.97%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA/ MORGAN STANLEY/CLEARED THROUGH CME 17331LVCKQKXST7XV54	08/07/2014	08/11/2018	07/06/2018	Termination		32,642,980	6.97% [5.64%]			3,882,310	316,855			(3,198,832)			3,882,310			0002
Currency Swap /78492/[Semi-Annual] FIXED [5.0%]/Semi-Annual FIXED 6.63%	ASSET HEDGE	Schedule D	Currency	WELLSFARGOSEC/CLEARED THROUGH CME VVVVXKR63DVZVN70PB21	12/11/2014	12/15/2018	07/06/2018	Termination		22,098,300	6.63% [5.0%]			1,036,038	202,528			(529,884)			1,036,038			0002
Currency Swap /79543/[Semi-Annual] FIXED [7.55%]/Semi-Annual FIXED 7.755%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A./ WELLSFARGOSEC/CLEARED THROUGH CME VVVVXKR63DVZVN70PB21	02/04/2015	02/05/2018	02/05/2018	Expiry		22,154,000	7.755% [7.55%]			1,811,673	18,020			(2,428,772)			1,811,673			0002
Currency Swap /80699/[Monthly] FIXED [3.5%]/Monthly FIXED 3.764%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A./ WELLSFARGOSEC/CLEARED THROUGH CME VVVVXKR63DVZVN70PB21	03/20/2015	06/01/2025	06/07/2018	Termination		6,227,489	3.764% [3.5%]			159,252	8,781			(42,623)			159,252			0002
Currency Swap /80791/[Quarterly] FIXED [3.18%]/Quarterly FIXED 3.866%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA ES71P3U3RH16C71XBU11	03/27/2015	03/31/2025	06/12/2018	Termination		26,699,000	3.866% [3.18%]			1,418,657	110,002			(1,603,410)			1,418,657			0002
Currency Swap /83738/[Semi-Annual] FIXED [3.8%]/Semi-Annual FIXED 5.634%	ASSET HEDGE	Schedule D	Currency	ROYAL BANK OF CANADA/ WELLSFARGOSEC/CLEARED THROUGH CME VVVVXKR63DVZVN70PB21	09/02/2015	03/03/2024	08/03/2018	Termination		70,548,750	5.634% [3.8%]			(7,565,189)	660,933			8,700,766			(7,565,189)			0002
Currency Swap /84769/[Semi-Annual] FIXED [5.4%]/Semi-Annual FIXED 6.854%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A./ CR SUI SEC USA/CLEARED THROUGH CME 1Y8Y60CX6VMJ20EL1146	10/22/2015	10/26/2018	07/05/2018	Termination		34,205,400	6.854% [5.4%]			(1,802,513)	190,143			(3,041,969)			(1,802,513)			0002
Currency Swap /87762/[Semi-Annual] FIXED [5.7%]/Semi-Annual FIXED 7.91375%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57PNE97	03/14/2016	03/16/2020	08/03/2018	Termination		28,860,000	7.91375% [5.7%]			(1,972,504)	298,725			(3,063,236)			(1,972,504)			0002
Currency Swap /90024/[Semi-Annual] FIXED [6.75%]/Semi-Annual FIXED 9.2275%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57PNE97	06/15/2016	03/15/2018	03/15/2018	Expiry		5,378,631	9.2275% [6.75%]			69,767	26,114			(55,018)			(69,767)			0002
Currency Swap /90066/[Semi-Annual] FIXED [5.0%]/Semi-Annual FIXED 6.793%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E5700ZIZ7FF32TNEFA76	06/16/2016	06/20/2019	07/05/2018	Termination		59,599,000	6.793% [5.0%]			(3,864,134)	443,147			5,860,794			(3,864,134)			0002
Currency Swap /96534/[Annual] FIXED [3.0%]/Semi-Annual FIXED 5.416%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E5700ZIZ7FF32TNEFA76	03/13/2017	03/20/2027	05/21/2018	Part Term		2,662,500	5.416% [3.0%]			(444,729)	21,429			417,083			(444,729)			0002
Currency Swap /96534/[Annual] FIXED [3.0%]/Semi-Annual FIXED 5.416%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E5700ZIZ7FF32TNEFA76	03/13/2017	03/20/2027	06/13/2018	Part Term		7,455,000	5.416% [3.0%]			(1,198,544)	69,177			1,167,833			(1,198,544)			0002
Currency Swap /96534/[Annual] FIXED [3.0%]/Semi-Annual FIXED 5.416%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E5700ZIZ7FF32TNEFA76	03/13/2017	03/20/2027	06/14/2018	Termination		2,023,500	5.416% [3.0%]			(286,219)	19,505			316,983			(286,219)			0002
Currency Swap /96612/[Annual] FIXED [3.0%]/Annual FIXED 5.657%	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC G5GSEF7VJP5170UK5573	03/15/2017	03/11/2025	05/21/2018	Termination		5,320,000	5.657% [3.0%]			(810,817)	45,356			781,615			(810,817)			0002
Currency Swap /98372/[Annual] FIXED [5.125%]/Semi-Annual FIXED 7.625%	Portfolio Hedge	Schedule D	Currency	BANK OF AMERICA, N.A. B4TYDBE6GMZ0031MB27	06/09/2017	06/15/2025	01/09/2018	Termination		2,013,840	7.625% [5.125%]			(227,339)	1,214			226,489			(227,339)			0002
Currency Swap /101098/[Semi-Annual] FIXED [7.82%]/Semi-Annual FIXED 10.639%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57PNE97	11/03/2017	12/31/2033	07/25/2018	Termination		7,988,282	10.639% [7.82%]			(614,397)	115,147			481,570			(614,397)			0002
Currency Swap /101276/EUR/USD [Annual] FIXED [2.75%]/Semi-Annual FIXED 4.89%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A. E5700ZIZ7FF32TNEFA76	11/16/2017	01/27/2030	05/21/2018	Part Term		2,942,500	4.89% [2.75%]			(146,601)	24,280			78,823			(146,601)			0002

19138

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)	
Currency Swap /101276/EUR/ USD [Annual] FIXED [2.75%]/Semi-Annual FIXED 4.88%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	E570DZIZ7FF32THEFA76	11/16/2017	01/27/2030	06/13/2018	Part Term	3,531,000	4.89% [2.75%]			(147,288)	33,599			94,588			(147,288)			0002	
Currency Swap /102358// [Semi-Annual] BPLib [4.82706%]/Quarterly LIBOR 6.17203%	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUGJUFU57RNE97	12/19/2017	12/21/2018	12/21/2018	Expiry	133,500,000	LIBOR [BPLib]			7,140,000	2,289,681			1,640,569			7,140,000			0002	
Currency Swap /103650// [Annual] FIXED [5.25%]/Semi-Annual FIXED 7.93%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	E570DZIZ7FF32THEFA76	02/07/2018	01/15/2028	07/25/2018	Termination	3,868,200	7.93% [5.25%]			142,670	51,737						142,670			0002	
Currency Swap /104377// [Annual] FIXED [4.75%]/Semi-Annual FIXED 7.43%	ASSET HEDGE	Schedule D	Currency	BANK OF AMERICA, N.A.	B4TYDEB6GMZ0031MB27	03/06/2018	03/13/2028	11/14/2018	Part Term	4,155,675	7.43% [4.75%]			374,247	81,331						374,247			0002	
Currency Swap /104377// [Annual] FIXED [4.75%]/Semi-Annual FIXED 7.43%	ASSET HEDGE	Schedule D	Currency	BANK OF AMERICA, N.A.	B4TYDEB6GMZ0031MB27	03/06/2018	03/13/2028	11/15/2018	Part Term	2,251,508	7.43% [4.75%]			187,496	44,651						187,496			0002	
Currency Swap /104377// [Annual] FIXED [4.75%]/Semi-Annual FIXED 7.43%	ASSET HEDGE	Schedule D	Currency	BANK OF AMERICA, N.A.	B4TYDEB6GMZ0031MB27	03/06/2018	03/13/2028	11/27/2018	Termination	2,896,568	7.43% [4.75%]			269,583	59,971						269,583			0002	
Currency Swap /106920/EUR/ USD [Annual] FIXED [2.7%]/Semi-Annual FIXED 5.94%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	E570DZIZ7FF32THEFA76	06/06/2018	06/15/2028	11/21/2018	Part Term	9,411,200	5.34% [2.7%]			224,961	111,933						224,961			0002	
Currency Swap /106920/EUR/ USD [Annual] FIXED [2.7%]/Semi-Annual FIXED 5.94%	ASSET HEDGE	Schedule D	Currency	CITIBANK N.A.	E570DZIZ7FF32THEFA76	06/06/2018	06/15/2028	11/26/2018	Part Term	4,705,600	5.34% [2.7%]			142,181	56,694						142,181			0002	
093999999. Subtotal - Swaps - Hedging Other - Foreign Exchange														35,170,879	8,201,278	XXX	(12,078,651)		35,170,879		XXX				
Total Return Swap /59047/[Quarterly] FIXED [0.0%]/Quarterly LIBOR 0.6591%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	CITIBANK N.A.	E570DZIZ7FF32THEFA76	05/17/2013	05/24/2018	05/30/2018	Expiry	47,293,892	LIBOR [0.0%]			(2,953,564)	410,321						(2,953,564)			0003	
Total Return Swap /71970/[Quarterly] FIXED [0.0%]/Quarterly LIBOR 0.6286%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON	ROMUISFPUBR08K5P83	01/22/2014	01/25/2018	01/25/2018	Expiry	22,560,252	LIBOR [0.0%]			(2,475,168)	84,030						(2,475,168)			0003	
Total Return Swap /80285/[Quarterly] FIXED [0.0%]/Quarterly LIBOR - .1894%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	DEUTSCHE BANK AG/ MORGAN STANLEY/CLEARED THROUGH CME	I7331LVCZKQK5T7XV54	03/11/2015	03/12/2018	03/15/2018	Expiry	17,213,606	LIBOR [0.0%]			(976,779)	38,868						(976,779)			0003	
Total Return Swap /82960/[Quarterly] FIXED [0.0%]/Quarterly LIBOR 0.6125%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	HSC BANK USA, NATIONAL ASSOCIATION/ CR SUI5 SEC USA/CLEARED THROUGH CME	1Y8Y6QC6YUJ20EL146	07/21/2015	07/26/2018	07/26/2018	Expiry	19,766,043	LIBOR [0.0%]			(2,073,566)	264,119						(2,073,566)			0003	
Total Return Swap /85466/[Quarterly] FIXED [0.0%]/Quarterly LIBOR 0.7422%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A.	B4TYDEB6GMZ0031MB27	11/25/2015	11/30/2018	12/05/2018	Expiry	16,657,848	LIBOR [0.0%]			1,322,173	378,107						199,052			1,322,173	0003
Total Return Swap /85758/[Quarterly] FIXED [0.0%]/Quarterly LIBOR 0.762%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON/ WELLSFARGOSEC/CLEARED THROUGH CME	VYVVKR63D/VZV70PB21	12/10/2015	12/10/2018	12/13/2018	Expiry	57,131,972	LIBOR [0.0%]			(572,281)	1,253,652						(572,281)			0003	
Total Return Swap /85842/[Quarterly] FIXED [0.0%]/Quarterly LIBOR 0.76775%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BNP PARIBAS LONDON	ROMUISFPUBR08K5P83	12/10/2015	12/11/2018	12/14/2018	Expiry	56,976,987	LIBOR [0.0%]			(552,569)	1,250,448						(552,569)			0003	
Total Return Swap /90974/[Quarterly] FIXED [0.0%]/Quarterly LIBOR 0.8876%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	BANK OF AMERICA, N.A.	B4TYDEB6GMZ0031MB27	08/02/2016	08/02/2018	08/07/2018	Expiry	31,714,440	LIBOR [0.0%]			(75,374)	404,124						(75,374)			0003	
Total Return Swap /93760/[Quarterly] FIXED [0.0%]/Quarterly LIBOR 0.44083%	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	GOLDMAN SACHS INTERNATIONAL	W22LR0WP21HZNB6K528	11/30/2016	12/06/2018	12/10/2018	Expiry	29,555,777	LIBOR [0.0%]			343,296	421,098						343,296			0003	
Total Return Swap /96874/[At Maturity] FIXED [0.84986%]/At Maturity FIXED 0.0%	Portfolio Hedge	Schedule BA, D	Interest	GOLDMAN SACHS BANK USA	KD3XUN7C6T14HNAYLU02	04/03/2017	01/05/2018	01/04/2018	Termination	254,957,528	0.0% [0.84986%]			14,337,308	(60,322)						(18,258,553)			14,337,308	0005

E19.39

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/(Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
	Total Return Swap /97194/(At Maturity) FIXED [0.87691%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEAR D THROUGH CME	04/19/2017	04/27/2018	04/26/2018	Termination		77,168,343	0.0% [0.87691%]			(3,960,000)	454,697			(2,816,639)			(3,960,000)			0005
	Total Return Swap /97198/(At Maturity) FIXED [0.93022%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	BANK OF AMERICA, N.A./ WELLSFARGOSEC/CLEAR D THROUGH CME	04/20/2017	01/23/2018	01/22/2018	Termination		232,554,385	-----77293% [0.93022%]			(1,363,088)	(674,766)			(5,730,481)			(1,363,088)			0005
	Total Return Swap /97218/(At Maturity) FIXED [0.93017%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	BANK OF AMERICA, N.A.	04/21/2017	01/23/2018	01/22/2018	Termination		83,850,725	-----77293% [0.93017%]			(621,858)	(234,801)			(1,940,056)			(621,858)			0005
	Total Return Swap /100866/(At Maturity) FIXED [1.05241%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	UBS AG	08/18/2017	07/20/2018	07/19/2018	Termination		115,765,285	0.0% [1.05241%]			(5,096,094)	585,614			(248,015)			(5,096,094)			0005
	Total Return Swap /101009/(At Maturity) FIXED [1.04861%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	MORGAN STANLEY CAPITAL SERVICES	08/18/2017	08/21/2018	08/20/2018	Termination		199,236,685	-----4.35294% [1.04861%]			(8,817,188)	3,606,188			(2,482,023)			(8,817,188)			0005
	Total Return Swap /100998/(At Maturity) FIXED [0.92621%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	BANK OF AMERICA, N.A.	10/26/2017	10/26/2018	10/26/2018	Termination		125,038,247	0.0% [0.92621%]			(8,648,438)	(86,325)			(3,866,463)			(8,648,438)			0005
	Total Return Swap /101588/(At Maturity) FIXED [0.90177%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	BNP PARIBAS LONDON	11/22/2017	05/24/2018	05/23/2018	Termination		90,117,527	0.0% [0.90177%]			(6,508,411)	492,584			(887,879)			(6,508,411)			0005
	Total Return Swap /102571/(At Maturity) FIXED [0.89765%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	GOLDMAN SACHS BANK USA	01/04/2018	10/09/2018	10/05/2018	Termination		269,294,837	0.0% [0.89765%]			(27,515,625)	1,240,370						(27,515,625)			0005
	Total Return Swap /103220/(At Maturity) FIXED [0.92476%/At Maturity FIXED 0.0%]	Portfolio Hedge	Interest	BANK OF AMERICA, N.A.	01/22/2018	10/23/2018	10/22/2018	Termination		314,420,166	-----9.91195% [0.92477%]			(25,818,750)	1,937,533						(25,818,750)			0005
	0949999999. Subtotal - Swaps - Hedging Other - Total Return											1,622,452		(82,025,975)	11,765,539		XXX	(29,646,807)			(82,025,975)			XXX
	0969999999. Subtotal - Swaps - Hedging Other													(71,882,164)	(149,094,428)		XXX	(35,451,642)			(73,304,615)			XXX
	Interest Rate Swap /74841/(Quarterly) LIBOR [2.75125%/Semi-Annual FIXED 3.3885%	REPLICATION	Interest	CITIBANK N.A./ GOLDMAN SACHS/CLEARED THROUGH CME	06/03/2014	06/05/2044	01/05/2018	Part Term		45,000,000	3.3885% [LIBOR]			6,547,304	16,571						6,547,304			0016
	Interest Rate Swap /74841/(Quarterly) LIBOR [2.75125%/Semi-Annual FIXED 3.3885%	REPLICATION	Interest	CITIBANK N.A./ GOLDMAN SACHS/CLEARED THROUGH CME	06/03/2014	06/05/2044	07/20/2018	Termination		15,000,000	3.3885% [LIBOR]			1,146,436	122,000						1,146,436			0016
	Interest Rate Swap /76172/(Quarterly) LIBOR [2.64%/Semi-Annual FIXED 3.2%	REPLICATION	Interest	WELLS FARGO BANK, N.A./ MORGAN STANLEY/CLEARED THROUGH CME	08/14/2014	08/18/2044	03/21/2018	Termination		30,000,000	3.2% [LIBOR]			866,375	109,057						866,375			0016
	Interest Rate Swap /76574/(Quarterly) LIBOR [2.73613%/Semi-Annual FIXED 3.1435%	REPLICATION	Interest	ROYAL BANK OF CANADA/ WELLSFARGOSEC/CLEAR D THROUGH CME	09/02/2014	09/04/2044	03/21/2018	Termination		30,000,000	3.1435% [LIBOR]			542,823	105,417						542,823			0016
	Interest Rate Swap /76911/(Quarterly) LIBOR [2.78819%/Semi-Annual FIXED 3.336%	REPLICATION	Interest	WELLS FARGO BANK, N.A.	09/15/2014	09/17/2044	07/20/2018	Termination		30,000,000	3.336% [LIBOR]			2,018,996	225,644						2,018,996			0016
	0979999999. Subtotal - Swaps - Replication - Interest Rate													11,121,935	578,690		XXX				11,121,935			XXX
	Credit Default Swap /100122/Filed with the SVO and awaiting RSAT Sovereign Bond of Peru	REPLICATION	Credit	BNP PARIBAS LONDON	09/08/2017	12/20/2022	03/15/2018	Termination		5,000,000	1.0% [CREDIT]	41,065		78,399	(3,261)					(1,594)	42,914			0007
	Credit Default Swap /100123/Filed with the SVO and awaiting RSAT Sovereign Bond of Columbia	REPLICATION	Credit	BNP PARIBAS LONDON	09/08/2017	12/20/2022	03/15/2018	Termination		15,000,000	1.0% [CREDIT]	231,312		68,803	3,981					8,981	268,682			0007
	Credit Default Swap /100127/Filed with the SVO and awaiting RSAT Sovereign Bond of Mexico	REPLICATION	Credit	GOLDMAN SACHS INTERNATIONAL	09/08/2017	12/20/2022	03/19/2018	Assignment		15,000,000	1.0% [CREDIT]	94,235		140,139	37,086					3,753	41,197			0007

E19.40

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
	Credit Default Swap /100184/Filed with the SVO and awaiting RSAT Sovereign Bond of Panama	REPLICATION	Credit	BANK OF AMERICA, N.A.	09/12/2017	12/20/2022	03/20/2018	Termination		10,000,000	1.0% [CREDIT]	79,340		190,022	19,301					(3,199)	121,582			0007
	Credit Default Swap /100289/Filed with the SVO and awaiting RSAT Sovereign Bond of India	REPLICATION	Credit	HSC BANK USA, NATIONAL ASSOCIATION	09/14/2017	12/20/2022	03/15/2018	Assignment		15,000,000	1.0% [CREDIT]	(54,699)		108,001	(2,876)					2,124	155,267			0007
	Credit Default Swap /100421/Filed with the SVO and awaiting RSAT Credit Default Indices (CDIGS29/CDX.NA.IG.29)	REPLICATION	Credit	DEUTSCHE BANK AG/ WELLSFARGOSEC/CLEARING THROUGH ICE	09/26/2017	12/20/2022	03/21/2018	Assignment		70,000,000	1.0% [CREDIT]	1,421,231		1,401,711	96,245					(59,311)	116,153			0007
	Credit Default Swap /100424/Filed with the SVO and awaiting RSAT Credit Default Indices (CDIGS29/CDX.NA.IG.29)	REPLICATION	Credit	GOLDMAN SACHS INTERNATIONAL/ WELLSFARGOSEC/CLEARING THROUGH ICE	09/26/2017	12/20/2022	03/21/2018	Termination		517,000,000	1.0% [CREDIT]	10,473,480		10,529,044	711,811					(437,078)	1,055,379			0007
	Credit Default Swap /100427/Filed with the SVO and awaiting RSAT Credit Default Indices (CDIGS29/CDX.NA.IG.29)	REPLICATION	Credit	BARCLAYS BANK PLC/ WELLSFARGOSEC/CLEARING THROUGH ICE	09/26/2017	12/20/2022	03/21/2018	Assignment		35,000,000	1.0% [CREDIT]	705,002		700,855	48,357					(29,421)	63,154			0007
	Credit Default Swap /104797/ Credit Default Indices (CDIGS29/CDX.NA.IG.29)	REPLICATION	Credit	JPMORGAN CHASE BANK, N.A. / WELLSFARGOSEC/CLEARING THROUGH ICE	09/26/2017	12/20/2022	03/20/2018	Assignment		35,000,000	1.0% [CREDIT]	1,407,899		696,366	47,796					(29,010)	59,250			0007
	Credit Default Swap /100511/Filed with the SVO and awaiting RSAT Credit Default Indices (CDIGS29/CDX.NA.IG.29)	REPLICATION	Credit	CITIBANK N.A. / WELLSFARGOSEC/CLEARING THROUGH ICE	09/27/2017	12/20/2022	03/21/2018	Assignment		348,000,000	1.0% [CREDIT]	7,322,966		7,082,559	467,732					(305,601)	458,656			0007
	Credit Default Swap /100511/Filed with the SVO and awaiting RSAT Credit Default Indices (CDIGS29/CDX.NA.IG.29)	REPLICATION	Credit	CITIBANK N.A. / WELLSFARGOSEC/CLEARING THROUGH ICE	09/27/2017	12/20/2022	03/21/2018	Assignment		171,000,000	1.0% [CREDIT]	3,598,354		3,480,223	229,834					(150,166)	225,374			0007
	Credit Default Swap /100543/Filed with the SVO and awaiting RSAT Credit Default Indices (CDIGS29/CDX.NA.IG.29)	REPLICATION	Credit	JPMORGAN CHASE BANK, N.A. / WELLSFARGOSEC/CLEARING THROUGH ICE	09/28/2017	12/20/2022	03/21/2018	Assignment		257,000,000	1.0% [CREDIT]	5,339,144		5,251,287	348,299					(222,812)	421,827			0007
	Credit Default Swap /101784/Filed with the SVO and awaiting RSAT Sovereign Bond of Russia	REPLICATION	Credit	BNP PARIBAS LONDON - GOLDMAN SACHS BANK USA / WELLSFARGOSEC/CLEARING THROUGH ICE	12/01/2017	12/20/2022	03/19/2018	Assignment		10,000,000	1.0% [CREDIT]	125,605		150,695	27,464					5,242	62,920			0007
	Credit Default Swap /103691/ Credit Default Indices (CDIGS29/CDX.NA.IG.29)	REPLICATION	Credit	BANK OF AMERICA, N.A.	02/09/2018	12/20/2022	03/21/2018	Termination		1,000,000,000	1.0% [CREDIT]		18,222,154	20,352,182	193,018					(918,093)	3,048,122			0007
	Credit Default Swap /104704/Need to file with SVO Sovereign Bond of Columbia	REPLICATION	Credit	BNP PARIBAS LONDON	03/15/2018	06/20/2023	09/17/2018	Termination		15,000,000	1.0% [CREDIT]		(52,065)	11,454	47,105					7,105	56,415			0007
	Credit Default Swap /104707/Need to file with SVO Sovereign Bond of Peru	REPLICATION	Credit	BNP PARIBAS LONDON	03/15/2018	06/20/2023	09/12/2018	Assignment		5,000,000	1.0% [CREDIT]		48,325	38,909	19,173					(6,522)	(2,894)			0007
	Credit Default Swap /104708/Need to file with SVO Sovereign Bond of India	REPLICATION	Credit	BNP PARIBAS LONDON	03/15/2018	06/20/2023	09/12/2018	Termination		15,000,000	1.0% [CREDIT]		9,285	(260,461)	75,831					(1,253)	(268,493)			0007
	Credit Default Swap /104738/Need to file with SVO Sovereign Bond of Mexico	REPLICATION	Credit	BNP PARIBAS LONDON	03/19/2018	06/20/2023	09/17/2018	Assignment		15,000,000	1.0% [CREDIT]		(132,663)	(1,545)	51,060					12,727	118,391			0007
	Credit Default Swap /108761/ Sovereign Bond of Russia	REPLICATION	Credit	BANK OF AMERICA, N.A.	03/19/2018	06/20/2023	09/17/2018	Termination		10,000,000	1.0% [CREDIT]		(107,551)	(239,381)	35,873					10,318	(142,148)			0007
	Credit Default Swap /104796/Need to file with SVO Sovereign Bond of Panama	REPLICATION	Credit	BANK OF AMERICA, N.A.	03/20/2018	06/20/2023	09/12/2018	Assignment		10,000,000	1.0% [CREDIT]		164,525	153,179	34,474					(15,526)	4,180			0007

E1941

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
	Credit Default Swap /104801/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	WELLS FARGO BANK, N.A./ WELLSFARGOSEC/CLEARINGHOUSE	03/20/2018	06/20/2023	09/28/2018	Termination		35,000,000	1.0% [CREDIT]		628,462	690,864	124,716					(63,895)	126,297			0007
	Credit Default Swap /104821/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	BARCLAYS BANK PLC/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/25/2018	Termination		257,000,000	1.0% [CREDIT]		4,776,228	4,810,412	868,971					(473,140)	507,325			0007
	Credit Default Swap /104822/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/28/2018	Termination		105,000,000	1.0% [CREDIT]		1,902,580	2,072,593	369,484					(193,432)	363,446			0007
	Credit Default Swap /104825/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/27/2018	Termination		659,000,000	1.0% [CREDIT]		12,189,167	13,056,924	2,257,868					(1,220,188)	2,087,944			0007
	Credit Default Swap /104825/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/28/2018	Part Term		225,000,000	1.0% [CREDIT]		4,161,704	4,409,814	602,017					(639,372)	887,483			0007
	Credit Default Swap /104825/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/28/2018	Termination		327,000,000	1.0% [CREDIT]		6,048,343	6,569,071	1,653,167						520,729			0007
	Credit Default Swap /104825/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/28/2018	Termination		154,000,000	1.0% [CREDIT]		2,848,455	2,975,026	202,124					(688,265)	814,836			0007
	Credit Default Swap /104825/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/28/2018	Part Term		90,000,000	1.0% [CREDIT]		1,664,681	1,808,001	455,000						143,320			0007
	Credit Default Swap /104825/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/28/2018	Termination		64,000,000	1.0% [CREDIT]		1,183,773	1,235,795	81,013					(289,598)	341,619			0007
	Credit Default Swap /104830/Need to file with SVO Credit Default Indices (CDIG030/CDX.NA.IG.30)	REPLICATION	Credit	GOLDMAN SACHS BANK USA/ WELLSFARGOSEC/CLEARINGHOUSE	03/21/2018	06/20/2023	09/25/2018	Termination		517,000,000	1.0% [CREDIT]		9,570,260	9,647,170	1,751,844					(948,044)	1,024,955			0007
	Credit Default Swap /107985/ Sovereign Bond of India	REPLICATION	Credit	BNP PARIBAS LONDON	07/10/2018	06/20/2023	09/12/2018	Termination		10,000,000	1.0% [CREDIT]		(104,284)	(173,640)	23,972					5,083	(74,439)			0007
	Credit Default Swap /108131/ Sovereign Bond of Malaysia	REPLICATION	Credit	BNP PARIBAS LONDON	07/10/2018	06/20/2023	09/12/2018	Termination		10,000,000	1.0% [CREDIT]		(6,715)	(9,758)	19,216					327	(3,371)			0007
	Credit Default Swap /110003/awaiting PPN Sovereign Bond of Russia	REPLICATION	Credit	BANK OF AMERICA, N.A.	09/17/2018	12/20/2023	10/16/2018	Termination		10,000,000	1.0% [CREDIT]		(328,921)	(218,763)	28,422					19,811	90,348			0007
0989999999. Subtotal - Swaps - Replication - Credit Default												29,882,627	62,685,742	96,424,282	10,926,115	XXX				(6,620,053)	12,736,419	XXX		
1029999999. Subtotal - Swaps - Replication												29,882,627	62,685,742	107,546,217	11,504,804	XXX				(6,620,053)	23,858,354	XXX		
1089999999. Subtotal - Swaps - Income Generation																XXX						XXX		
1149999999. Subtotal - Swaps - Other																XXX						XXX		
1159999999. Total Swaps - Interest Rate												(1,105,199)		(15,837,813)	(168,315,332)	XXX	3,978,229				(14,732,614)	XXX		
1169999999. Total Swaps - Credit Default												32,610,278	62,685,742	98,556,962	10,758,892	XXX	2,295,586			(6,620,053)	12,141,449	XXX		
1179999999. Total Swaps - Foreign Exchange														35,170,879	8,201,278	XXX	(12,078,651)				35,170,879	XXX		
1189999999. Total Swaps - Total Return														(82,025,975)	11,765,539	XXX	(29,646,807)				(82,025,975)	XXX		
1199999999. Total Swaps - Other																XXX						XXX		
1209999999. Total Swaps												31,505,079	62,685,742	35,864,053	(137,589,624)	XXX	(35,451,642)			(6,620,053)	(49,446,261)	XXX		
FNCL 3.5 1/17 COUPON 3.500000	TBA FORWARD	Schedule D	Interest	BARCLAYS CAPITAL INC	12/06/2017	01/11/2018	01/02/2018	Termination		70,925,000	102.53515625			(163,460)	(53,325)					66,489	(163,460)			0013
MAT /101910	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	12/06/2017	01/11/2018	01/02/2018	Termination		6,600,000	102.53515625			(15,727)	(4,962)					6,703	(15,727)			0013
FNCL 3.5 1/17 COUPON 3.500000	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	12/06/2017	01/11/2018	01/02/2018	Termination		35,250,000	102.53515625			(83,994)	(26,503)					35,799	(83,994)			0013
MAT /101913	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	12/06/2017	01/11/2018	01/02/2018	Termination		70,875,000	102.53515625			(168,882)	(53,287)					71,979	(168,882)			0013
FNCL 3.5 1/17 COUPON 3.500000	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	12/06/2017	01/11/2018	01/02/2018	Termination		809,475,000	102.50390625			(2,118,548)	(608,599)					758,842	(2,118,548)			0013

E19.42

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
FNCL 3.5 1/17 COUPON 3.500000 MAT /101821	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	12/06/2017	01/11/2018	01/02/2018	Termination		626,925,000	102.51953125			(1,542,823)	(471,350)			587,711			(1,542,823)			0013
FNCL 3.5 2/17 COUPON 3.500000 MAT /102483	TBA FORWARD	Schedule D	Interest	BARCLAYS CAPITAL INC	01/02/2018	02/13/2018	02/05/2018	Termination		70,925,000	100.09375000			(1,617,977)							(1,617,977)			0013
FNCL 3.5 2/17 COUPON 3.500000 MAT /102487	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	01/02/2018	02/13/2018	02/05/2018	Termination		6,600,000	100.14062500			(147,469)							(147,469)			0013
FNCL 3.5 2/17 COUPON 3.500000 MAT /102489	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	01/02/2018	02/13/2018	02/05/2018	Termination		35,250,000	100.14062500			(787,617)							(787,617)			0013
FNCL 3.5 2/17 COUPON 3.500000 MAT /102491	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	01/02/2018	02/13/2018	02/05/2018	Termination		70,875,000	100.14062500			(1,583,613)							(1,583,613)			0013
FNCL 3.5 2/17 COUPON 3.500000 MAT /102493	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	01/02/2018	02/13/2018	02/05/2018	Termination		809,475,000	100.12500000			(17,960,227)							(17,960,227)			0013
FNCL 3.5 2/17 COUPON 3.500000 MAT /102495	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	01/02/2018	02/13/2018	02/05/2018	Termination		626,925,000	100.12500000			(14,007,855)							(14,007,855)			0013
FNCL 3.5 3/16 COUPON 3.500000 MAT /103611	TBA FORWARD	Schedule D	Interest	BARCLAYS CAPITAL INC	02/05/2018	03/13/2018	03/05/2018	Termination		10,975,000	99.79296875			(14,147)							(14,147)			0013
FNCL 3.5 3/16 COUPON 3.500000 MAT /103614	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	02/05/2018	03/13/2018	03/05/2018	Termination		6,600,000	99.82031250			(9,797)							(9,797)			0013
FNCL 3.5 3/16 COUPON 3.500000 MAT /103616	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	02/05/2018	03/13/2018	03/05/2018	Termination		35,250,000	99.82031250			(52,324)							(52,324)			0013
FNCL 3.5 3/16 COUPON 3.500000 MAT /103618	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	02/05/2018	03/13/2018	03/05/2018	Termination		130,825,000	99.82031250			(194,193)							(194,193)			0013
FNCL 3.5 3/16 COUPON 3.500000 MAT /103620	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	02/05/2018	03/13/2018	03/05/2018	Termination		809,475,000	99.79296875			(1,296,425)							(1,296,425)			0013
FNCL 3.5 3/16 COUPON 3.500000 MAT /103622	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	02/05/2018	03/13/2018	03/05/2018	Termination		626,925,000	99.79296875			(1,004,060)							(1,004,060)			0013
FNCL 3.5 4/16 COUPON 3.500000 MAT /104360	TBA FORWARD	Schedule D	Interest	BARCLAYS CAPITAL INC	03/05/2018	04/12/2018	04/05/2018	Termination		10,975,000	99.97656250			35,154							35,154			0013
FNCL 3.5 4/16 COUPON 3.500000 MAT /104362	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	03/05/2018	04/12/2018	04/05/2018	Termination		6,600,000	99.99218750			20,367							20,367			0013
FNCL 3.5 4/16 COUPON 3.500000 MAT /104364	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	03/05/2018	04/12/2018	04/05/2018	Termination		35,250,000	99.99218750			108,779							108,779			0013
FNCL 3.5 4/16 COUPON 3.500000 MAT /104366	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	03/05/2018	04/12/2018	04/05/2018	Termination		130,825,000	99.99218750			403,718							403,718			0013
FNCL 3.5 4/16 COUPON 3.500000 MAT /104368	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	03/05/2018	04/12/2018	04/05/2018	Termination		809,475,000	99.97656250			2,592,850							2,592,850			0013
FNCL 3.5 4/16 COUPON 3.500000 MAT /104370	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	03/05/2018	04/12/2018	04/05/2018	Termination		626,925,000	99.97656250			2,008,119							2,008,119			0013
FNCL 3.5 5/17 COUPON 3.500000 MAT /105191	TBA FORWARD	Schedule D	Interest	BARCLAYS CAPITAL INC	04/05/2018	05/14/2018	05/07/2018	Termination		10,975,000	99.28906250			(59,162)							(59,162)			0013
FNCL 3.5 5/17 COUPON 3.500000 MAT /105193	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	04/05/2018	05/14/2018	05/07/2018	Termination		6,600,000	99.30078125			(35,836)							(35,836)			0013
FNCL 3.5 5/17 COUPON 3.500000 MAT /105195	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	04/05/2018	05/14/2018	05/07/2018	Termination		35,250,000	99.30078125			(191,396)							(191,396)			0013
FNCL 3.5 5/17 COUPON 3.500000 MAT /105197	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	04/05/2018	05/14/2018	05/07/2018	Termination		130,825,000	99.30078125			(710,339)							(710,339)			0013
FNCL 3.5 5/17 COUPON 3.500000 MAT /105199	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	04/05/2018	05/14/2018	05/07/2018	Termination		809,475,000	99.28906250			(4,363,576)							(4,363,576)			0013
FNCL 3.5 5/17 COUPON 3.500000 MAT /106201	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	04/05/2018	05/14/2018	05/07/2018	Termination		626,925,000	99.28906250			(3,379,518)							(3,379,518)			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106021	TBA FORWARD	Schedule D	Interest	BARCLAYS CAPITAL INC	05/07/2018	06/13/2018	06/06/2018	Termination		10,975,000	98.97656250			(19,721)							(19,721)			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106023	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	05/07/2018	06/13/2018	06/06/2018	Termination		6,600,000	98.97656250			(12,633)							(12,633)			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106025	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	05/07/2018	06/13/2018	06/06/2018	Termination		35,250,000	98.97656250			(67,471)							(67,471)			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106027	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	05/07/2018	06/13/2018	06/06/2018	Termination		130,825,000	98.97656250			(250,407)							(250,407)			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106029	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	05/07/2018	06/13/2018	06/06/2018	Termination		320,350,000	98.97656250			(575,629)							(575,629)			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106029	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	05/07/2018	06/13/2018	06/07/2018	Termination		489,125,000	99.01562500			(687,832)							(687,832)			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106031	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	05/07/2018	06/13/2018	06/06/2018	Termination		504,000,000	99.03125000			(630,000)							(630,000)			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106031	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	05/07/2018	06/13/2018	06/07/2018	Termination		122,925,000	99.15625000													0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106987	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	06/06/2018	06/13/2018	06/07/2018	Termination		6,600,000	99.15625000			11,859							11,859			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106988	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	06/06/2018	06/13/2018	06/07/2018	Termination		35,250,000	99.15625000			63,340							63,340			0013
FNCL 3.5 6/16 COUPON 3.500000 MAT /106989	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	06/06/2018	06/13/2018	06/07/2018	Termination		10,975,000	99.15625000			19,721							19,721			0013

E19.43

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
FNCL 3.5 6/16 COUPON 3.500000	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	06/06/2018	06/13/2018	06/07/2018	Termination	130,825,000	99.15625000			235,076								235,076			0013
MAT /106890	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	06/06/2018	06/13/2018	06/07/2018	Termination	320,350,000	99.15625000			575,629								575,629			0013
FNCL 3.5 6/16 COUPON 3.500000	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	06/06/2018	06/13/2018	06/07/2018	Termination	600,000,000	101.66796875			70,313								70,313			0013
MAT /106891	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/07/2018	06/13/2018	06/08/2018	Termination	8,000,000	101.72265625			(3,750)								(3,750)			0013
FNCL 4 6/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/07/2018	06/13/2018	06/08/2018	Termination	42,000,000	101.72265625			(19,688)								(19,688)			0013
MAT /106992	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/07/2018	06/13/2018	06/08/2018	Termination	6,600,000	99.17968750			1,547								1,547			0013
FNCL 4 6/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/07/2018	06/13/2018	06/07/2018	Termination	35,250,000	99.17968750			8,262								8,262			0013
MAT /106995	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/07/2018	06/13/2018	06/07/2018	Termination	443,150,000	99.17968750			103,863								103,863			0013
FNCL 4 6/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/07/2018	06/13/2018	06/08/2018	Termination	527,000,000	101.72265625			(247,032)								(247,032)			0013
MAT /106997	TBA FORWARD	Schedule D	Interest	JPMORGAN CHASE BANK, N.A.	06/07/2018	06/13/2018	06/07/2018	Termination	127,050,000	99.10156250			(69,480)								(69,480)			0013
FNCL 3.5 6/16 COUPON 3.500000	TBA FORWARD	Schedule D	Interest	JPMORGAN CHASE BANK, N.A.	06/07/2018	06/13/2018	06/08/2018	Termination	163,050,000	101.66796875			(57,322)								(57,322)			0013
MAT /107000	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	06/07/2018	06/13/2018	06/07/2018	Termination	14,875,000	99.01562500			(20,918)								(20,918)			0013
FNCL 3.5 6/16 COUPON 3.500000	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	06/07/2018	06/13/2018	06/08/2018	Termination	600,000,000	101.66796875			210,938								210,938			0013
MAT /107001	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/08/2018	07/12/2018	07/02/2018	Termination	8,000,000	101.99218750			32,188								32,188			0013
FNCL 4 6/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/08/2018	07/12/2018	07/02/2018	Termination	42,000,000	101.99218750			168,984								168,984			0013
MAT /107010	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	06/08/2018	07/12/2018	07/02/2018	Termination	527,000,000	101.99218750			2,120,352								2,120,352			0013
FNCL 4 6/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	JPMORGAN CHASE BANK, N.A.	06/08/2018	07/12/2018	07/02/2018	Termination	163,050,000	101.96875000			713,344								713,344			0013
MAT /107011	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	06/08/2018	07/12/2018	07/02/2018	Termination	600,000,000	101.96875000			2,625,000								2,625,000			0013
FNCL 4 7/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	06/08/2018	07/12/2018	07/02/2018	Termination	600,000,000	101.98437500			2,718,750								2,718,750			0013
MAT /107092	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	07/02/2018	08/13/2018	08/06/2018	Termination	8,000,000	101.73437500			(9,375)								(9,375)			0013
FNCL 4 7/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	07/02/2018	08/13/2018	08/06/2018	Termination	42,000,000	101.73437500			(49,219)								(49,219)			0013
MAT /107094	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	07/02/2018	08/13/2018	08/06/2018	Termination	527,000,000	101.73437500			(617,578)								(617,578)			0013
FNCL 4 7/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	JPMORGAN CHASE BANK, N.A.	07/02/2018	08/13/2018	08/06/2018	Termination	163,050,000	101.71484375			(184,705)								(184,705)			0013
MAT /107096	TBA FORWARD	Schedule D	Interest	RBC CAPITAL MARKETS CORPORATION	07/02/2018	08/13/2018	07/27/2018	Termination	600,000,000	101.60937500			(1,312,500)								(1,312,500)			0013
FNCL 4 7/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	07/02/2018	08/13/2018	08/06/2018	Termination	600,000,000	101.71484375			(773,438)								(773,438)			0013
MAT /107100	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	07/02/2018	08/13/2018	08/06/2018	Termination	600,000,000	101.71484375			632,813								632,813			0013
FNCL 4 7/17 COUPON 4.000000	TBA FORWARD	Schedule D	Interest	NOMURA SECURITIES	08/06/2018	09/13/2018	09/05/2018	Termination	8,000,000	101.63281250			2,813								2,813			0013
MAT /107101	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	08/06/2018	09/13/2018	09/05/2018	Termination	42,000,000	101.63281250			14,766								14,766			0013
FNCL 4 8/18 FIXED COUPON 4.000000 /107769	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	08/06/2018	09/13/2018	09/05/2018	Termination	527,000,000	101.63281250			185,273								185,273			0013
FNCL 4 8/18 FIXED COUPON 4.000000 /107771	TBA FORWARD	Schedule D	Interest	J.P. Morgan Securities LLC	08/06/2018	09/13/2018	09/05/2018	Termination	163,050,000	101.61328125			(57,322)								(57,322)			0013
FNCL 4 8/18 FIXED COUPON 4.000000 /107773	TBA FORWARD	Schedule D	Interest	J.P. Morgan Securities LLC	08/06/2018	09/13/2018	09/05/2018	Termination	600,000,000	101.61328125			210,938								210,938			0013
FNCL 4 8/18 FIXED COUPON 4.000000 /107777	TBA FORWARD	Schedule D	Interest	NOMURA SECURITIES	08/06/2018	09/13/2018	09/05/2018	Termination	600,000,000	101.61328125			210,938								210,938			0013
FNCL 4 8/18 FIXED COUPON 4.000000 /107799	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	08/06/2018	09/13/2018	09/05/2018	Termination	600,000,000	101.61328125			210,938								210,938			0013
FNCL 4 8/18 FIXED COUPON 4.000000 /107811	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	09/05/2018	10/11/2018	10/03/2018	Termination	8,000,000	100.87890625			(51,250)								(51,250)			0013
FNCL 4 8/18 FIXED COUPON 4.000000 /108493	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	09/05/2018	10/11/2018	10/03/2018	Termination	42,000,000	100.87890625			(269,063)								(269,063)			0013
FNCL 4 9/14 FIXED COUPON 4.000000 /108618	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	09/05/2018	10/11/2018	10/03/2018	Termination	527,000,000	100.87890625			(3,376,094)								(3,376,094)			0013
FNCL 4 9/14 FIXED COUPON 4.000000 /108620	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	09/05/2018	10/11/2018	10/03/2018	Termination	527,000,000	100.87890625			(3,376,094)								(3,376,094)			0013
FNCL 4 9/14 FIXED COUPON 4.000000 /108622	TBA FORWARD	Schedule D	Interest	J.P. Morgan Securities LLC	09/05/2018	10/11/2018	10/03/2018	Termination	163,050,000	100.85937500			(1,044,539)								(1,044,539)			0013
FNCL 4 9/14 FIXED COUPON 4.000000 /108626	TBA FORWARD	Schedule D	Interest	J.P. Morgan Securities LLC	09/05/2018	10/11/2018	10/03/2018	Termination	163,050,000	100.85937500			(1,044,539)								(1,044,539)			0013
FNCL 4 9/14 FIXED COUPON 4.000000 /108628	TBA FORWARD	Schedule D	Interest	NOMURA SECURITIES	09/05/2018	10/11/2018	10/03/2018	Termination	600,000,000	101.61328125			210,938								210,938			0013
FNCL 4 9/14 FIXED COUPON 4.000000 /108630	TBA FORWARD	Schedule D	Interest	WELLS FARGO BANK, N.A.	08/06/2018	09/13/2018	09/05/2018	Termination	600,000,000	101.61328125			210,938								210,938			0013
FNCL 4 10/14 FIXED COUPON 4.000000 /109281	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	09/05/2018	10/11/2018	10/03/2018	Termination	8,000,000	100.87890625			(51,250)								(51,250)			0013
FNCL 4 10/14 FIXED COUPON 4.000000 /109283	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	09/05/2018	10/11/2018	10/03/2018	Termination	42,000,000	100.87890625			(269,063)								(269,063)			0013
FNCL 4 10/14 FIXED COUPON 4.000000 /109285	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY	09/05/2018	10/11/2018	10/03/2018	Termination	527,000,000	100.87890625			(3,376,094)								(3,376,094)			0013
FNCL 4 10/14 FIXED COUPON 4.000000 /109289	TBA FORWARD	Schedule D	Interest	J.P. Morgan Securities LLC	09/05/2018	10/11/2018	10/03/2018	Termination	163,050,000	100.85937500			(1,044,539)								(1,044,539)			0013

E19.44

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)	
FNCL 4 10/14 FIXED COUPON 4.000000 /109291	TBA FORWARD	Schedule D	Interest	NOMURA SECURITIES WELLS FARGO BANK, XPSKO1VTEQPKCHBEKQ95	09/05/2018	10/11/2018	10/03/2018	Termination		600,000,000	100.85937500			(3,843,750)										0013	
FNCL 4 10/14 FIXED COUPON 4.000000 /109293	TBA FORWARD	Schedule D	Interest	N.A. KB1H1DSPRR1VMUCUFXT09	09/05/2018	10/11/2018	10/03/2018	Termination		600,000,000	100.85937500			(3,843,750)											0013
FNCL 4 11/18 FIXED COUPON 4.000000 /110172	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FORBUP27PHTHYVLBNG30	10/03/2018	11/13/2018	11/06/2018	Termination		8,000,000	99.62890625			(90,000)											0013
FNCL 4 11/18 FIXED COUPON 4.000000 /110174	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FORBUP27PHTHYVLBNG30	10/03/2018	11/13/2018	11/06/2018	Termination		42,000,000	99.62890625			(472,500)											0013
FNCL 4 11/18 FIXED COUPON 4.000000 /110176	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FORBUP27PHTHYVLBNG30	10/03/2018	11/13/2018	11/06/2018	Termination		527,000,000	99.62890625			(5,928,750)											0013
FNCL 4 11/18 FIXED COUPON 4.000000 /110180	TBA FORWARD	Schedule D	Interest	J.P. Morgan Securities LLC ZBUT11V806ZRV1WT807	10/03/2018	11/13/2018	11/06/2018	Termination		163,050,000	99.62890625			(1,802,467)											0013
FNCL 4 11/18 FIXED COUPON 4.000000 /110182	TBA FORWARD	Schedule D	Interest	NOMURA SECURITIES WELLS FARGO BANK, XPSKO1VTEQPKCHBEKQ95	10/03/2018	11/13/2018	11/06/2018	Termination		600,000,000	99.62890625			(6,632,813)											0013
FNCL 4 11/18 FIXED COUPON 4.000000 /110184	TBA FORWARD	Schedule D	Interest	N.A. KB1H1DSPRR1VMUCUFXT09	10/03/2018	11/13/2018	11/06/2018	Termination		600,000,000	99.62890625			(6,632,813)											0013
FNCL 4 12/18 FIXED COUPON 4.000000 /111136	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FORBUP27PHTHYVLBNG30	11/06/2018	12/13/2018	12/06/2018	Termination		8,000,000	100.98828125			(119,063)											0013
FNCL 4 12/18 FIXED COUPON 4.000000 /111138	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FORBUP27PHTHYVLBNG30	11/06/2018	12/13/2018	12/06/2018	Termination		42,000,000	100.98828125			(625,078)											0013
FNCL 4 12/18 FIXED COUPON 4.000000 /111140	TBA FORWARD	Schedule D	Interest	GOLDMAN SACHS AND COMPANY FORBUP27PHTHYVLBNG30	11/06/2018	12/13/2018	12/06/2018	Termination		527,000,000	100.98828125			(7,843,242)											0013
FNCL 4 12/18 FIXED COUPON 4.000000 /111144	TBA FORWARD	Schedule D	Interest	J.P. Morgan Securities LLC ZBUT11V806ZRV1WT807	11/06/2018	12/13/2018	12/06/2018	Termination		163,050,000	100.93750000			(2,343,844)											0013
FNCL 4 12/18 FIXED COUPON 4.000000 /111146	TBA FORWARD	Schedule D	Interest	NOMURA SECURITIES WELLS FARGO BANK, XPSKO1VTEQPKCHBEKQ95	11/06/2018	12/13/2018	12/06/2018	Termination		600,000,000	100.93750000			(8,625,000)											0013
FNCL 4 12/18 FIXED COUPON 4.000000 /111148	TBA FORWARD	Schedule D	Interest	N.A. KB1H1DSPRR1VMUCUFXT09	11/06/2018	12/13/2018	12/06/2018	Termination		600,000,000	100.98437500			(8,906,250)											0013
REC 7290896.00 GBP PAY [9401393.85] USD /92238	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA K03XUN70G14HNAVLU02	10/04/2016	03/15/2018	03/15/2018	Expiry		9,401,394	1.28947030			(758,470)				(479,295)							0002
REC 9404389.68 USD PAY [7290896.00] GBP /92261	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA K03XUN70G14HNAVLU02	10/04/2016	04/03/2018	04/03/2018	Expiry		9,404,390	1.28988120			(844,423)				(484,014)							0002
REC 8551212.00 EUR PAY [9382475.32] USD /95142	Portfolio Hedge	BA, D	Currency	THE TORONTO-DOMINION BANK PT30B789TSU1DF371261	01/17/2017	04/16/2018	04/16/2018	Expiry		9,382,475	1.09721000			(1,204,780)				(957,213)							0002
REC 51212.50 EUR PAY [55826.26] USD /95159	Portfolio Hedge	BA, D	Currency	THE TORONTO-DOMINION BANK PT30B789TSU1DF371261	01/17/2017	01/16/2018	01/16/2018	Expiry		55,926	1.09204315			(6,855)				(5,677)							0002
REC 226284183.25 USD PAY [173650000.00] GBP /99940	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57RNE97	09/01/2017	02/07/2018	02/07/2018	Expiry		226,284,183	1.30310500			(14,655,192)				(8,689,574)							0002
REC 226558550.25 USD PAY [173650000.00] GBP /99949	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK PT30B789TSU1DF371261	09/05/2017	02/14/2018	02/14/2018	Expiry		226,558,550	1.30468500			(16,516,720)				(8,557,111)							0002
REC 9350936.02 USD PAY [11665000.01] CAD /100574	Portfolio Hedge	BA, D	Currency	GOLDMAN SACHS BANK USA K03XUN70G14HNAVLU02	10/03/2017	01/04/2018	01/04/2018	Expiry		9,350,936	80162332			(9,604)				(39,078)							0002
REC 56946759.86 USD PAY [73406000.00] AUD /100640	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	10/06/2017	01/10/2018	01/10/2018	Expiry		56,946,760	77577800			(625,566)				(385,228)							0002
REC 15531000.00 AUD PAY [12056532.03] USD /100645	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57RNE97	10/06/2017	01/10/2018	01/10/2018	Expiry		12,056,532	77628820			(124,431)				(71,212)							0002
REC 148346783.54 USD PAY [112634000.00] GBP /100657	ASSET HEDGE	BA	Currency	SOCIETE GENERAL 02RNE81BX4P4R0T8PU41	10/09/2017	01/18/2018	01/18/2018	Expiry		148,346,784	1.31706930			(8,135,633)				(3,955,358)							0002
REC 188568678.60 USD PAY [142600000.00] GBP /100665	ASSET HEDGE	Schedule D	Currency	SOCIETE GENERAL 02RNE81BX4P4R0T8PU41	10/10/2017	01/12/2018	01/12/2018	Expiry		188,568,679	1.32236100			(6,664,981)				(4,217,249)							0002
REC 105807189.18 USD PAY [134673000.00] AUD /100724	ASSET HEDGE	Schedule D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21GI19DL770XOHC3E78	10/16/2017	01/10/2018	01/10/2018	Expiry		105,807,189	78566000			(183,155)				(748,497)							0002
REC 9702052.82 USD PAY [8174700.00] EUR /100740	ASSET HEDGE	BA	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57RNE97	10/16/2017	01/18/2018	01/18/2018	Expiry		97,020,953	1.18684420			(2,996,502)				(1,232,703)							0002
REC 136979623.13 USD PAY [102879000.00] GBP /100741	ASSET HEDGE	Schedule BA	Currency	GOLDMAN SACHS BANK USA K03XUN70G14HNAVLU02	10/16/2017	01/10/2018	01/10/2018	Expiry		136,979,623	1.33146340			(1,989,330)				(2,186,604)							0002
REC 9595381.79 USD PAY [8108000.00] EUR /100765	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57RNE97	10/17/2017	01/18/2018	01/18/2018	Expiry		9,595,382	1.18344620			(324,756)				(149,789)							0002
REC 67241662.58 USD PAY [7538798999.04] JPY /100803	Portfolio Hedge	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK MBNUM28PBD07JBLV310	10/19/2017	01/23/2018	01/23/2018	Expiry		67,241,663	00891941			(1,361,408)				(256,849)							0002
REC 48177977.32 USD PAY [61313000.00] AUD /100805	ASSET HEDGE	Schedule BA	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	10/19/2017	01/23/2018	01/23/2018	Expiry		48,177,977	78577100			(872,423)				(290,661)							0002
REC 5013935.63 USD PAY [7158000.00] NZD /100831	ASSET HEDGE	Schedule BA	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LZCQKX77V5V54	10/19/2017	01/23/2018	01/23/2018	Expiry		5,013,936	70046600			(250,058)				(64,207)							0002
REC 61526056.15 USD PAY [46640000.00] GBP /100833	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUG0FU57RNE97	10/19/2017	01/23/2018	01/23/2018	Expiry		61,526,056	1.31916930			(3,797,928)				(1,556,590)							0002
REC 93822115.02 USD PAY [78957000.00] EUR /100851	ASSET HEDGE	Schedule BA	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21GI19DL770XOHC3E78	10/19/2017	01/23/2018	01/23/2018	Expiry		93,922,115	1.18953500			(3,187,099)				(910,732)							0002
REC 16961988.54 USD PAY [21366999.99] CAD /100894	ASSET HEDGE	Schedule BA	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21GI19DL770XOHC3E78	10/20/2017	01/23/2018	01/23/2018	Expiry		16,961,989	79384043			(242,720)				(44,013)							0002

E19.45

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 28258635.88 USD PAY [21800000.00] GBP /100919	ASSET HEDGE	Schedule BA	Currency	MORGAN STANLEY CAPITAL SERVICES	10/23/2017	01/24/2018	01/24/2018	Expiry	282,558,636	1.32160260				(21,956,704)				6,828,283			(21,956,704)			0002
REC 25067000.00 EUR PAY [2957701.37] USD /100920	ASSET HEDGE	Schedule BA	Currency	WELLS FARGO BANK, N.A.	10/23/2017	01/16/2018	01/16/2018	Expiry	29,577,701	1.17994580				1,151,934				(550,217)			1,151,934			0002
REC 15575439.36 USD PAY [11791000.00] GBP /100981	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	10/26/2017	01/12/2018	01/12/2018	Expiry	15,575,439	1.32096000				(567,619)				373,733			(567,619)			0002
REC 2386727.67 USD PAY [26999999.71] JPY /101039	ASSET HEDGE	Schedule BA	Currency	CREDIT AGRICOLE THE TORONTO-DOMINION BANK	10/31/2017	02/02/2018	02/02/2018	Expiry	2,386,728	0.0883973				(70,272)				16,200			(70,272)			0002
REC 3067675.78 USD PAY [25805000.02] SEK /101063	ASSET HEDGE	Schedule BA	Currency	PT308789TSU/DF371261	11/02/2017	02/05/2018	02/05/2018	Expiry	3,067,675	1.1980769				(140,631)				88,149			(140,631)			0002
REC 15999599.46 USD PAY [136510000.00] EUR /101069	ASSET HEDGE	Schedule BA	Currency	WELLS FARGO BANK, N.A.	11/02/2017	02/05/2018	02/05/2018	Expiry	159,995,999	1.17204600				(8,894,173)				4,259,350			(8,894,173)			0002
REC 19427991.84 USD PAY [14832000.00] GBP /101077	ASSET HEDGE	Schedule BA	Currency	THE TORONTO-DOMINION BANK	11/02/2017	02/05/2018	02/05/2018	Expiry	19,427,992	1.30987000				(1,273,031)				648,972			(1,273,031)			0002
REC 11047333.54 USD PAY [1256282000.04] JPY /101099	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A.	11/03/2017	01/23/2018	01/23/2018	Expiry	11,047,334	0.0879367				(384,833)				114,973			(384,833)			0002
REC 352170000.56 JPY PAY [3096813.48] USD /101104	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A.	11/03/2017	01/23/2018	01/23/2018	Expiry	3,096,813	0.0879352				107,934				(32,284)			107,934			0002
REC 5262694.15 USD PAY [4005000.00] GBP /101107	ASSET HEDGE	Schedule BA	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	11/06/2017	01/23/2018	01/23/2018	Expiry	5,262,694	1.31403100				(346,709)				146,940			(346,709)			0002
REC 1658000.00 GBP PAY [2179130.95] USD /101108	Portfolio Hedge	Schedule BA, D	Currency	THE TORONTO-DOMINION BANK	11/06/2017	01/23/2018	01/23/2018	Expiry	2,179,131	1.31431300				143,064				(64,293)			143,064			0002
REC 1230083.53 USD PAY [1057000.00] EUR /101114	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A.	11/06/2017	01/23/2018	01/23/2018	Expiry	1,230,084	1.16374979				(69,921)				40,678			(69,921)			0002
REC 2721057.06 USD PAY [3949000.00] NZD /101120	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A.	11/06/2017	01/23/2018	01/23/2018	Expiry	2,721,058	0.68904980				(183,037)				90,177			(183,037)			0002
REC 1470000.00 EUR PAY [1711346.07] USD /101125	ASSET HEDGE	Schedule BA	Currency	CREDIT AGRICOLE GOLDMAN SACHS BANK	11/06/2017	01/23/2018	01/23/2018	Expiry	1,711,346	1.16418100				96,607				(53,254)			96,607			0002
REC 275511372.99 USD PAY [208851000.00] GBP /101183	ASSET HEDGE	Schedule D	Currency	USA	11/07/2017	02/12/2018	02/12/2018	Expiry	275,511,373	1.31917670				(13,433,986)				7,292,958			(13,433,986)			0002
REC 121497023.65 USD PAY [92377999.99] GBP /101243	ASSET HEDGE	Schedule BA	Currency	CREDIT AGRICOLE GOLDMAN SACHS BANK	11/13/2017	02/15/2018	02/15/2018	Expiry	121,497,024	1.31521600				(8,700,530)				3,622,284			(8,700,530)			0002
REC 23670248.40 USD PAY [18000000.00] GBP /101262	ASSET HEDGE	Schedule D	Currency	USA	11/14/2017	01/12/2018	01/12/2018	Expiry	23,670,248	1.31501380				(973,552)				679,958			(973,552)			0002
REC 203160000.18 JPY PAY [1823587.16] USD /101366	ASSET HEDGE	Schedule D	Currency	DEUTSCHE BANK AG GOLDMAN SACHS BANK	11/20/2017	05/22/2018	05/22/2018	Expiry	18,239,587	0.0897794				44,813				80,568			44,813			0002
REC 18241519.66 USD PAY [203160000.03] JPY /101367	ASSET HEDGE	Schedule D	Currency	USA	11/20/2017	05/22/2018	05/22/2018	Expiry	18,241,520	0.0897889				(42,880)				(64,259)			(42,880)			0002
REC 120597121.43 USD PAY [90861059.00] GBP /101389	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	11/20/2017	02/22/2018	02/22/2018	Expiry	120,597,121	1.32726960				(6,235,831)				2,409,928			(6,235,831)			0002
REC 1451460.54 USD PAY [2135000.00] NZD /101406	ASSET HEDGE	Schedule BA	Currency	MORGAN STANLEY CAPITAL SERVICES	11/20/2017	02/22/2018	02/22/2018	Expiry	1,451,461	0.7984100				(116,270)				62,791			(116,270)			0002
REC 62731450.65 USD PAY [53090000.00] EUR /101443	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	11/21/2017	02/22/2018	02/22/2018	Expiry	62,731,451	1.18140550				(2,702,447)				1,216,545			(2,702,447)			0002
REC 108112919.40 USD PAY [81000000.00] GBP /101466	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	11/22/2017	05/25/2018	05/25/2018	Expiry	108,112,919	1.33472740				245,219				1,897,698			245,219			0002
REC 81000000.00 GBP PAY [108076880.00] USD /101468	ASSET HEDGE	Schedule D	Currency	DEUTSCHE BANK AG GOLDMAN SACHS BANK	11/22/2017	05/25/2018	05/25/2018	Expiry	108,076,880	1.33428000				(208,980)				(1,951,194)			(208,980)			0002
REC 4835000.00 GBP PAY [6453094.17] USD /101569	ASSET HEDGE	Schedule D	Currency	USA/ CLEARED THROUGH CITI GLOBAL MARK	11/27/2017	01/12/2018	01/12/2018	Expiry	6,453,064	1.33465650				166,534				(87,798)			166,534			0002
REC 2044969.28 USD PAY [15321000.00] GBP /101570	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	11/27/2017	01/12/2018	01/12/2018	Expiry	20,443,668	1.33435600				(532,313)				290,538			(532,313)			0002
REC 6846000.00 GBP PAY [8886797.92] USD /101593	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	11/28/2017	01/05/2018	01/05/2018	Expiry	8,886,798	1.33716490				128,501				(97,149)			128,501			0002
REC 25814000.00 EUR PAY [30887773.55] USD /101599	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	11/28/2017	01/05/2018	01/05/2018	Expiry	30,887,774	1.18890350				412,934				(315,747)			412,934			0002
REC 1980287.56 USD PAY [1665000.00] EUR /101614	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	11/28/2017	01/05/2018	01/05/2018	Expiry	1,980,288	1.18936190				(25,704)				19,608			(25,704)			0002
REC 3874736.64 USD PAY [32099999.96] SEK /101628	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	11/28/2017	02/28/2018	02/28/2018	Expiry	3,874,737	1.2070831				3,477				61,339			3,477			0002
REC 50000000.00 USD PAY [5503818000.00] JPY /101633	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	11/28/2017	06/29/2018	06/29/2018	Expiry	50,000,000	0.0908460				465,638				(657,470)			465,638			0002
REC 49618151.13 USD PAY [37113000.00] GBP /101634	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	11/28/2017	01/05/2018	01/05/2018	Expiry	49,618,151	1.33694800				(725,633)				550,555			(725,633)			0002
REC 13400000.00 GBP PAY [18237372.00] USD /101681	ASSET HEDGE	Schedule D	Currency	DEUTSCHE BANK AG/ CLEARED THROUGH CITI	11/30/2017	06/04/2018	06/04/2018	Expiry	182,373,732	1.36099800				(3,939,332)				271,486			(3,939,332)			0002
REC 182358884.80 USD PAY [134000000.00] GBP /101683	ASSET HEDGE	Schedule D	Currency	USA GOLDMAN SACHS BANK	11/30/2017	06/04/2018	06/04/2018	Expiry	182,358,885	1.36088720				3,924,485				(189,426)			3,924,485			0002
REC 5913552.88 USD PAY [7759000.00] AUD /101777	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	12/01/2017	01/10/2018	01/10/2018	Expiry	5,913,553	0.76215400				(171,831)				145,182			(171,831)			0002

E19.46

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 27735000.00 EUR PAY [33635493.53] USD /101787	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	12/01/2017	12/18/2018	12/18/2018	Expiry		33,835,494	1.21995650			(2,317,440)				(255,311)			(2,317,440)			0002
REC 100000000.00 GBP PAY [13563399.98] USD /101900	ASSET HEDGE	Schedule D	Currency	DEUTSCHE BANK AG / CLEARED THROUGH CITI GLOBAL MARK	12/04/2017	06/08/2018	06/08/2018	Expiry		135,639,400	1.35639400			(1,409,400)				(275,896)			(1,409,400)			0002
REC 135659730.00 USD PAY [100000000.00] GBP /101802	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	12/04/2017	06/08/2018	06/08/2018	Expiry		135,659,730	1.35659730			1,429,730				238,148			1,429,730			0002
REC 19409847.64 USD PAY [25796000.00] AUD /101928	ASSET HEDGE	Schedule D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	12/07/2017	03/12/2018	03/12/2018	Expiry		19,409,848	75237800			(900,918)				710,194			(900,918)			0002
REC 100000000.00 GBP PAY [135218599.98] USD /101943	ASSET HEDGE	Schedule D	Currency	DEUTSCHE BANK AG	12/07/2017	06/11/2018	06/11/2018	Expiry		135,218,600	1.35218600			(1,118,600)				(709,759)			(1,118,600)			0002
REC 135192600.01 USD PAY [100000000.00] GBP /101944	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	12/07/2017	06/11/2018	06/11/2018	Expiry		135,192,600	1.35192600			(1,092,600)				716,103			(1,092,600)			0002
REC 4211491.45 USD PAY [3561000.00] EUR /101989	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	12/07/2017	01/16/2018	01/16/2018	Expiry		4,211,491	1.18267101			(153,938)				72,323			(153,938)			0002
REC 22167497.36 USD PAY [18800000.00] EUR /102022	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	12/08/2017	01/12/2018	01/12/2018	Expiry		22,167,497	1.17912220			(642,543)				420,878			(642,543)			0002
REC 2309000.00 EUR PAY [2724967.27] USD /102039	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A.	12/08/2017	01/16/2018	01/16/2018	Expiry		2,724,967	1.18015040			105,636				(49,947)			105,636			0002
REC 43029645.69 USD PAY [55287999.99] CAD /102053	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	12/08/2017	03/12/2018	03/12/2018	Expiry		43,029,646	77828183			(17,591)				1,104,445			(17,591)			0002
REC 110243178.27 USD PAY [93217000.00] EUR /102098	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	12/11/2017	01/16/2018	01/16/2018	Expiry		110,243,178	1.18265100			(4,031,542)				1,783,527			(4,031,542)			0002
REC 58805520.70 USD PAY [49752000.00] EUR /102111	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK / CLEARED THROUGH CITI GLOBAL MARK	12/11/2017	01/18/2018	01/18/2018	Expiry		58,805,521	1.18197300			(2,066,051)				1,051,612			(2,066,051)			0002
REC 287225690.82 USD PAY [243271000.00] EUR /102164	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	12/12/2017	03/16/2018	03/16/2018	Expiry		287,225,691	1.18068200			(11,705,714)				6,423,702			(11,705,714)			0002
REC 635615.54 USD PAY [1931000010.52] COP /102204	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	12/13/2017	03/16/2018	03/16/2018	Expiry		635,616	00032916			(42,314)				7,440			(42,314)			0002
REC 7956000.00 GBP PAY [10661841.16] USD /102210	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	12/13/2017	01/12/2018	01/12/2018	Expiry		10,661,841	1.34010070			230,718				(95,250)			230,718			0002
REC 36735191.07 USD PAY [30888000.00] EUR /102223	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	12/13/2017	03/19/2018	03/19/2018	Expiry		36,735,191	1.18930300			(1,365,157)				558,165			(1,365,157)			0002
REC 40953000.00 GBP PAY [55140306.85] USD /102237	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	12/13/2017	03/15/2018	03/15/2018	Expiry		55,140,307	1.34642900			1,927,699				(365,273)			1,927,699			0002
REC 17815321.51 USD PAY [15000000.00] EUR /102258	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	12/14/2017	03/16/2018	03/16/2018	Expiry		17,815,322	1.18768810			(616,679)				277,419			(616,679)			0002
REC 10107717.33 USD PAY [8530000.00] EUR /102272	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	12/15/2017	03/16/2018	03/16/2018	Expiry		10,107,717	1.18496100			(373,947)				188,873			(373,947)			0002
REC 11630000.00 USD PAY [11360302.63] CHF /102332	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	12/18/2017	03/22/2018	03/22/2018	Expiry		11,630,000	1.02374033			(334,671)				102,136			(334,671)			0002
REC 4346862.90 USD PAY [36359000.02] SEK /102339	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	12/18/2017	03/22/2018	03/22/2018	Expiry		4,346,863	1.1955397			(56,212)				104,812			(56,212)			0002
REC 15458701.35 USD PAY [11500000.00] GBP /102345	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	12/18/2017	02/12/2018	02/12/2018	Expiry		15,458,701	1.34423490			(451,549)				116,497			(451,549)			0002
REC 102300000.00 GBP PAY [137825352.72] USD /102359	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	12/19/2017	05/25/2018	05/25/2018	Expiry		137,825,353	1.34726640			(1,592,443)				(1,186,435)			(1,592,443)			0002
REC 137873294.00 USD PAY [102300000.00] GBP /102360	ASSET HEDGE	Schedule D	Currency	DEUTSCHE BANK AG	12/19/2017	05/25/2018	05/25/2018	Expiry		137,873,294	1.34578000			1,440,384				1,294,586			1,440,384			0002
REC 28959000.00 AUD PAY [22204293.61] USD /102375	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	12/20/2017	01/10/2018	01/10/2018	Expiry		22,204,294	76677590			507,466				(416,805)			507,466			0002
REC 36200000.00 GBP PAY [48644828.76] USD /102383	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	12/20/2017	03/28/2018	03/28/2018	Expiry		48,644,829	1.34377980			2,913,911				(438,269)			2,913,911			0002
REC 21000000.00 GBP PAY [28088151.00] USD /102397	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	12/21/2017	01/24/2018	01/24/2018	Expiry		28,088,151	1.33753100			1,822,149				(328,166)			1,822,149			0002
REC 28609985.03 USD PAY [33864000.00] CAD /102398	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	12/21/2017	03/22/2018	03/22/2018	Expiry		28,609,985	78578978			436,499				432,196			436,499			0002
REC 280179574.93 USD PAY [234494000.00] EUR /102414	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	12/21/2017	03/27/2018	03/27/2018	Expiry		280,179,575	1.19482620			(10,686,783)				2,779,496			(10,686,783)			0002
REC 12036000.00 EUR PAY [14341676.35] USD /102421	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	12/21/2017	02/12/2018	02/12/2018	Expiry		14,341,676	1.19156500			450,568				(122,852)			450,568			0002
REC 18352000.00 GBP PAY [24599780.57] USD /102429	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	12/21/2017	01/12/2018	01/12/2018	Expiry		24,599,781	1.34044140			525,943				(213,691)			525,943			0002
REC 124521707.06 USD PAY [92746000.00] GBP /102438	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	12/22/2017	03/28/2018	03/28/2018	Expiry		124,521,707	1.34261000			(6,036,837)				1,283,859			(6,036,837)			0002
REC 170162869.65 USD PAY [220514000.00] AUD /102451	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	12/22/2017	03/29/2018	03/29/2018	Expiry		170,162,870	77166470			852,220				2,059,434			852,220			0002
REC 1900956.30 USD PAY [1590000.00] EUR /102467	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	12/28/2017	01/02/2018	01/02/2018	Expiry		1,900,956	1.19557000			(15,789)				8,360			(15,789)			0002
REC 11586000.00 CAD PAY [9258874.49] USD /102477	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	01/03/2018	01/04/2018	01/04/2018	Expiry		9,258,874	79914332			19,194							19,194			0002

E1947

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 9368227.51 USD PAY [11709000.00 CAD /102480	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	01/03/2018	04/05/2018	04/05/2018	Expiry		9,368,228	80008775			184,859							184,859			0002
REC 19450000.00 EUR PAY [16236817.13] USD /102500	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/03/2018	03/19/2018	03/19/2018	Expiry		16,236,817	1.20719830			353,758							353,758			0002
REC 16168514.00 USD PAY [13450000.00] EUR /102501	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/03/2018	01/05/2018	01/05/2018	Expiry		16,168,514	1.20212000			36,046							36,046			0002
REC 30631452.93 USD PAY [25467000.00] EUR /102514	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/03/2018	01/05/2018	01/05/2018	Expiry		30,631,453	1.20279000			51,189							51,189			0002
REC 28570000.00 EUR PAY [32027656.02] USD /102515	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/03/2018	02/12/2018	02/12/2018	Expiry		32,027,656	1.20540670			626,874							626,874			0002
REC 1996933.22 USD PAY [1657000.00] EUR /102524	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/03/2018	02/12/2018	02/12/2018	Expiry		1,996,933	1.20514980			39,520							39,520			0002
REC 1675000.00 EUR PAY [2014254.50] USD /102525	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/03/2018	01/05/2018	01/05/2018	Expiry		2,014,255	1.20254000			3,786							3,786			0002
REC 8986631.55 USD PAY [6645000.00] GBP /102534	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	01/03/2018	01/05/2018	01/05/2018	Expiry		8,986,632	1.35239000			27,311							27,311			0002
REC 6666000.00 GBP PAY [9025797.33] USD /102535	ASSET HEDGE	Schedule D	Currency	THE TORONTO-DOMINION BANK	01/03/2018	02/12/2018	02/12/2018	Expiry		9,025,797	1.35400500			196,614							196,614			0002
REC 50465344.41 USD PAY [37287000.00] GBP /102543	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/03/2018	02/12/2018	02/12/2018	Expiry		50,465,344	1.35343000			1,121,220							1,121,220			0002
REC 36870000.00 GBP PAY [49842340.80] USD /102544	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/03/2018	01/05/2018	01/05/2018	Expiry		49,842,341	1.35184000			171,814							171,814			0002
REC 37996427.76 USD PAY [48500000.00] AUD /102557	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/04/2018	04/09/2018	04/09/2018	Expiry		37,996,428	78343150			861,128							861,128			0002
REC 16000000.00 GBP PAY [21672729.60] USD /102568	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/04/2018	01/24/2018	01/24/2018	Expiry		21,672,730	1.35454560			1,116,070							1,116,070			0002
REC 48500000.00 AUD PAY [38002860.00] USD /103943	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/04/2018	01/08/2018	01/08/2018	Expiry		38,002,860	78356000			35,890							35,890			0002
REC 168872000.00 AUD PAY [13233165.36] USD /102585	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/08/2018	01/10/2018	01/10/2018	Expiry		132,333,165	78363000			113,144							113,144			0002
REC 134244036.04 USD PAY [171361000.00] AUD /102586	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/08/2018	03/09/2018	03/09/2018	Expiry		134,244,036	78339900			137,260							137,260			0002
REC 100957000.00 GBP PAY [136461678.91] USD /102597	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/09/2018	01/10/2018	01/10/2018	Expiry		136,461,679	1.35168120			88,963							88,963			0002
REC 136900003.92 USD PAY [100957000.00] GBP /102603	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/09/2018	04/12/2018	04/12/2018	Expiry		136,900,004	1.35602290			6,771,903							6,771,903			0002
REC 2825577.37 USD PAY [2369000.00] EUR /102609	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/09/2018	01/11/2018	01/11/2018	Expiry		2,825,577	1.19273000			24,567							24,567			0002
REC 156978000.00 GBP PAY [212303326.32] USD /102624	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/10/2018	01/12/2018	01/12/2018	Expiry		212,303,326	1.35244000			2,615,253							2,615,253			0002
REC 18787000.00 EUR PAY [22510969.14] USD /102625	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/10/2018	01/12/2018	01/12/2018	Expiry		22,510,969	1.19822000			283,308							283,308			0002
REC 214425404.33 USD PAY [158045000.00] GBP /102626	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/10/2018	04/12/2018	04/12/2018	Expiry		214,425,404	1.35673640			1,048,435							1,048,435			0002
REC 22639574.94 USD PAY [18787000.00] EUR /102627	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/10/2018	04/12/2018	04/12/2018	Expiry		22,639,575	1.20506600			519,160							519,160			0002
REC 12510000.00 GBP PAY [16899771.52] USD /102637	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	01/10/2018	01/11/2018	01/11/2018	Expiry		16,899,772	1.35090100			32,513							32,513			0002
REC 16941078.29 USD PAY [12510000.00] GBP /102638	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	01/10/2018	03/28/2018	03/28/2018	Expiry		16,941,078	1.35420290			669,249							669,249			0002
REC 68604332.04 USD PAY [71006000.00] EUR /102656	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	01/12/2018	04/09/2018	04/09/2018	Expiry		86,604,332	1.21964190			856,222							856,222			0002
REC 71035000.00 EUR PAY [86184634.45] USD /102667	ASSET HEDGE	Schedule D	Currency	WELLS FARGO BANK, N.A.	01/12/2018	01/16/2018	01/16/2018	Expiry		86,184,634	1.21327000			897,172							897,172			0002
REC 3331000.00 EUR PAY [4071012.96] USD /102680	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/12/2018	03/27/2018	03/27/2018	Expiry		4,071,013	1.22215940			60,759							60,759			0002
REC 4054226.72 USD PAY [3331000.00] EUR /102681	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	01/12/2018	01/16/2018	01/16/2018	Expiry		4,054,227	1.21712000			29,246							29,246			0002
REC 174246911.11 USD PAY [141780000.00] EUR /102691	ASSET HEDGE	Schedule D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	01/16/2018	04/16/2018	04/16/2018	Expiry		174,246,911	1.22899500			1,290,907							1,290,907			0002
REC 142332000.00 EUR PAY [173949397.20] USD /102692	ASSET HEDGE	Schedule D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	01/16/2018	01/18/2018	01/18/2018	Expiry		173,943,937	1.22210000			199,265							199,265			0002
REC 111962000.00 GBP PAY [154181750.58] USD /102712	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/16/2018	01/18/2018	01/18/2018	Expiry		154,181,751	1.37709000			1,367,056							1,367,056			0002
REC 173744550.63 USD PAY [125764000.00] GBP /102713	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	01/16/2018	04/17/2018	04/17/2018	Expiry		173,744,551	1.38151260			5,972,205							5,972,205			0002
REC 5844813.73 USD PAY [4210000.00] GBP /102756	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	01/19/2018	03/28/2018	03/28/2018	Expiry		5,844,814	1.38831680			81,603							81,603			0002
REC 48987000.00 GBP PAY [67877856.81] USD /102766	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	01/19/2018	01/23/2018	01/23/2018	Expiry		67,877,857	1.38563000			733,335							733,335			0002
REC 58284614.04 USD PAY [41915000.00] GBP /102773	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	01/19/2018	04/30/2018	04/30/2018	Expiry		58,284,614	1.39054310			588,617							588,617			0002

E19.48

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 61313000.00 AUD PAY [49020356.63] USD / 102780	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	11/07/2018	01/23/2018	01/23/2018	Expiry		49,020,357	79951000			30,043							30,043			0002
REC 51743420.06 USD PAY [64736000.00] AUD / 102787	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	11/07/2018	04/30/2018	04/30/2018	Expiry		51,743,420	79929900			2,997,212							2,997,212			0002
REC 8442911000.55 JPY PAY [76320099.44] USD / 102794	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	01/19/2018	01/23/2018	01/23/2018	Expiry		76,320,099	00903955			510,391							510,391			0002
REC 105304494.67 USD PAY [1158700000.33] JPY / 102801	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	01/19/2018	04/27/2018	04/27/2018	Expiry		105,304,495	00908816			(1,295,905)							(1,295,905)			0002
REC 9356067.74 USD PAY [12851000.00] NZD / 102816	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	01/19/2018	04/30/2018	04/30/2018	Expiry		9,356,068	72804200			312,819							312,819			0002
REC 11107000.00 NZD PAY [8039993.01] USD / 102819	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	01/19/2018	01/23/2018	01/23/2018	Expiry		8,093,993	72872900			74,095							74,095			0002
REC 78544000.00 EUR PAY [96096227.68] USD / 102822	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	01/19/2018	01/23/2018	01/23/2018	Expiry		96,096,228	1.22347000			505,038							505,038			0002
REC 91530483.14 USD PAY [74346000.00] EUR / 102829	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	01/19/2018	04/30/2018	04/30/2018	Expiry		91,530,483	1.23114200			1,742,819							1,742,819			0002
REC 176800000.00 GBP PAY [246087920.00] USD / 103167	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	01/22/2018	01/24/2018	01/24/2018	Expiry		246,087,920	1.39190000			5,728,320							5,728,320			0002
REC 246785449.04 USD PAY [176800000.00] GBP / 103168	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	01/22/2018	04/11/2018	04/11/2018	Expiry		246,785,449	1.39584530			(3,810,871)							(3,810,871)			0002
REC 17596990.35 USD PAY [21900000.00] CAD / 103173	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	01/22/2018	04/30/2018	04/30/2018	Expiry		17,596,990	80351554			543,460							543,460			0002
REC 21367000.00 CAD PAY [17150402.13] USD / 103174	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	01/22/2018	01/23/2018	01/23/2018	Expiry		17,150,402	80265840			54,306							54,306			0002
REC 2492558.17 USD PAY [2024000.00] EUR / 103192	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	01/22/2018	04/09/2018	04/09/2018	Expiry		2,492,558	1.23169870			(3)							(3)			0002
REC 2250000.00 EUR PAY [27576747.50] USD / 103193	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	01/22/2018	01/24/2018	01/24/2018	Expiry		2,757,648	1.22571000			33,728							33,728			0002
REC 5321000.00 EUR PAY [6547526.15] USD / 103223	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	01/23/2018	02/12/2018	02/12/2018	Expiry		6,547,526	1.23050670			(8,017)							(8,017)			0002
REC 6880430.71 USD PAY [5598000.00] EUR / 103224	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	01/23/2018	01/24/2018	01/24/2018	Expiry		6,880,431	1.22908730			(65,008)							(65,008)			0002
REC 3408497.08 USD PAY [2397000.00] GBP / 103284	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	01/26/2018	02/12/2018	02/12/2018	Expiry		3,408,497	1.42198460			92,248							92,248			0002
REC 2397000.00 GBP PAY [3406951.98] USD / 103285	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	01/26/2018	01/30/2018	01/30/2018	Expiry		3,406,952	1.42134000			(15,676)							(15,676)			0002
REC 2000000.00 GBP PAY [2829401.00] USD / 103296	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	01/26/2018	01/29/2018	01/29/2018	Expiry		2,829,401	1.41470050			(14,401)							(14,401)			0002
REC 2835068.80 USD PAY [2000000.00] GBP / 103297	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	01/26/2018	03/28/2018	03/28/2018	Expiry		2,835,069	1.41753440			19,669							19,669			0002
REC 20839177.62 USD PAY [25703000.00] CAD / 103304	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	01/29/2018	04/05/2018	04/05/2018	Expiry		20,839,178	81076830			680,315							680,315			0002
REC 25703000.00 CAD PAY [20824961.11] USD / 103305	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	01/29/2018	01/30/2018	01/30/2018	Expiry		20,824,961	81021519			15,031							15,031			0002
REC 8301970.02 USD PAY [6708500.00] EUR / 103322	ASSET HEDGE	Scheduled	Currency	LLOYDS BANK PLC	01/29/2018	01/31/2018	01/31/2018	Expiry		8,301,970	1.23753000			(21,266)							(21,266)			0002
REC 6708500.00 EUR PAY [8313461.66] USD / 103372	ASSET HEDGE	Scheduled	Currency	LLOYDS BANK PLC	01/29/2018	02/22/2018	02/22/2018	Expiry		8,313,462	1.23924300			146,577							146,577			0002
REC 2537074.08 USD PAY [274974000.17] JPY / 103398	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	01/31/2018	05/02/2018	05/02/2018	Expiry		2,537,074	00922660			34,811							34,811			0002
REC 274974000.22 JPY PAY [2520623.35] USD / 103399	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	01/31/2018	02/02/2018	02/02/2018	Expiry		2,523,623	00917768			(21,360)							(21,360)			0002
REC 6787061.47 USD PAY [5437000.00] EUR / 103438	ASSET HEDGE	Scheduled	Currency	LLOYDS BANK PLC	02/01/2018	02/05/2018	02/05/2018	Expiry		6,787,061	1.24831000			60,405							60,405			0002
REC 5437000.00 EUR PAY [6794395.99] USD / 103439	ASSET HEDGE	Scheduled	Currency	LLOYDS BANK PLC	02/01/2018	02/22/2018	02/22/2018	Expiry		6,794,396	1.24965900			(94,381)							(94,381)			0002
REC 19089491.16 USD PAY [13381000.00] GBP / 103462	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	02/01/2018	02/12/2018	02/12/2018	Expiry		19,089,491	1.42661170			576,878							576,878			0002
REC 13255000.00 GBP PAY [18904678.65] USD / 103463	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	02/01/2018	02/05/2018	02/05/2018	Expiry		18,904,679	1.42623000			(404,675)							(404,675)			0002
REC 14832000.00 GBP PAY [20852915.75] USD / 103483	ASSET HEDGE	Scheduled	Currency	CITIBANK N.A.	02/02/2018	02/05/2018	02/05/2018	Expiry		20,952,916	1.41268310			(251,893)							(251,893)			0002
REC 14472188.86 USD PAY [10208000.00] GBP / 103484	ASSET HEDGE	Scheduled	Currency	CITIBANK N.A.	02/02/2018	05/04/2018	05/04/2018	Expiry		14,472,189	1.41773010			642,390							642,390			0002
REC 136510000.00 EUR PAY [169588011.12] USD / 103495	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	02/02/2018	02/05/2018	02/05/2018	Expiry		169,588,011	1.24231200			(697,839)							(697,839)			0002
REC 177069800.26 USD PAY [141692000.00] EUR / 103496	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	02/02/2018	05/04/2018	05/04/2018	Expiry		177,069,800	1.24968100			7,535,322							7,535,322			0002
REC 25605000.00 SEK PAY [3240699.12] USD / 103507	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	02/02/2018	02/05/2018	02/05/2018	Expiry		3,240,699	1.2656509			(32,393)							(32,393)			0002
REC 2786993.23 USD PAY [21887000.01] SEK / 103513	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	02/02/2018	05/04/2018	05/04/2018	Expiry		2,786,993	1.2733555			296,253							296,253			0002

E19.49

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 244108227.03 USD PAY [173650000.00] GBP /103546	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	02/05/2018	04/18/2018	04/18/2018	Expiry	244,108,227	1.40574850				(2,561,598)							(2,561,598)			0002
REC 173650000.00 GBP PAY [243412151.00] USD /103551	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	02/05/2018	02/07/2018	02/07/2018	Expiry	243,412,151	1.40174000				(2,472,776)							(2,472,776)			0002
REC 44100000.00 EUR PAY [54754339.50] USD /103552	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	02/05/2018	02/06/2018	02/06/2018	Expiry	54,754,340	1.24159500				(193,820)							(193,820)			0002
REC 54993317.40 USD PAY [44100000.00] EUR /103553	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	02/05/2018	04/12/2018	04/12/2018	Expiry	54,993,317	1.24701400				631,247							631,247			0002
REC 18324.11 USD PAY [1999999.83] JPY /103596	ASSET HEDGE	Schedule BA, D	Currency	WELLS FARGO BANK, N.A.	02/06/2018	03/27/2018	03/27/2018	Expiry	18,324	0.0916206				(676)							(676)			0002
REC 1999999.47 JPY PAY [18277.02] USD /103597	ASSET HEDGE	Schedule BA, D	Currency	WELLS FARGO BANK, N.A.	02/06/2018	02/08/2018	02/08/2018	Expiry	18,277	0.0913851				123							123			0002
REC 44100000.00 EUR PAY [54575602.20] USD /103604	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	02/06/2018	04/12/2018	04/12/2018	Expiry	54,575,602	1.23754200				(213,532)							(213,532)			0002
REC 54341519.40 USD PAY [44100000.00] EUR /103605	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	02/06/2018	02/07/2018	02/07/2018	Expiry	54,341,519	1.23223400				266,099							266,099			0002
REC 4404614.36 USD PAY [3554000.00] EUR /103630	ASSET HEDGE	Schedule	Currency	LLOYDS BANK PLC	02/06/2018	02/08/2018	02/08/2018	Expiry	4,404,614	1.23934000				52,031							52,031			0002
REC 10018000.00 EUR PAY [12452404.06] USD /103631	ASSET HEDGE	Schedule	Currency	LLOYDS BANK PLC	02/06/2018	03/27/2018	03/27/2018	Expiry	12,452,404	1.24300300				(26,077)							(26,077)			0002
REC 33006047.04 USD PAY [42300000.00] AUD /103703	ASSET HEDGE	Schedule	Currency	WELLS FARGO SEC/CLEARING THROUGH ICE	02/09/2018	03/29/2018	03/29/2018	Expiry	33,006,047	78028480				528,107							528,107			0002
REC 42300000.00 AUD PAY [33011766.00] USD /103704	ASSET HEDGE	Schedule	Currency	WELLS FARGO SEC/CLEARING THROUGH ICE	02/09/2018	02/13/2018	02/13/2018	Expiry	33,011,766	78042000				231,804							231,804			0002
REC 60100000.00 GBP PAY [8307226.34] USD /103709	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE/WELLS FARGO SEC/CLEARING THROUGH ICE	02/09/2018	03/14/2018	03/14/2018	Expiry	8,307,226	1.38223400				84,537							84,537			0002
REC 7971751.85 USD PAY [5774000.00] GBP /103716	ASSET HEDGE	Schedule	Currency	WELLS FARGO SEC/CLEARING THROUGH ICE	02/09/2018	02/12/2018	02/12/2018	Expiry	7,971,752	1.38062900				(16,577)							(16,577)			0002
REC 6917136.06 USD PAY [50043000.00] GBP /103724	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	02/09/2018	03/14/2018	03/14/2018	Expiry	69,171,336	1.38223400				(703,905)							(703,905)			0002
REC 50479000.00 GBP PAY [69692771.29] USD /103725	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	02/09/2018	02/12/2018	02/12/2018	Expiry	69,692,771	1.38062900				144,925							144,925			0002
REC 62583745.94 USD PAY [51185000.00] EUR /103739	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	02/09/2018	02/12/2018	02/12/2018	Expiry	62,583,746	1.22269700				(322,619)							(322,619)			0002
REC 53333000.00 EUR PAY [6535772.98] USD /103740	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	02/09/2018	03/14/2018	03/14/2018	Expiry	65,335,773	1.22505340				631,815							631,815			0002
REC 1622000.00 EUR PAY [1983214.53] USD /103752	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	02/09/2018	02/12/2018	02/12/2018	Expiry	1,983,215	1.22269700				10,223							10,223			0002
REC 1971110.92 USD PAY [1609000.00] EUR /103756	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	02/09/2018	03/14/2018	03/14/2018	Expiry	1,971,111	1.22505340				(19,061)							(19,061)			0002
REC 313059185.36 USD PAY [225697000.00] GBP /103761	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	02/09/2018	05/14/2018	05/14/2018	Expiry	313,059,185	1.38707730				7,104,332							7,104,332			0002
REC 22332400.00 GBP PAY [306552701.38] USD /103762	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	02/09/2018	02/12/2018	02/12/2018	Expiry	308,552,701	1.38163700				416,053							416,053			0002
REC 173650000.00 GBP PAY [240027712.50] USD /103785	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A.	02/12/2018	02/14/2018	02/14/2018	Expiry	240,027,713	1.38225000				3,047,558							3,047,558			0002
REC 240657972.92 USD PAY [173650000.00] GBP /103786	ASSET HEDGE	Schedule BA	Currency	JPMORGAN CHASE BANK, N.A.	02/12/2018	05/14/2018	05/14/2018	Expiry	240,957,973	1.38760710				5,558,033							5,558,033			0002
REC 14822408.16 USD PAY [18900000.00] AUD /103793	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	02/12/2018	04/09/2018	04/09/2018	Expiry	14,822,408	78425440				273,188							273,188			0002
REC 18900000.00 AUD PAY [14824971.00] USD /103972	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	02/12/2018	02/14/2018	02/14/2018	Expiry	14,824,971	78439000				(153,279)							(153,279)			0002
REC 15031999.96 SEK PAY [1866378.61] USD /103906	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	02/13/2018	02/15/2018	02/15/2018	Expiry	1,866,379	12416037				27,653							27,653			0002
REC 1867922.98 USD PAY [15031999.98] SEK /103807	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	02/13/2018	02/28/2018	02/28/2018	Expiry	1,867,923	12426310				55,064							55,064			0002
REC 14188143.02 USD PAY [10178400.00] GBP /103815	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	02/13/2018	05/14/2018	05/14/2018	Expiry	14,188,143	1.39394630				390,304							390,304			0002
REC 10178400.00 GBP PAY [14135253.00] USD /103816	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	02/13/2018	02/15/2018	02/15/2018	Expiry	14,135,253	1.38875000				210,184							210,184			0002
REC 389000.00 GBP PAY [552267.34] USD /103858	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	02/14/2018	05/14/2018	05/14/2018	Expiry	552,267	1.40526041				(19,517)							(19,517)			0002
REC 550217.49 USD PAY [393000.00] GBP /103859	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	02/14/2018	02/15/2018	02/15/2018	Expiry	550,217	1.40004450				(3,677)							(3,677)			0002

E19:50

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 91747000.00 GBP PAY [12844882.74] USD /103861	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA K03XUN7C6T14HNA1L002	02/14/2018	02/15/2018	02/15/2018	Expiry		128,448,883	1.40004450			858,339							858,339			0002
REC 128928425.92 USD PAY [91747000.00] GBP /103862	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA K03XUN7C6T14HNA1L002	02/14/2018	05/14/2018	05/14/2018	Expiry		128,928,426	1.40526040			4,556,193							4,556,193			0002
REC 604000.00 EUR PAY [756323.42] USD /103906	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFVIMCJFXT09	02/15/2018	04/09/2018	04/09/2018	Expiry		756,323	1.25219109			(12,377)							(12,377)			0002
REC 2850162.23 USD PAY [2356000.00] EUR /103907	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFVIMCJFXT09	02/15/2018	04/09/2018	04/09/2018	Expiry		2,950,162	1.25219110			48,277							48,277			0002
REC 550431.87 USD PAY [393000.00] GBP /103993	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE BA, D 1VUJ7VQFKU00S21A208	02/20/2018	02/22/2018	02/22/2018	Expiry		550,432	1.40059000			(1,843)							(1,843)			0002
REC 393000.00 GBP PAY [552510.33] USD /103994	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE BA, D 1VUJ7VQFKU00S21A208	02/20/2018	05/22/2018	05/22/2018	Expiry		552,510	1.40587870			(24,633)							(24,633)			0002
REC 126852435.11 USD PAY [90230000.00] GBP /103995	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE BA, D 1VUJ7VQFKU00S21A208	02/20/2018	05/22/2018	05/22/2018	Expiry		126,852,435	1.40587870			5,655,499							5,655,499			0002
REC 90230000.00 GBP PAY [126375235.70] USD /103996	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE BA, D 1VUJ7VQFKU00S21A208	02/20/2018	02/22/2018	02/22/2018	Expiry		126,375,236	1.40059000			(423,179)							(423,179)			0002
REC 2135000.00 NZD PAY [1567578.92] USD /104008	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK PT308789TSU1DF371261	02/20/2018	02/22/2018	02/22/2018	Expiry		1,567,579	73422900			152							152			0002
REC 1941346.39 USD PAY [2646000.00] NZD /104009	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK PT308789TSU1DF371261	02/20/2018	05/22/2018	05/22/2018	Expiry		1,941,346	73369100			106,345							106,345			0002
REC 54174150.74 USD PAY [43636000.00] EUR /104012	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFVIMCJFXT09	02/20/2018	05/22/2018	05/22/2018	Expiry		54,174,151	1.24150130			2,775,306							2,775,306			0002
REC 40953500.00 EUR PAY [50523923.41] USD /104013	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFVIMCJFXT09	02/20/2018	02/22/2018	02/22/2018	Expiry		50,523,923	1.23369000			(56,925)							(56,925)			0002
REC 3530344.00 USD PAY [2896000.00] EUR /104034	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA K03XUN7C6T14HNA1L002	02/20/2018	03/16/2018	03/16/2018	Expiry		3,330,344	1.23529080			17,499							17,499			0002
REC 2114000.00 EUR PAY [2607609.26] USD /104035	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA K03XUN7C6T14HNA1L002	02/20/2018	02/22/2018	02/22/2018	Expiry		2,607,809	1.23359000			(2,727)							(2,727)			0002
REC 10022805.52 USD PAY [8098000.00] EUR /104037	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES GOLDMAN SACHS BANK	02/20/2018	04/09/2018	04/09/2018	Expiry		10,022,806	1.23768900			48,499							48,499			0002
REC 19162000.00 EUR PAY [2367062.31] USD /104038	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA K03XUN7C6T14HNA1L002	02/20/2018	03/16/2018	03/16/2018	Expiry		23,670,642	1.23529080			(124,377)							(124,377)			0002
REC 28375387.79 USD PAY [21381000.00] EUR /104039	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA K03XUN7C6T14HNA1L002	02/20/2018	02/22/2018	02/22/2018	Expiry		26,375,388	1.23359000			27,581							27,581			0002
REC 24000.00 EUR PAY [29704.54] USD /104048	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES THE TORONTO-DOMINION	02/20/2018	04/09/2018	04/09/2018	Expiry		29,705	1.23768917			(144)							(144)			0002
REC 4470999.99 CAD PAY [3527444.00] USD /104076	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK PT308789TSU1DF371261	02/21/2018	02/22/2018	02/22/2018	Expiry		3,527,444	78896086			(7,426)							(7,426)			0002
REC 3530064.77 USD PAY [4471000.01] CAD /104077	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK PT308789TSU1DF371261	02/21/2018	04/05/2018	04/05/2018	Expiry		3,530,065	78954703			23,459							23,459			0002
REC 24520000.00 CAD PAY [19296970.14] USD /104181	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGJF57RNE97	02/22/2018	04/05/2018	04/05/2018	Expiry		19,296,970	78698899			(65,934)							(65,934)			0002
REC 19283712.33 USD PAY [24520000.00] CAD /104182	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGJF57RNE97	02/22/2018	02/26/2018	02/26/2018	Expiry		19,283,712	78644830			(52,760)							(52,760)			0002
REC 6001461.93 USD PAY [4860499.97] SEK /104211	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE 1VUJ7VQFKU00S21A208	02/26/2018	05/25/2018	05/25/2018	Expiry		6,001,462	12347417			441,050							441,050			0002
REC 47131999.96 SEK PAY [5782074.24] USD /104212	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE 1VUJ7VQFKU00S21A208	02/26/2018	02/28/2018	02/28/2018	Expiry		5,782,074	12267831			(97,955)							(97,955)			0002
REC 2244000.00 GBP PAY [3133252.32] USD /104225	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE 1VUJ7VQFKU00S21A208	02/26/2018	02/28/2018	02/28/2018	Expiry		3,133,252	1.39628000			(45,733)							(45,733)			0002
REC 5478000.00 GBP PAY [7657604.18] USD /104226	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFVIMCJFXT09	02/26/2018	03/28/2018	03/28/2018	Expiry		7,657,604	1.39788320			53,776							53,776			0002
REC 14663599.63 USD PAY [10491000.00] GBP /104233	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE WELLS FARGO BANK, N.A. KB1H1DSPRFVIMCJFXT09	03/02/2018	03/28/2018	03/28/2018	Expiry		14,663,590	1.39773040			(104,591)							(104,591)			0002
REC 3000000.00 GBP PAY [4137317.40] USD /104298	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFVIMCJFXT09	03/02/2018	03/02/2018	03/02/2018	Expiry		4,137,317	1.37910580			(6,317)							(6,317)			0002
REC 17704809.38 USD PAY [128015000.00] GBP /104309	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGJF57RNE97	03/02/2018	06/14/2018	06/14/2018	Expiry		1,177,408,009	1.38302550			5,879,153							5,879,153			0002
REC 128015000.00 GBP PAY [176280495.45] USD /104310	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGJF57RNE97	03/02/2018	03/06/2018	03/06/2018	Expiry		1,176,280,495	1.37703000			1,519,538							1,519,538			0002
REC 2482148.35 USD PAY [1800000.00] GBP /104311	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A. KB1H1DSPRFVIMCJFXT09	03/02/2018	04/03/2018	04/03/2018	Expiry		2,482,148	1.37897131			(48,112)							(48,112)			0002
REC 1820838.76 USD PAY [2350000.00] CAD /104343	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK PT308789TSU1DF371261	03/06/2018	03/12/2018	03/12/2018	Expiry		1,820,839	77482500			(8,871)							(8,871)			0002
REC 2350000.00 CAD PAY [1820731.55] USD /104344	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK PT308789TSU1DF371261	03/06/2018	03/07/2018	03/07/2018	Expiry		1,820,732	77477938			48							48			0002
REC 133962689.44 USD PAY [171354000.00] AUD /104389	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGJF57RNE97	03/07/2018	06/05/2018	06/05/2018	Expiry		133,962,689	78178910			3,459,483							3,459,483			0002
REC 168872000.00 AUD PAY [131995421.36] USD /104390	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGJF57RNE97	03/07/2018	03/09/2018	03/09/2018	Expiry		131,995,421	78163000			434,001							434,001			0002
REC 4125728.61 USD PAY [2963000.00] GBP /104401	ASSET HEDGE	Schedule	Currency	LLOYDS BANK PLC H7FNTJ4857H60EX1Z170	03/07/2018	05/14/2018	05/14/2018	Expiry		4,125,729	1.39241600			(109,086)							(109,086)			0002

E19151

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 1198000.00 GBP PAY [163027.66] USD /104408	ASSET HEDGE	Schedule	Currency	LLOYDS BANK PLC JPIMORGAN CHASE BANK, N.A.	H7FNTJ4851HG0EXQ1Z70	03/07/2018	03/09/2018	03/09/2018	Expiry	1,663,028	1.38817000			(3,558)							(3,558)			0002
REC 25798000.00 AUD PAY [20088386.64] USD /104436	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/08/2018	03/12/2018	03/12/2018	Expiry	20,088,387	77868000			222,379							222,379			0002
REC 21155615.34 USD PAY [27162000.00] AUD /104437	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/08/2018	06/06/2018	06/06/2018	Expiry	21,155,615	77886810			333,226							333,226			0002
REC 57379000.00 CAD PAY [44676908.22] USD /104479	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/09/2018	03/12/2018	03/12/2018	Expiry	44,676,908	77862821			(1,619)							(1,619)			0002
REC 44760611.97 USD PAY [57379000.00] CAD /104480	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/09/2018	06/11/2018	06/11/2018	Expiry	44,760,612	78008700			372,218							372,218			0002
REC 42511825.00 USD PAY [30700000.00] GBP /104495	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/09/2018	03/13/2018	03/13/2018	Expiry	42,511,825	1.38475000			(354,585)							(354,585)			0002
REC 30700000.00 GBP PAY [42866317.66] USD /104496	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/09/2018	06/14/2018	06/14/2018	Expiry	42,866,318	1.39043380			(1,637,348)							(1,637,348)			0002
REC 63054801.50 USD PAY [51185000.00] EUR /104528	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/12/2018	03/14/2018	03/14/2018	Expiry	63,054,802	1.23190000			(255,925)							(255,925)			0002
REC 53333000.00 EUR PAY [65868772.31] USD /104533	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/12/2018	04/13/2018	04/13/2018	Expiry	65,868,772	1.23504720			(39,850)							(39,850)			0002
REC 1622000.00 EUR PAY [1998141.80] USD /104539	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/12/2018	03/14/2018	03/14/2018	Expiry	1,998,142	1.23190000			8,110							8,110			0002
REC 1987190.95 USD PAY [1609000.00] EUR /104543	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/12/2018	04/13/2018	04/13/2018	Expiry	1,987,191	1.23504720			1,202							1,202			0002
REC 49790000.00 GBP PAY [69225028.60] USD /104546	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/12/2018	03/14/2018	03/14/2018	Expiry	69,225,029	1.39034000			296,748							296,748			0002
REC 69225028.60 USD PAY [50043000.00] GBP /104551	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/12/2018	04/13/2018	04/13/2018	Expiry	69,691,438	1.39263110			(1,624,841)							(1,624,841)			0002
REC 8332307.82 USD PAY [5983000.00] GBP /104558	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/12/2018	03/14/2018	03/14/2018	Expiry	8,332,308	1.39034000			(35,718)							(35,718)			0002
REC 6310000.00 GBP PAY [8369712.91] USD /104561	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/12/2018	04/13/2018	04/13/2018	Expiry	8,369,713	1.39263110			195,138							195,138			0002
REC 41865000.00 GBP PAY [5869063.03] USD /104602	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/13/2018	06/11/2018	06/11/2018	Expiry	58,699,063	1.40210350			(2,558,098)							(2,558,098)			0002
REC 58161137.76 USD PAY [41646000.00] GBP /104608	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/13/2018	03/15/2018	03/15/2018	Expiry	58,161,138	1.39656000			127,437							127,437			0002
REC 193100000.00 COP PAY [678257.82] USD /104641	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	KD3XUN7CGT14HNAYLU02	03/14/2018	03/16/2018	03/16/2018	Expiry	678,258	0.00035125			(329)							(329)			0002
REC 675410.98 USD PAY [193100000.00] COP /104642	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	KD3XUN7CGT14HNAYLU02	03/14/2018	06/18/2018	06/18/2018	Expiry	675,411	0.00034977			1,061							1,061			0002
REC 247585000.00 EUR PAY [305264629.87] USD /104648	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE/ CLEARED THROUGH CITI GLOBAL MARK	MBNUM2BPD07JBLVG310	03/15/2018	03/16/2018	03/16/2018	Expiry	305,264,630	1.23296900			(1,032,182)							(1,032,182)			0002
REC 310913259.01 USD PAY [250391000.00] EUR /104649	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	1UVU7VQFKU00SJ21A208	03/15/2018	06/15/2018	06/15/2018	Expiry	310,913,259	1.24171100			20,309,464							20,309,464			0002
REC 12883000.00 EUR PAY [15826649.56] USD /104691	ASSET HEDGE	Schedule	Currency	LLOYDS BANK PLC	H7FNTJ4851HG0EXQ1Z70	03/16/2018	03/19/2018	03/19/2018	Expiry	15,826,650	1.22849100			64,531							64,531			0002
REC 15926991.86 USD PAY [12874000.00] EUR /104692	ASSET HEDGE	Schedule	Currency	LLOYDS BANK PLC	H7FNTJ4851HG0EXQ1Z70	03/16/2018	06/19/2018	06/19/2018	Expiry	15,926,992	1.23714400			1,015,038							1,015,038			0002
REC 12281631.43 USD PAY [11629999.99] CHF /104752	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/20/2018	06/25/2018	06/25/2018	Expiry	12,281,631	1.05603022			499,278							499,278			0002
REC 11508000.00 CHF PAY [12053290.88] USD /104753	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/20/2018	03/22/2018	03/22/2018	Expiry	12,053,291	1.04738364			66,935							66,935			0002
REC 447036.17 USD PAY [3635899.96] SEK /104759	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	E570DZIZ7FF32TIEFA76	03/20/2018	06/25/2018	06/25/2018	Expiry	4,470,636	1.2295817			362,069							362,069			0002
REC 35877000.03 SEK PAY [4391412.72] USD /104759	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	E570DZIZ7FF32TIEFA76	03/20/2018	03/22/2018	03/22/2018	Expiry	4,391,413	1.2206167			(34,598)							(34,598)			0002
REC 25498796.24 USD PAY [33260000.00] CAD /104769	Portfolio Hedge	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/20/2018	06/22/2018	06/22/2018	Expiry	25,498,796	76665052			487,276							487,276			0002
REC 33864000.00 CAD PAY [25914277.19] USD /104770	Portfolio Hedge	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRRVIMCJFXT09	03/20/2018	03/21/2018	03/21/2018	Expiry	25,914,277	76524561			330,323							330,323			0002
REC 61690250.00 USD PAY [50000000.00] EUR /104808	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	03/21/2018	06/15/2018	06/15/2018	Expiry	61,690,250	1.23380500			3,660,250							3,660,250			0002
REC 29320439.00 USD PAY [38000000.00] AUD /104846	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	17331LVCKQKXST7V54	03/22/2018	04/10/2018	04/10/2018	Expiry	29,320,439	77159050			(171,361)							(171,361)			0002
REC 38000000.00 AUD PAY [29318520.00] USD /104847	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	17331LVCKQKXST7V54	03/22/2018	03/26/2018	03/26/2018	Expiry	29,318,520	77154000			116,280							116,280			0002
REC 4767118.15 USD PAY [3857000.00] EUR /104876	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	KD3XUN7CGT14HNAYLU02	03/23/2018	04/09/2018	04/09/2018	Expiry	4,767,118	1.23596530			16,451							16,451			0002
REC 4050000.00 EUR PAY [499630.24] USD /104877	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	KD3XUN7CGT14HNAYLU02	03/23/2018	03/26/2018	03/26/2018	Expiry	4,999,630	1.23447660			41,000							41,000			0002
REC 6636000.41 JPY PAY [63130.26] USD /104892	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/23/2018	03/27/2018	03/27/2018	Expiry	63,130	0.0951330			(88)							(88)			0002
REC 63293.19 USD PAY [6636000.46] JPY /104893	ASSET HEDGE	Schedule	Currency	JPIMORGAN CHASE BANK, N.A.	7H6GLXDRUGGFU57RNE97	03/23/2018	05/02/2018	05/02/2018	Expiry	63,293	0.0953785			2,906							2,906			0002

19152

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 217834000.00 EUR PAY [270910561.12] USD /104943	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	03/26/2018	03/27/2018	03/27/2018	Expiry		270,910,561	1.24365600			(709,268)							(709,268)			0002
REC 217834000.00 EUR /104951	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	03/26/2018	06/25/2018	06/25/2018	Expiry		272,727,297	1.25199600			17,796,166							17,796,166			0002
REC 4757035.55 USD PAY [3342000.00] GBP /104958	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	03/26/2018	04/12/2018	04/12/2018	Expiry		4,757,036	1.42340980			1,035							1,035			0002
REC 3240000.00 GBP PAY [4608073.16] USD /104959	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	03/26/2018	03/27/2018	03/27/2018	Expiry		4,608,073	1.42224480			(20,233)							(20,233)			0002
REC 259042000.00 AUD PAY [199711020.32] USD /104984	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	03/27/2018	03/29/2018	03/29/2018	Expiry		199,711,020	1.77096000			(818,573)							(818,573)			0002
REC 207606162.60 USD PAY [269196000.00] AUD /104985	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	03/27/2018	07/02/2018	07/02/2018	Expiry		207,606,163	1.77120820			10,043,218							10,043,218			0002
REC 83381000.00 GBP PAY [117992619.86] USD /104986	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	03/27/2018	03/28/2018	03/28/2018	Expiry		117,992,620	1.41510200			(617,186)							(617,186)			0002
REC 122579289.61 USD PAY [86317000.00] GBP /104987	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	03/27/2018	06/25/2018	06/25/2018	Expiry		122,579,290	1.42010600			7,950,314							7,950,314			0002
REC 99944997.16 USD PAY [1057000000.30] JPY /105046	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	03/28/2018	05/31/2018	05/31/2018	Expiry		99,944,997	0.09455553			2,700,997							2,700,997			0002
REC 5539185.00 USD PAY [4500000.00] EUR /105058	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE/ CLEARED THROUGH CITI GLOBAL MARK	03/28/2018	04/03/2018	04/03/2018	Expiry		5,539,185	1.23093000			17,235							17,235			0002
REC 2452000.00 GBP PAY [3461230.94] USD /105059	ASSET HEDGE	Scheduled	Currency	LLOYDS BANK PLC	03/28/2018	06/11/2018	06/11/2018	Expiry		3,461,231	1.41159500			(173,099)							(173,099)			0002
REC 23983000.00 EUR PAY [2984892.31] USD /105080	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	03/28/2018	06/19/2018	06/19/2018	Expiry		29,884,862	1.23774600			(1,905,353)							(1,905,353)			0002
REC 2855392.80 USD PAY [14800000.00] GBP /105081	ASSET HEDGE	Scheduled	Currency	LLOYDS BANK PLC	03/29/2018	05/14/2018	05/14/2018	Expiry		20,853,363	1.40901100			790,483							790,483			0002
REC 14800000.00 GBP PAY [2081774.72] USD /105082	ASSET HEDGE	Scheduled	Currency	LLOYDS BANK PLC	03/29/2018	04/03/2018	04/03/2018	Expiry		20,817,775	1.40660640			(13,415)							(13,415)			0002
REC 13688440.05 USD PAY [17544000.00] CAD /105141	ASSET HEDGE	Scheduled	Currency	LLOYDS BANK PLC	04/04/2018	07/03/2018	07/03/2018	Expiry		13,688,440	1.78023484			339,210							339,210			0002
REC 17359999.99 CAD PAY [13519828.04] USD /105142	ASSET HEDGE	Scheduled	Currency	SOCIETE GENERAL	04/04/2018	04/05/2018	04/05/2018	Expiry		13,519,828	1.77879194			95,620							95,620			0002
REC 8740000.00 AUD PAY [6711838.00] USD /105176	ASSET HEDGE	Scheduled	Currency	BANK OF AMERICA, N.A.	04/05/2018	04/09/2018	04/09/2018	Expiry		67,111,838	1.76787000			168,682							168,682			0002
REC 68306097.88 USD PAY [88940000.00] AUD /105177	ASSET HEDGE	Scheduled	Currency	BANK OF AMERICA, N.A.	04/05/2018	07/03/2018	07/03/2018	Expiry		68,306,098	1.76800200			2,632,802							2,632,802			0002
REC 106015800.45 USD PAY [85881000.00] EUR /105206	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	04/06/2018	07/05/2018	07/05/2018	Expiry		106,015,800	1.23445000			5,620,911							5,620,911			0002
REC 85904000.00 EUR PAY [105346566.42] USD /105207	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	04/06/2018	04/09/2018	04/09/2018	Expiry		105,346,566	1.22632900			461,390							461,390			0002
REC 5188663.20 USD PAY [4200000.00] EUR /105222	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	04/06/2018	07/05/2018	07/05/2018	Expiry		5,188,663	1.23539600			278,863							278,863			0002
REC 4200000.00 EUR PAY [5154954.00] USD /105223	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	04/06/2018	04/10/2018	04/10/2018	Expiry		5,154,954	1.22737000			33,306							33,306			0002
REC 28766543.11 USD PAY [37504000.00] AUD /105241	ASSET HEDGE	Scheduled	Currency	BANK OF AMERICA, N.A.	04/06/2018	07/05/2018	07/05/2018	Expiry		28,766,543	1.76702600			1,069,839							1,069,839			0002
REC 39460000.00 AUD PAY [27861174.00] USD /105242	ASSET HEDGE	Scheduled	Currency	BANK OF AMERICA, N.A.	04/06/2018	04/10/2018	04/10/2018	Expiry		27,861,174	1.76690000			335,432							335,432			0002
REC 17680000.00 GBP PAY [25053379.20] USD /105292	ASSET HEDGE	Schedule BA, D	Currency	THE TORONTO-DOMINION BANK	04/10/2018	04/11/2018	04/11/2018	Expiry		250,533,379	1.41704400			62,941							62,941			0002
REC 251484386.40 USD PAY [17880000.00] GBP /105293	ASSET HEDGE	Schedule BA, D	Currency	THE TORONTO-DOMINION BANK	04/10/2018	07/09/2018	07/09/2018	Expiry		251,484,386	1.42242300			17,118,306							17,118,306			0002
REC 157113401.10 USD PAY [11045000.00] GBP /105295	ASSET HEDGE	Schedule BA, D	Currency	MORGAN STANLEY CAPITAL SERVICES	04/10/2018	07/12/2018	07/12/2018	Expiry		157,113,401	1.42242000			11,279,665							11,279,665			0002
REC 160291008.90 GBP PAY [227015347.17] USD /105306	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	04/10/2018	04/12/2018	04/12/2018	Expiry		227,015,347	1.41627000			1,094,788							1,094,788			0002
REC 229442316.31 USD PAY [161387000.00] GBP /105309	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	04/10/2018	07/10/2018	07/10/2018	Expiry		229,442,316	1.42169020			15,120,380							15,120,380			0002
REC 23598446.65 USD PAY [18973000.00] EUR /105310	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	04/10/2018	07/09/2018	07/09/2018	Expiry		23,598,447	1.24379100			1,301,377							1,301,377			0002
REC 18601000.00 EUR PAY [22983767.62] USD /105315	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	04/10/2018	04/12/2018	04/12/2018	Expiry		22,983,768	1.23562000			(54,315)							(54,315)			0002
REC 100957000.00 GBP PAY [143049002.01] USD /105316	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	04/10/2018	04/12/2018	04/12/2018	Expiry		143,049,002	1.41693000			622,905							622,905			0002
REC 165261025.96 USD PAY [116179000.00] GBP /105317	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	04/10/2018	07/12/2018	07/12/2018	Expiry		165,261,026	1.42246900			11,869,892							11,869,892			0002
REC 1948000.00 AUD PAY [1512818.16] USD /105362	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	04/11/2018	06/06/2018	06/06/2018	Expiry		1,512,818	1.77660070			(19,481)							(19,481)			0002
REC 1189000.00 AUD PAY [923282.28] USD /105369	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	04/11/2018	04/13/2018	04/13/2018	Expiry		923,282	1.77652000			214							214			0002

E19153

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/(Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 766487.42 USD PAY [987000.00] AUD /105370	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE MORGAN STANLEY	04/11/2018	06/06/2018	06/06/2018	Expiry		766,487		77658300		9,853							9,853			0002
REC 12410535.54 USD PAY [8757000.00] GBP /105381	ASSET HEDGE	Schedule D	Currency	CAPITAL SERVICES MORGAN STANLEY	04/11/2018	04/13/2018	04/13/2018	Expiry		12,410,536		1,41722000		69,005							(69,005)			0002
REC 15200399.18 USD PAY [12233000.00] EUR /105382	ASSET HEDGE	Schedule D	Currency	CAPITAL SERVICES MORGAN STANLEY	04/11/2018	06/25/2018	06/25/2018	Expiry		15,200,399		1,24257330		884,119							884,119			0002
REC 8793000.00 GBP PAY [12476461.57] USD /105391	ASSET HEDGE	Schedule D	Currency	CAPITAL SERVICES MORGAN STANLEY	04/11/2018	05/11/2018	05/11/2018	Expiry		12,476,462		1,41890840		(560,188)							(560,188)			0002
REC 43068000.00 GBP PAY [61036830.96] USD /105392	ASSET HEDGE	Schedule D	Currency	CAPITAL SERVICES MORGAN STANLEY	04/11/2018	04/13/2018	04/13/2018	Expiry		61,036,831		1,41722000		339,376							339,376			0002
REC 61401842.10 USD PAY [43274000.00] GBP /105393	ASSET HEDGE	Schedule D	Currency	CAPITAL SERVICES MORGAN STANLEY	04/11/2018	05/11/2018	05/11/2018	Expiry		61,401,842		1,41890840		2,756,917							2,756,917			0002
REC 60810000.00 EUR PAY [75047141.26] USD /105421	ASSET HEDGE	Schedule D	Currency	LLOYDS BANK PLC	04/12/2018	05/14/2018	05/14/2018	Expiry		75,047,141		1,23412500		(2,543,378)							(2,543,378)			0002
REC 74452564.18 USD PAY [60461000.00] EUR /105422	ASSET HEDGE	Schedule D	Currency	LLOYDS BANK PLC	04/12/2018	04/13/2018	04/13/2018	Expiry		74,452,564		1,23141470		(174,448)							(174,448)			0002
REC 1109000.00 GBP PAY [1577630.13] USD /105444	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/12/2018	04/16/2018	04/16/2018	Expiry		1,577,630		1,42257000		12,343							12,343			0002
REC 3967379.60 USD PAY [2781000.00] GBP /105445	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/12/2018	06/25/2018	06/25/2018	Expiry		3,967,380		1,42660180		274,212							274,212			0002
REC 1647000.00 EUR PAY [2029873.64] USD /105450	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	04/12/2018	04/13/2018	04/13/2018	Expiry		2,029,874		1,23246730		3,018							3,018			0002
REC 2000688.33 USD PAY [1623000.00] EUR /105451	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	04/12/2018	04/16/2018	04/16/2018	Expiry		2,000,688		1,23271000		(8,748)							(8,748)			0002
REC 999000.00 CAD PAY [794500.62] USD /105462	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	04/12/2018	06/11/2018	06/11/2018	Expiry		794,501		79529592		(21,674)							(21,674)			0002
REC 675000.00 CAD PAY [536220.72] USD /105466	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	04/12/2018	04/13/2018	04/13/2018	Expiry		536,221		79440107		(1,013)							(1,013)			0002
REC 2715935.57 USD PAY [3415000.00] CAD /105471	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	04/12/2018	06/11/2018	06/11/2018	Expiry		2,715,936		79529592		74,092							74,092			0002
REC 7000000.00 GBP PAY [9985349.50] USD /105478	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/13/2018	04/13/2018	04/13/2018	Expiry		9,985,350		1,42647850		(9,650)							(9,650)			0002
REC 177825496.32 USD PAY [143351000.00] EUR /105488	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/13/2018	07/12/2018	07/12/2018	Expiry		177,825,496		1,24049010		10,534,879							10,534,879			0002
REC 143375000.00 EUR PAY [176675220.15] USD /105489	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/13/2018	04/16/2018	04/16/2018	Expiry		176,675,220		1,23225960		837,367							837,367			0002
REC 179907884.49 USD PAY [125788000.00] GBP /105504	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	04/13/2018	07/12/2018	07/12/2018	Expiry		179,907,884		1,43024680		13,829,988							13,829,988			0002
REC 125788000.00 GBP PAY [179224000.28] USD /105511	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	04/13/2018	04/17/2018	04/17/2018	Expiry		179,224,000		1,42481000		527,052							527,052			0002
REC 173650000.00 GBP PAY [248790091.50] USD /105524	ASSET HEDGE	Schedule D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	04/16/2018	04/18/2018	04/18/2018	Expiry		248,790,092		1,43271000		(2,120,267)							(2,120,267)			0002
REC 251870356.11 USD PAY [175115000.00] GBP /105525	ASSET HEDGE	Schedule D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	04/16/2018	07/16/2018	07/16/2018	Expiry		251,870,356		1,43831400		20,018,096							20,018,096			0002
REC 6337551.72 USD PAY [4524000.00] GBP /105671	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/24/2018	06/25/2018	06/25/2018	Expiry		6,337,552		1,40087350		329,680							329,680			0002
REC 3534000.00 GBP PAY [4937941.93] USD /105672	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/24/2018	04/25/2018	04/25/2018	Expiry		4,937,942		1,39726710		(17,200)							(17,200)			0002
REC 11666456000.55 JPY PAY [106706991.55] USD /105696	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/25/2018	04/27/2018	04/27/2018	Expiry		106,706,692		00914645		624,704							624,704			0002
REC 107377590.98 USD PAY [11666456000.00] JPY /105687	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/25/2018	07/27/2018	07/27/2018	Expiry		107,377,561		00920396		2,379,457							2,379,457			0002
REC 4020000.00 EUR PAY [4884300.00] USD /105737	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/26/2018	04/30/2018	04/30/2018	Expiry		4,884,300		1,21500000		(29,346)							(29,346)			0002
REC 4904000.40 USD PAY [4020000.00] EUR /105738	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL	04/26/2018	06/25/2018	06/25/2018	Expiry		4,904,000		1,21990060		199,394							199,394			0002
REC 48185522.50 USD PAY [63680000.00] AUD /105757	ASSET HEDGE	Schedule D	Currency	MARK	04/26/2018	07/27/2018	07/27/2018	Expiry		48,185,523		75668220		1,055,955							1,055,955			0002
REC 6156913.00 USD PAY [8702000.00] NZD /105758	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/26/2018	07/27/2018	07/27/2018	Expiry		6,156,913		70752850		241,293							241,293			0002
REC 36747299.02 USD PAY [26258000.00] GBP /105759	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	04/26/2018	07/27/2018	07/27/2018	Expiry		36,747,299		1,39947060		2,315,184							2,315,184			0002
REC 81803565.93 USD PAY [67002000.00] EUR /105760	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/26/2018	07/27/2018	07/27/2018	Expiry		81,803,566		1,22091230		3,692,634							3,692,634			0002
REC 12851000.00 NZD PAY [903624.62] USD /105761	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/26/2018	04/30/2018	04/30/2018	Expiry		9,093,625		70762000		(50,376)							(50,376)			0002
REC 64736000.00 AUD PAY [48966957.76] USD /105762	ASSET HEDGE	Schedule D	Currency	JPMORGAN CHASE BANK, N.A.	04/26/2018	04/30/2018	04/30/2018	Expiry		48,966,958		75641000		(220,750)							(220,750)			0002
REC 41915000.00 GBP PAY [58419450.40] USD /105763	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	04/26/2018	04/30/2018	04/30/2018	Expiry		58,419,450		1,39376000		(723,453)							(723,453)			0002

19154

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 74346000.00 EUR PAY [90154833.44] USD /105764	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	04/26/2018	04/30/2018	04/30/2018	Expiry		90,154,933	1.21264000			(367,269)							(367,269)			0002
REC 18821803.50 USD PAY [21604000.00] CAD /105841	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	04/27/2018	07/27/2018	07/27/2018	Expiry		16,821,804	77864301			273,140							273,140			0002
REC 21899999.99 CAD PAY [17016581.45] USD /105842	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	04/27/2018	04/30/2018	04/30/2018	Expiry		17,016,581	77701285			36,949							36,949			0002
REC 3212922.15 USD PAY [2325000.00] GBP /105865	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	04/27/2018	06/25/2018	06/25/2018	Expiry		3,212,922	1.38190200			125,322							125,322			0002
REC 2327000.00 GBP PAY [3207829.54] USD /105866	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	04/27/2018	04/30/2018	04/30/2018	Expiry		3,207,830	1.37852580			(4,714)							(4,714)			0002
REC 28160999.99 JPY PAY [2574931.88] USD /105873	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	04/30/2018	05/02/2018	05/02/2018	Expiry		2,574,932	00914361			12,281							12,281			0002
REC 2591306.26 USD PAY [28161000.50] JPY /105874	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	04/30/2018	08/01/2018	08/01/2018	Expiry		2,591,306	00920176			56,816							56,816			0002
REC 89000.00 AUD PAY [66617.39] USD /105897	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK	05/01/2018	05/03/2018	05/03/2018	Expiry		66,617	74851000			409							409			0002
REC 66621.84 USD PAY [89000.00] AUD /105898	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK	05/01/2018	06/06/2018	06/06/2018	Expiry		66,622	74856000			(1,606)							(1,606)			0002
REC 1468576.62 USD PAY [1962000.00] AUD /105899	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK	05/01/2018	05/03/2018	05/03/2018	Expiry		1,468,577	74851000			(9,006)							(9,006)			0002
REC 1962000.00 AUD PAY [1468674.72] USD /105900	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK	05/01/2018	06/06/2018	06/06/2018	Expiry		1,468,675	74856000			35,394							35,394			0002
REC 29930250.00 USD PAY [25000000.00] EUR /105926	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	05/03/2018	05/07/2018	05/07/2018	Expiry		29,930,250	1.19721000			117,750							117,750			0002
REC 25000000.00 EUR PAY [30076290.00] USD /105927	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/03/2018	07/12/2018	07/12/2018	Expiry		30,078,290	1.20313160			(903,290)							(903,290)			0002
REC 10208000.00 GBP PAY [13832159.50] USD /105938	ASSET HEDGE	ScheduleD	Currency	CITIBANK N.A.	05/03/2018	05/04/2018	05/04/2018	Expiry		13,832,160	1.35503130			(2,361)							(2,361)			0002
REC 175199818.25 USD PAY [145480000.00] EUR /105939	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	05/03/2018	08/06/2018	08/06/2018	Expiry		175,199,818	1.20428800			7,126,774							7,126,774			0002
REC 141692000.00 EUR PAY [16843228.35] USD /105940	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	05/03/2018	05/04/2018	05/04/2018	Expiry		169,443,228	1.19585600			91,250							91,250			0002
REC 11283175.80 USD PAY [8290000.00] GBP /105941	ASSET HEDGE	ScheduleD	Currency	CITIBANK N.A.	05/03/2018	08/06/2018	08/06/2018	Expiry		11,283,176	1.36105860			554,258							554,258			0002
REC 21887000.03 SEK PAY [2470838.56] USD /105966	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/03/2018	05/04/2018	05/04/2018	Expiry		2,470,839	11289069			19,902							19,902			0002
REC 1985096.74 USD PAY [1745799.98] SEK /105967	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/03/2018	08/06/2018	08/06/2018	Expiry		1,985,097	11370700			31,547							31,547			0002
REC 42876105.30 USD PAY [31500000.00] GBP /105985	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/03/2018	07/10/2018	07/10/2018	Expiry		42,876,105	1.36114620			1,044,105							1,044,105			0002
REC 31500000.00 GBP PAY [42746445.00] USD /105986	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/03/2018	05/08/2018	05/08/2018	Expiry		42,746,445	1.35703000			(79,695)							(79,695)			0002
REC 9769261.56 USD PAY [8150000.00] EUR /105991	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK	05/03/2018	05/04/2018	05/04/2018	Expiry		9,769,262	1.19868240			17,787							17,787			0002
REC 8122000.00 EUR PAY [9741973.51] USD /105992	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK	05/03/2018	05/14/2018	05/14/2018	Expiry		9,741,974	1.19945500			(58,113)							(58,113)			0002
REC 534000.00 EUR PAY [632694.91] USD /106037	ASSET HEDGE	Schedule BA, D	Currency	WELLS FARGO BANK, N.A.	05/08/2018	05/09/2018	05/09/2018	Expiry		632,695	1.18480320			(2)							(2)			0002
REC 457000.00 EUR PAY [519370.15] USD /106039	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	05/08/2018	06/25/2018	06/25/2018	Expiry		519,370	1.18849000			(7,949)							(7,949)			0002
REC 8411061.47 USD PAY [7076000.00] EUR /106040	ASSET HEDGE	ScheduleD	Currency	WELLS FARGO BANK, N.A.	05/08/2018	06/25/2018	06/25/2018	Expiry		8,411,061	1.18867460			130,019							130,019			0002
REC 10891230.79 USD PAY [9194000.00] EUR /106041	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	05/08/2018	05/09/2018	05/09/2018	Expiry		10,891,231	1.18460200			(1,820)							(1,820)			0002
REC 54125649.22 USD PAY [39802000.00] GBP /106063	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/09/2018	06/08/2018	06/08/2018	Expiry		54,125,649	1.35987260			699,425							699,425			0002
REC 39613000.00 GBP PAY [53807526.29] USD /106064	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/09/2018	05/11/2018	05/11/2018	Expiry		53,807,526	1.35833000			(123,989)							(123,989)			0002
REC 15080179.66 USD PAY [11102000.00] GBP /106065	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/09/2018	05/11/2018	05/11/2018	Expiry		15,080,180	1.35833000			34,749							34,749			0002
REC 11146000.00 GBP PAY [15157139.99] USD /106066	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/09/2018	06/08/2018	06/08/2018	Expiry		15,157,140	1.35987260			(195,864)							(195,864)			0002
REC 68932000.00 EUR PAY [82449654.81] USD /106092	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/10/2018	06/11/2018	06/11/2018	Expiry		82,449,655	1.19610130			(1,302,904)							(1,302,904)			0002
REC 81849670.40 USD PAY [68560000.00] EUR /106093	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/10/2018	05/14/2018	05/14/2018	Expiry		81,849,670	1.19384000			105,582							105,582			0002
REC 235021869.22 USD PAY [173650000.00] GBP /106113	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK	05/10/2018	08/08/2018	08/08/2018	Expiry		235,021,869	1.35342280			11,325,939							11,325,939			0002
REC 173650000.00 GBP PAY [234068308.00] USD /106114	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK	05/10/2018	05/14/2018	05/14/2018	Expiry		234,066,308	1.34792000			1,333,632							1,333,632			0002

E19155

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 17363556.65 USD PAY [132935000.00] GBP /106118	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	05/10/2018	07/30/2018	07/30/2018	Expiry		179,835,359	1.35280670			5,238,530							5,238,530			0002
REC 131590500.00 GBP PAY [177365571.33] USD /106119	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	05/10/2018	05/14/2018	05/14/2018	Expiry		177,365,571	1.34786000			1,018,510							1,018,510			0002
REC 180002801.71 USD PAY [132936000.00] GBP /106138	ASSET HEDGE	Schedule	Currency	SOCIETE GENERAL	02/29/2018	08/13/2018	08/13/2018	Expiry		180,002,802	1.35405610			10,243,530							10,243,530			0002
REC 131589000.00 GBP PAY [177413553.36] USD /106139	ASSET HEDGE	Schedule	Currency	SOCIETE GENERAL	02/29/2018	05/14/2018	05/14/2018	Expiry		177,413,553	1.34824000			968,495							968,495			0002
REC 52969.68 USD PAY [393000.00] GBP /106160	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	05/10/2018	05/14/2018	05/14/2018	Expiry		529,670	1.34776000			(3,081)							(3,081)			0002
REC 518000.00 GBP PAY [700935.27] USD /106161	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	05/10/2018	08/06/2018	08/06/2018	Expiry		700,935	1.35315689			(30,540)							(30,540)			0002
REC 122972192.75 USD PAY [90878000.00] GBP /106183	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	05/10/2018	08/06/2018	08/06/2018	Expiry		122,972,193	1.35315690			5,357,885							5,357,885			0002
REC 91416000.00 GBP PAY [123206828.16] USD /106184	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	05/10/2018	05/14/2018	05/14/2018	Expiry		123,206,828	1.34776000			716,701							716,701			0002
REC 41668000.00 GBP PAY [56536392.44] USD /106236	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/14/2018	05/16/2018	05/16/2018	Expiry		56,536,392	1.35683000			(334,594)							(334,594)			0002
REC 58124582.65 USD PAY [42767000.00] GBP /106237	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/14/2018	06/25/2018	06/25/2018	Expiry		58,124,583	1.35909890			1,330,007							1,330,007			0002
REC 2646000.00 NZD PAY [1821834.50] USD /106292	ASSET HEDGE	Schedule	Currency	BANK OF AMERICA, N.A.	05/17/2018	05/22/2018	05/22/2018	Expiry		1,821,835	68852400			13,167							13,167			0002
REC 1667655.99 USD PAY [2422000.00] NZD /106293	ASSET HEDGE	Schedule	Currency	BANK OF AMERICA, N.A.	05/17/2018	08/13/2018	08/13/2018	Expiry		1,667,656	68854500			73,980							73,980			0002
REC 531156.01 USD PAY [393000.00] GBP /106301	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/17/2018	05/22/2018	05/22/2018	Expiry		531,156	1.35154201			3,278							3,278			0002
REC 129000.00 GBP PAY [175044.24] USD /106302	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/17/2018	08/15/2018	08/15/2018	Expiry		175,044	1.35693209			(11,253)							(11,253)			0002
REC 90734000.00 GBP PAY [122630811.83] USD /106303	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/17/2018	05/22/2018	05/22/2018	Expiry		122,630,812	1.35154200			(756,903)							(756,903)			0002
REC 12366620.80 USD PAY [91137000.00] GBP /106304	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/17/2018	08/15/2018	08/15/2018	Expiry		123,666,721	1.35693210			7,950,072							7,950,072			0002
REC 51795108.70 USD PAY [43627000.00] EUR /106305	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	05/17/2018	08/13/2018	08/13/2018	Expiry		51,795,109	1.18722600			2,016,702							2,016,702			0002
REC 43627000.00 EUR PAY [51472879.68] USD /106306	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	05/17/2018	05/22/2018	05/22/2018	Expiry		51,472,880	1.17984000			(84,636)							(84,636)			0002
REC 2031599999.88 JPY PAY [18300889.10] USD /106332	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/18/2018	05/22/2018	05/22/2018	Expiry		18,300,889	00900812			(16,489)							(16,489)			0002
REC 2012900000.19 JPY PAY [18369311.78] USD /106333	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/18/2018	11/21/2018	11/21/2018	Expiry		18,369,312	00912579			(655,792)							(655,792)			0002
REC 18369813.02 USD PAY [2012900000.08] JPY /106334	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	05/18/2018	11/21/2018	11/21/2018	Expiry		18,369,813	00912604			656,293							656,293			0002
REC 18299405.51 USD PAY [2031599999.72] JPY /106335	ASSET HEDGE	Schedule	Currency	DEUTSCHE BANK AG	05/18/2018	05/22/2018	05/22/2018	Expiry		18,299,406	00900739			15,006							15,006			0002
REC 1931000000.55 COP PAY [667012.09] USD /106386	ASSET HEDGE	Schedule	Currency	DEUTSCHE BANK AG	05/21/2018	06/18/2018	06/18/2018	Expiry		667,012	00034542			7,337							7,337			0002
REC 42027363.00 USD PAY [31500000.00] GBP /106444	ASSET HEDGE	Schedule	Currency	DEUTSCHE BANK AG	05/23/2018	06/04/2018	06/04/2018	Expiry		42,027,363	1.33420200			81,963							81,963			0002
REC 21300000.00 GBP PAY [28407171.00] USD /106445	ASSET HEDGE	Schedule	Currency	DEUTSCHE BANK AG	05/23/2018	05/25/2018	05/25/2018	Expiry		28,407,171	1.33367000			(41,961)							(41,961)			0002
REC 31500000.00 GBP PAY [42037814.70] USD /106471	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	05/23/2018	06/04/2018	06/04/2018	Expiry		42,037,815	1.33453380			(92,415)							(92,415)			0002
REC 28414200.00 USD PAY [21300000.00] GBP /106472	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	05/23/2018	05/25/2018	05/25/2018	Expiry		28,414,200	1.33400000			48,990							48,990			0002
REC 9023012.59 USD PAY [7723000.00] EUR /106474	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	05/23/2018	05/25/2018	05/25/2018	Expiry		9,023,013	1.16833000			(16,450)							(16,450)			0002
REC 7723000.00 EUR PAY [9042659.13] USD /106475	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	05/23/2018	06/25/2018	06/25/2018	Expiry		9,042,659	1.17087390			(4,432)							(4,432)			0002
REC 4591585.09 USD PAY [3921000.00] EUR /106477	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	05/23/2018	06/25/2018	06/25/2018	Expiry		4,591,585	1.17102400			2,839							2,839			0002
REC 3921000.00 EUR PAY [4581610.08] USD /106478	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	05/23/2018	05/25/2018	05/25/2018	Expiry		4,581,610	1.16848000			(8,940)							(8,940)			0002
REC 48604999.98 SEK PAY [5538283.84] USD /106501	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	05/23/2018	05/25/2018	05/25/2018	Expiry		5,539,284	1.1396531			21,128							21,128			0002
REC 6294879.92 USD PAY [54854999.97] SEK /106502	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	05/23/2018	08/20/2018	08/20/2018	Expiry		6,294,880	1.1475490			299,228							299,228			0002
REC 20000000.00 AUD PAY [1514800.00] USD /106531	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	05/24/2018	05/29/2018	05/29/2018	Expiry		15,141,800	75709000			(131,800)							(131,800)			0002
REC 15148482.00 USD PAY [20000000.00] AUD /106532	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	05/24/2018	07/05/2018	07/05/2018	Expiry		15,144,842	75724210			374,842							374,842			0002

19155

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 12739420.80 USD PAY [10922000.00] EUR /106575	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/25/2018	05/29/2018	05/29/2018	Expiry		12,739,421	1.16640000			138,709							138,709			0002
REC 11280000.00 EUR PAY [13166592.35] USD /106576	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/25/2018	06/11/2018	06/11/2018	Expiry		13,168,592	1.16742840			110,224							110,224			0002
REC 7639836.69 USD PAY [5737000.00] GBP /106577	ASSET HEDGE	ScheduleD	Currency	THE TORONTO-DOMINION BANK	05/25/2018	06/08/2018	06/08/2018	Expiry		7,639,837	1.33167800			60,938							60,938			0002
REC 22172000.00 AUD PAY [16687536.30] USD /106593	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	05/29/2018	05/30/2018	05/30/2018	Expiry		16,687,536	75264010			105,537							105,537			0002
REC 16708849.98 USD PAY [22200000.00] AUD /106594	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/29/2018	06/05/2018	06/05/2018	Expiry		16,708,850	75265090			198,670							198,670			0002
REC 1057000000.41 JPY PAY [97084837.18] USD /106606	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/30/2018	05/31/2018	05/31/2018	Expiry		97,084,837	00918494			159,163							159,163			0002
REC 97116735.51 USD PAY [1056999999.94] JPY /106607	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/30/2018	06/06/2018	06/06/2018	Expiry		97,116,736	00918796			929,736							929,736			0002
REC 113050691.20 USD PAY [12267951250.13] JPY /106625	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	05/31/2018	06/01/2018	06/01/2018	Expiry		113,050,691	00921512			1,412,335							1,412,335			0002
REC 50719608.24 USD PAY [5503818000.32] JPY /106635	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	05/31/2018	06/01/2018	06/01/2018	Expiry		50,719,608	00921535			634,864							634,864			0002
REC 5503818000.14 JPY PAY [50805333.63] USD /106636	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	05/31/2018	06/29/2018	06/29/2018	Expiry		50,805,334	00923093			1,270,972							1,270,972			0002
REC 1056999999.84 JPY PAY [97310474.73] USD /106645	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	05/31/2018	06/06/2018	06/06/2018	Expiry		97,310,475	00920629			1,123,475							1,123,475			0002
REC 100833300.00 GBP PAY [135163811.99] USD /106649	ASSET HEDGE	ScheduleD	Currency	DEUTSCHE BANK AG	05/31/2018	12/04/2018	12/04/2018	Expiry		135,163,812	1.34046800			6,913,938							6,913,938			0002
REC 135205516.64 USD PAY [100833300.00] GBP /106650	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	05/31/2018	12/04/2018	12/04/2018	Expiry		135,205,517	1.34088160			6,955,642							6,955,642			0002
REC 102500000.00 GBP PAY [13624700.00] USD /106651	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	05/31/2018	06/04/2018	06/04/2018	Expiry		136,247,100	1.32924000			241,900							241,900			0002
REC 136195850.00 USD PAY [102500000.00] GBP /106652	ASSET HEDGE	ScheduleD	Currency	DEUTSCHE BANK AG	05/31/2018	06/04/2018	06/04/2018	Expiry		136,195,850	1.32874000			293,150							293,150			0002
REC 19354000.00 AUD PAY [146082423.36] USD /106708	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/01/2018	06/04/2018	06/04/2018	Expiry		146,082,423	75473730			1,986,387							1,986,387			0002
REC 146170742.05 USD PAY [193554000.00] AUD /106709	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/01/2018	09/05/2018	09/05/2018	Expiry		146,170,742	75519360			6,986,061							6,986,061			0002
REC 23147000.00 AUD PAY [17714630.57] USD /106746	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/04/2018	06/06/2018	06/06/2018	Expiry		17,714,631	76531000			29,860							29,860			0002
REC 17724630.08 USD PAY [23147000.00] AUD /106747	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/04/2018	08/31/2018	08/31/2018	Expiry		17,724,630	76574200			1,091,196							1,091,196			0002
REC 50631138.14 USD PAY [37653000.00] GBP /106800	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/06/2018	07/06/2018	07/06/2018	Expiry		50,631,138	1.34467740			691,964							691,964			0002
REC 37455000.00 GBP PAY [50293075.80] USD /106801	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/06/2018	06/08/2018	06/08/2018	Expiry		50,293,076	1.34276000			17,229							17,229			0002
REC 23012220.88 USD PAY [17138000.00] GBP /106802	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/06/2018	06/08/2018	06/08/2018	Expiry		23,012,221	1.34276000			7,883							7,883			0002
REC 17199000.00 GBP PAY [23127106.51] USD /106803	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/06/2018	07/06/2018	07/06/2018	Expiry		23,127,107	1.34467740			316,073							316,073			0002
REC 10000000.00 GBP PAY [134247369.99] USD /106820	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/06/2018	06/11/2018	06/11/2018	Expiry		134,247,370	1.34247370			147,370							147,370			0002
REC 134343000.00 USD PAY [100000000.00] GBP /106821	ASSET HEDGE	ScheduleD	Currency	DEUTSCHE BANK AG	06/06/2018	06/08/2018	06/08/2018	Expiry		134,343,000	1.34343000			113,000							113,000			0002
REC 100000000.00 GBP PAY [134301000.00] USD /106822	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/06/2018	06/08/2018	06/08/2018	Expiry		134,301,000	1.34301000			71,000							71,000			0002
REC 134280000.00 USD PAY [100000000.00] GBP /106823	ASSET HEDGE	ScheduleD	Currency	DEUTSCHE BANK AG	06/06/2018	06/11/2018	06/11/2018	Expiry		134,280,000	1.34280000			180,000							180,000			0002
REC 100833300.00 GBP PAY [13654890.69] USD /106871	ASSET HEDGE	ScheduleD	Currency	DEUTSCHE BANK AG	06/06/2018	12/11/2018	12/11/2018	Expiry		136,548,991	1.35436300			10,664,432							10,664,432			0002
REC 100833300.00 GBP PAY [136618735.69] USD /106872	ASSET HEDGE	ScheduleD	Currency	DEUTSCHE BANK AG	06/06/2018	12/07/2018	12/07/2018	Expiry		136,618,736	1.35489700			8,268,028							8,268,028			0002
REC 136566120.85 USD PAY [100833300.00] GBP /106873	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/06/2018	12/07/2018	12/07/2018	Expiry		136,566,121	1.35437520			8,215,413							8,215,413			0002
REC 136520967.72 USD PAY [100833300.00] GBP /106874	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/06/2018	12/11/2018	12/11/2018	Expiry		136,520,968	1.35392740			10,620,509							10,620,509			0002
REC 144006000.00 EUR PAY [169796711.37] USD /107022	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/08/2018	07/09/2018	07/09/2018	Expiry		169,796,711	1.17909470			560,860							560,860			0002
REC 168641242.39 USD PAY [143352000.00] EUR /107023	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/08/2018	06/11/2018	06/11/2018	Expiry		168,641,242	1.17641360			112,732							112,732			0002
REC 59107799.15 USD PAY [44077000.00] GBP /107044	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	06/08/2018	06/11/2018	06/11/2018	Expiry		59,107,799	1.34101230			542							542			0002
REC 44320000.00 GBP PAY [59678807.92] USD /107045	ASSET HEDGE	ScheduleD	Currency	CREDIT AGRICOLE	06/08/2018	09/06/2018	09/06/2018	Expiry		59,678,808	1.34654350			2,386,344							2,386,344			0002

19157

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 41980859.45 USD PAY [54295000.00 CAD /107046	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/08/2018	09/06/2018	09/06/2018	Expiry		41,980,859	77319936			678,653							678,653			0002
REC 54295000.00 CAD PAY [41904960.37] USD /107047	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/08/2018	06/11/2018	06/11/2018	Expiry		41,904,960	77180146			97,652							97,652			0002
REC 4237064.86 USD PAY [5500000.00] CAD /107116	Portfolio Hedge	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/11/2018	09/06/2018	09/06/2018	Expiry		4,237,065	77037543			53,215							53,215			0002
REC 5500000.00 CAD PAY [4229486.23] USD /107169	Portfolio Hedge	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/11/2018	06/11/2018	06/11/2018	Expiry		4,229,486	76899386			25,334							25,334			0002
REC 97315000.00 GBP PAY [13068309.55] USD /107155	ASSET HEDGE	BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	06/12/2018	06/14/2018	06/14/2018	Expiry		130,068,310	1.33657000			51,577							51,577			0002
REC 130627189.60 USD PAY [97315000.00] GBP /107156	ASSET HEDGE	BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	06/12/2018	09/14/2018	09/14/2018	Expiry		130,627,190	1.34231300			3,417,022							3,417,022			0002
REC 219318000.00 EUR PAY [25847228.90] USD /107178	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/13/2018	06/15/2018	06/15/2018	Expiry		258,477,229	1.17855000			(3,936,758)							(3,936,758)			0002
REC 263125235.75 USD PAY [221787000.00] EUR /107179	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/13/2018	09/11/2018	09/11/2018	Expiry		263,125,236	1.18638710			5,719,244							5,719,244			0002
REC 81824000.00 EUR PAY [96463950.08] USD /107180	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/13/2018	06/15/2018	06/15/2018	Expiry		96,463,950	1.17892000			(1,499,016)							(1,499,016)			0002
REC 81487000.00 EUR PAY [96143496.29] USD /107188	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/13/2018	07/09/2018	07/09/2018	Expiry		96,143,496	1.17986300			(379,974)							(379,974)			0002
REC 94871849.35 USD PAY [80568000.00] EUR /107189	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/13/2018	06/14/2018	06/14/2018	Expiry		94,871,849	1.17753760			(117,823)							(117,823)			0002
REC 98121433.64 USD PAY [82729000.00] EUR /107201	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/13/2018	09/11/2018	09/11/2018	Expiry		98,121,434	1.18605850			2,106,156							2,106,156			0002
REC 2340000.00 AUD PAY [17691963.12] USD /107207	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/14/2018	06/15/2018	06/15/2018	Expiry		17,691,963	75606680			(263,643)							(263,643)			0002
REC 17693294.59 USD PAY [2340000.00] AUD /107208	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/14/2018	07/03/2018	07/03/2018	Expiry		17,693,295	75612370			414,735							414,735			0002
REC 12471000.00 EUR PAY [14570038.89] USD /107239	ASSET HEDGE	ScheduleD	Currency	WELLS FARGO BANK, N.A.	06/15/2018	09/13/2018	09/13/2018	Expiry		14,570,039	1.16831360			8,560							8,560			0002
REC 14403950.88 USD PAY [12408000.00] EUR /107240	ASSET HEDGE	ScheduleD	Currency	WELLS FARGO BANK, N.A.	06/15/2018	06/19/2018	06/19/2018	Expiry		14,403,951	1.16086000			31,764							31,764			0002
REC 11241569.32 USD PAY [9685000.00] EUR /107261	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA/ CLEARED THROUGH CITI GLOBAL MARK	06/15/2018	06/18/2018	06/18/2018	Expiry		11,241,569	1.16071960			(12,401)							(12,401)			0002
REC 9685000.00 EUR PAY [11256177.21] USD /107262	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/15/2018	07/05/2018	07/05/2018	Expiry		11,256,177	1.16222790			65,588							65,588			0002
REC 11075670.00 USD PAY [15000000.00] AUD /107322	ASSET HEDGE	ScheduleD	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	06/21/2018	07/05/2018	07/05/2018	Expiry		11,075,670	73837800			(1,830)							(1,830)			0002
REC 15000000.00 AUD PAY [11075400.00] USD /107323	ASSET HEDGE	ScheduleD	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	06/21/2018	06/25/2018	06/25/2018	Expiry		11,075,400	73836000			44,100							44,100			0002
REC 32775000.00 CAD PAY [24629894.04] USD /107341	ASSET HEDGE	ScheduleD	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	06/21/2018	06/22/2018	06/22/2018	Expiry		24,629,894	75148418			16,906							16,906			0002
REC 24983687.64 USD PAY [33197000.00] CAD /107342	ASSET HEDGE	ScheduleD	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	06/21/2018	09/19/2018	09/19/2018	Expiry		24,983,688	75258872			(700,831)							(700,831)			0002
REC 35976999.99 SEK PAY [4050091.31] USD /107351	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/21/2018	06/25/2018	06/25/2018	Expiry		4,050,091	11257446			15,310							15,310			0002
REC 4119652.85 USD PAY [36358999.98] SEK /107352	ASSET HEDGE	ScheduleD	Currency	GOLDMAN SACHS BANK USA	06/21/2018	09/19/2018	09/19/2018	Expiry		4,119,653	11331040			22,194							22,194			0002
REC 11817762.98 USD PAY [11630000.00] CHF /107358	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/21/2018	09/19/2018	09/19/2018	Expiry		11,817,763	1.01614471			(203,005)							(203,005)			0002
REC 11508000.00 CHF PAY [11607827.31] USD /107359	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/21/2018	06/25/2018	06/25/2018	Expiry		11,607,827	1.00867460			50,927							50,927			0002
REC 138714000.00 GBP PAY [183798824.28] USD /107366	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/21/2018	06/25/2018	06/25/2018	Expiry		183,798,824	1.32502000			413,368							413,368			0002
REC 191883222.53 USD PAY [144274000.00] GBP /107367	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/21/2018	09/19/2018	09/19/2018	Expiry		191,883,223	1.32999170			2,278,332							2,278,332			0002
REC 236924000.00 EUR PAY [275199072.20] USD /107413	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/21/2018	06/25/2018	06/25/2018	Expiry		275,199,072	1.16155000			2,073,085							2,073,085			0002
REC 276970671.43 USD PAY [236924000.00] EUR /107414	ASSET HEDGE	ScheduleD	Currency	JPMORGAN CHASE BANK, N.A.	06/21/2018	09/19/2018	09/19/2018	Expiry		276,970,671	1.16902750			385,594							385,594			0002
REC 5404255.20 USD PAY [4050000.00] GBP /107447	ASSET HEDGE	ScheduleD	Currency	BANK OF AMERICA, N.A.	06/25/2018	10/10/2018	10/10/2018	Expiry		5,404,255	1.33438400			59,065							59,065			0002
REC 4050000.00 GBP PAY [5378238.00] USD /107448	ASSET HEDGE	ScheduleD	Currency	BANK OF AMERICA, N.A.	06/25/2018	06/27/2018	06/27/2018	Expiry		5,378,238	1.32796000			(66,663)							(66,663)			0002
REC 2382403.97 USD PAY [1791000.00] GBP /107472	ASSET HEDGE	ScheduleD	Currency	MORGAN STANLEY CAPITAL SERVICES	06/25/2018	07/30/2018	07/30/2018	Expiry		2,382,404	1.33020881			30,105							30,105			0002
REC 1791000.00 GBP PAY [2378680.83] USD /107473	ASSET HEDGE	ScheduleD	Currency	MORGAN STANLEY CAPITAL SERVICES	06/25/2018	06/27/2018	06/27/2018	Expiry		2,378,681	1.32813000			(29,784)							(29,784)			0002
REC 37032248.79 USD PAY [27883000.00] GBP /107474	ASSET HEDGE	ScheduleD	Currency	MORGAN STANLEY CAPITAL SERVICES	06/25/2018	06/27/2018	06/27/2018	Expiry		37,032,249	1.32813000			463,694							463,694			0002
REC 27883000.00 GBP PAY [37090211.97] USD /107475	ASSET HEDGE	ScheduleD	Currency	MORGAN STANLEY CAPITAL SERVICES	06/25/2018	07/30/2018	07/30/2018	Expiry		37,090,212	1.33020880			(468,680)							(468,680)			0002

E19158

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)	
REC 18005000.00 EUR PAY [21069831.05] USD /107490	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	06/25/2018	06/27/2018	06/27/2018	Expiry	21,069,631	1.17021000			(261,253)							(261,253)			0002	
REC 24859849.81 USD PAY [21123000.00] EUR /107491	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	06/25/2018	09/11/2018	09/11/2018	Expiry	24,859,849	1.17690900			344,495							344,495				0002
REC 3101000.00 EUR PAY [3619348.82] USD /107514	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	06/26/2018	06/27/2018	06/27/2018	Expiry	3,613,949	1.16541400			(30,123)							(30,123)				0002
REC 3634542.56 USD PAY [3101000.00] EUR /107515	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	06/26/2018	09/11/2018	09/11/2018	Expiry	3,634,543	1.17205500			35,522							35,522				0002
REC 13059417.16 USD PAY [9864000.00] GBP /107535	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	06/26/2018	07/30/2018	07/30/2018	Expiry	13,059,417	1.32394740			(104,040)							(104,040)				0002
REC 10841000.00 GBP PAY [14330555.29] USD /107536	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	06/26/2018	06/27/2018	06/27/2018	Expiry	14,330,555	1.32188500			(112,584)							(112,584)				0002
REC 14591000.00 GBP PAY [19142446.51] USD /107555	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	06/27/2018	07/06/2018	07/06/2018	Expiry	19,142,447	1.31193520			209,597							209,597				0002
REC 19248738.73 USD PAY [14677000.00] GBP /107556	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	06/27/2018	06/29/2018	06/29/2018	Expiry	19,248,739	1.31149000			(116,095)							(116,095)				0002
REC 264635000.00 AUD PAY [194355883.05] USD /107571	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	06/28/2018	07/02/2018	07/02/2018	Expiry	194,355,883	73443000			(140,257)							(140,257)				0002
REC 19756963.07 USD PAY [268928000.00] AUD /107572	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	06/28/2018	10/02/2018	10/02/2018	Expiry	197,566,963	73462400			4,309,302							4,309,302				0002
REC 3704000.00 EUR PAY [4289417.20] USD /107579	ASSET HEDGE	Schedule BA, D	Currency	CITIBANK N.A.	E570DZIZ7F32TWEFA76	06/28/2018	07/02/2018	07/02/2018	Expiry	4,289,417	1.15805000			21,668							21,668				0002
REC 4291560.33 USD PAY [3704000.00] EUR /107580	ASSET HEDGE	Schedule BA, D	Currency	CITIBANK N.A.	E570DZIZ7F32TWEFA76	06/28/2018	07/09/2018	07/09/2018	Expiry	4,291,560	1.15862860			(61,380)							(61,380)				0002
REC 65370411.80 USD PAY [115632000.00] AUD /107844	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	06/29/2018	10/02/2018	10/02/2018	Expiry	85,370,412	73829400			2,277,257							2,277,257				0002
REC 11234000.00 AUD PAY [82919277.40] USD /107645	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	06/29/2018	07/03/2018	07/03/2018	Expiry	82,919,277	73811000			(32,579)							(32,579)				0002
REC 53562362.00 USD PAY [7250000.00] AUD /107654	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	06/29/2018	10/03/2018	10/03/2018	Expiry	53,562,362	73879120			2,072,862							2,072,862				0002
REC 72504000.00 AUD PAY [53550366.85] USD /107655	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	06/29/2018	07/05/2018	07/05/2018	Expiry	53,550,367	73858500			(6,163)							(6,163)				0002
REC 30060000.00 AUD PAY [22234450.14] USD /107685	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A. / CLEARED THROUGH CITI GLOBAL MARK	MBN1M2BPB007JBLYG310	06/29/2018	09/05/2018	09/05/2018	Expiry	22,234,450	73966900			(618,304)							(618,304)				0002
REC 24042209.61 USD PAY [32511000.00] AUD /107686	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUG0FU57RNE97	06/29/2018	07/02/2018	07/02/2018	Expiry	24,042,210	73951000			(82,387)							(82,387)				0002
REC 24081222.81 USD PAY [32511000.00] AUD /107695	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUG0FU57RNE97	06/29/2018	07/03/2018	07/03/2018	Expiry	24,081,223	74071000			(75,100)							(75,100)				0002
REC 32511000.00 AUD PAY [24081742.98] USD /107696	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUG0FU57RNE97	06/29/2018	07/02/2018	07/02/2018	Expiry	24,081,743	74072600			(221,920)							(221,920)				0002
REC 13312653.09 USD PAY [17544000.00] CAD /107712	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	07/02/2018	10/01/2018	10/01/2018	Expiry	13,312,653	75881516			(376,930)							(376,930)				0002
REC 17360000.01 CAD PAY [13153508.11] USD /107713	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	ES71P3U3RH1GC71XBU11	07/02/2018	07/03/2018	07/03/2018	Expiry	13,153,508	75769056			55,716							55,716				0002
REC 80209000.00 EUR PAY [93076127.78] USD /107726	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUG0FU57RNE97	07/02/2018	07/05/2018	07/05/2018	Expiry	93,076,128	1.16042000			688,193							688,193				0002
REC 93718786.35 USD PAY [80209000.00] EUR /107734	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUG0FU57RNE97	07/02/2018	10/05/2018	10/05/2018	Expiry	93,718,786	1.16843230			1,374,165							1,374,165				0002
REC 3211000.00 GBP PAY [4360240.53] USD /107744	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	07/02/2018	07/05/2018	07/05/2018	Expiry	4,360,241	1.31293000			29,125							29,125				0002
REC 7459180.27 USD PAY [5675000.00] GBP /107745	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI 19DL770XOHC3ZET8	07/02/2018	07/30/2018	07/30/2018	Expiry	7,459,180	1.31493900			(5,635)							(5,635)				0002
REC 28024000.00 GBP PAY [34286463.86] USD /107789	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	07/03/2018	07/06/2018	07/06/2018	Expiry	34,286,464	1.31749400			229,167							229,167				0002
REC 34497844.32 USD PAY [26153000.00] GBP /107789	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	07/03/2018	08/02/2018	08/02/2018	Expiry	34,497,844	1.31907790			444,023							444,023				0002
REC 20290000.00 GBP PAY [26764090.58] USD /107790	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	07/03/2018	08/02/2018	08/02/2018	Expiry	26,764,091	1.31907790			(344,482)							(344,482)				0002
REC 26630506.22 USD PAY [20213000.00] GBP /107791	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	07/03/2018	07/06/2018	07/06/2018	Expiry	26,630,506	1.31749400			(177,996)							(177,996)				0002
REC 11006380.95 USD PAY [9360000.00] EUR /107813	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUG0FU57RNE97	07/05/2018	09/11/2018	09/11/2018	Expiry	11,006,381	1.17589540			143,165							143,165				0002
REC 491000.00 EUR PAY [577364.64] USD /107814	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	7H6GLXDRUG0FU57RNE97	07/05/2018	09/11/2018	09/11/2018	Expiry	577,365	1.17589540			(7,510)							(7,510)				0002
REC 10472127.97 USD PAY [8904000.00] EUR /107824	ASSET HEDGE	Schedule BA, D	Currency	CREDIT AGRICOLE	1UVU7VQFUG0S0J21A208	07/05/2018	09/19/2018	09/19/2018	Expiry	10,472,128	1.17611500			77,598							77,598				0002
REC 745691.69 USD PAY [637000.00] EUR /107833	ASSET HEDGE	Schedule BA, D	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	07/05/2018	08/06/2018	08/06/2018	Expiry	745,692	1.17063060			(9,766)							(9,766)				0002
REC 95937000.00 EUR PAY [112306787.87] USD /107835	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPRFVIMCJFXT09	07/05/2018	08/06/2018	08/06/2018	Expiry	112,306,788	1.17063060			(1,470,772)							(1,470,772)				0002

19:59

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 111846243.15 USD PAY [95735000.00] EUR /107836	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	07/05/2018	07/09/2018	07/09/2018	Expiry		111,846,243	1.16829000			(661,529)							(661,529)			0002
REC 231548473.51 USD PAY [173914000.00] GBP /107849	ASSET HEDGE	Schedule BA, D	Currency	CREDIT AGRICOLE	10/04/2018	10/04/2018	10/04/2018	Expiry		231,548,474	1.33139640			5,216,794							5,216,794			0002
REC 175165000.00 GBP PAY [232340414.97] USD /107850	ASSET HEDGE	Schedule BA, D	Currency	CREDIT AGRICOLE	07/06/2018	07/09/2018	07/09/2018	Expiry		232,340,415	1.32640890			(141,691)							(141,691)			0002
REC 22455653.11 USD PAY [18974000.00] EUR /107855	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	10/05/2018	10/05/2018	10/05/2018	Expiry		22,455,653	1.18349600			610,887							610,887			0002
REC 18787000.00 EUR PAY [22088364.36] USD /107856	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	07/06/2018	07/09/2018	07/09/2018	Expiry		22,088,364	1.15726800			(9,882)							(9,882)			0002
REC 254704533.04 USD PAY [191109000.00] GBP /107861	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	10/09/2018	10/09/2018	10/09/2018	Expiry		254,704,533	1.33277100			3,549,085							3,549,085			0002
REC 189640000.00 GBP PAY [251756582.00] USD /107863	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	07/06/2018	07/10/2018	07/10/2018	Expiry		251,756,582	1.32755000			85,338							85,338			0002
REC 10244611.30 USD PAY [7700000.00] GBP /107893	ASSET HEDGE	Schedule BA, D	Currency	ROYAL BANK OF CANADA	07/09/2018	10/12/2018	10/12/2018	Expiry		10,244,611	1.33046900			(114,491)							(114,491)			0002
REC 7700000.00 GBP PAY [10202885.00] USD /107895	ASSET HEDGE	Schedule BA, D	Currency	ROYAL BANK OF CANADA	07/09/2018	07/11/2018	07/11/2018	Expiry		10,202,885	1.32505000			(35,035)							(35,035)			0002
REC 7907280.43 USD PAY [5967000.00] GBP /107917	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/10/2018	07/11/2018	07/11/2018	Expiry		7,907,280	1.32516850			27,857							27,857			0002
REC 21559562.39 USD PAY [18402000.00] EUR /107918	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	07/10/2018	07/11/2018	07/11/2018	Expiry		21,559,562	1.17158800			78,908							78,908			0002
REC 6254000.00 GBP PAY [8308171.34] USD /107919	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/10/2018	09/06/2018	09/06/2018	Expiry		8,308,171	1.32845720			(223,626)							(223,626)			0002
REC 16524000.00 EUR PAY [21803637.15] USD /107920	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	07/10/2018	09/13/2018	09/13/2018	Expiry		21,803,637	1.17704800			(149,081)							(149,081)			0002
REC 8039000.00 EUR PAY [9561689.21] USD /107953	ASSET HEDGE	Schedule BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	07/10/2018	10/12/2018	10/12/2018	Expiry		9,561,689	1.18074700			(198,782)							(198,782)			0002
REC 241967000.00 GBP PAY [320562720.94] USD /107956	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/10/2018	07/12/2018	07/12/2018	Expiry		320,562,721	1.32482000			(1,093,691)							(1,093,691)			0002
REC 143351000.00 EUR PAY [168091949.09] USD /107957	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/10/2018	07/12/2018	07/12/2018	Expiry		168,091,949	1.17259000			(801,332)							(801,332)			0002
REC 329199713.95 USD PAY [247494000.00] GBP /107958	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/10/2018	10/12/2018	10/12/2018	Expiry		329,199,714	1.33013210			3,596,608							3,596,608			0002
REC 173870454.50 USD PAY [147265000.00] EUR /107959	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/10/2018	10/12/2018	10/12/2018	Expiry		173,870,455	1.18066380			3,602,662							3,602,662			0002
REC 146506087.13 USD PAY [11045000.00] GBP /108002	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	07/11/2018	10/15/2018	10/15/2018	Expiry		146,506,087	1.32638710			(1,136,262)							(1,136,262)			0002
REC 111706000.00 GBP PAY [147568652.77] USD /108003	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	07/11/2018	07/12/2018	07/12/2018	Expiry		147,568,653	1.32104500			(83,221)							(83,221)			0002
REC 175115000.00 GBP PAY [23157329.45] USD /108017	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK, USA	07/12/2018	07/16/2018	07/16/2018	Expiry		231,577,329	1.32243000			274,931							274,931			0002
REC 232418476.84 USD PAY [175115000.00] GBP /108018	ASSET HEDGE	Schedule BA, D	Currency	GOLDMAN SACHS BANK, USA	07/12/2018	10/10/2018	10/10/2018	Expiry		232,418,477	1.32723340			1,301,700							1,301,700			0002
REC 8793711.08 USD PAY [7503000.00] EUR /108026	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	07/12/2018	09/11/2018	09/11/2018	Expiry		8,793,711	1.17202600			85,729							85,729			0002
REC 4215000.00 EUR PAY [4919916.60] USD /108027	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	07/12/2018	07/16/2018	07/16/2018	Expiry		4,919,917	1.16724000			(17,956)							(17,956)			0002
REC 6784243.12 USD PAY [5769789.50] EUR /108055	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	07/16/2018	09/11/2018	09/11/2018	Expiry		6,784,243	1.17582160			87,825							87,825			0002
REC 5769789.50 EUR PAY [6784243.12] USD /108056	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	07/16/2018	07/18/2018	07/18/2018	Expiry		6,757,347	1.17116000			(40,735)							(40,735)			0002
REC 4844825.28 USD PAY [3984000.00] EUR /108074	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/17/2018	07/18/2018	07/18/2018	Expiry		4,844,825	1.16589490			7,151							7,151			0002
REC 3984000.00 EUR PAY [4672384.60] USD /108075	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/17/2018	10/05/2018	10/05/2018	Expiry		4,672,385	1.17278730			(85,605)							(85,605)			0002
REC 56320000.00 AUD PAY [41665849.60] USD /108090	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	07/18/2018	07/20/2018	07/20/2018	Expiry		41,565,850	1.73803000			172,902							172,902			0002
REC 41565849.60 USD PAY [56320000.00] AUD /108091	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	07/18/2018	10/03/2018	10/03/2018	Expiry		41,566,582	1.73804300			1,568,118							1,568,118			0002
REC 163000.00 GBP PAY [213672.98] USD /108176	ASSET HEDGE	Schedule BA, D	Currency	CREDIT AGRICOLE	07/23/2018	07/30/2018	07/30/2018	Expiry		213,673	1.31087718			411							411			0002
REC 6775924.25 USD PAY [5169000.00] GBP /108178	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	07/23/2018	07/30/2018	07/30/2018	Expiry		6,775,924	1.31087720			(13,040)							(13,040)			0002
REC 341000.00 GBP PAY [448259.47] USD /108196	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	07/24/2018	08/06/2018	08/06/2018	Expiry		448,259	1.31454390			(6,937)							(6,937)			0002
REC 1639236.24 USD PAY [1247000.00] GBP /108197	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/24/2018	08/06/2018	08/06/2018	Expiry		1,639,236	1.31454390			25,369							25,369			0002
REC 482338.09 USD PAY [649000.00] AUD /108202	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	07/24/2018	08/31/2018	08/31/2018	Expiry		482,338	1.74320199			15,967							15,967			0002

19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 44475900.00 USD PAY [60000000.00 AUD /108223	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA/ CLEARED THROUGH CITI GLOBAL MARK	07/25/2018	10/05/2018	10/05/2018	Expiry		44,475,900	74126500			2,193,900							2,193,900			0002
REC 60000000.00 AUD PAY [44464800.00] USD /108224	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	07/25/2018	07/27/2018	07/27/2018	Expiry		44,464,800	74108000			158,800							158,800			0002
REC 15138288.55 USD PAY [1669180999.75] JPY /108247	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK	07/25/2018	10/23/2018	10/23/2018	Expiry		15,138,289	00906929			282,578							282,578			0002
REC 11666456000.00 JPY PAY [105173322.76] USD /108248	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK	07/25/2018	07/27/2018	07/27/2018	Expiry		105,173,323	00901502			175,219							175,219			0002
REC 63680000.00 AUD PAY [47267753.60] USD /108249	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/25/2018	07/27/2018	07/27/2018	Expiry		47,267,754	74227000			138,186							138,186			0002
REC 50714264.30 USD PAY [68301000.00] AUD /108250	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/25/2018	10/23/2018	10/23/2018	Expiry		50,714,264	74251130			2,323,006							2,323,006			0002
REC 17599403.61 USD PAY [22947000.00] CAD /108295	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	07/25/2018	10/23/2018	10/23/2018	Expiry		17,599,404	76695880			63,306							63,306			0002
REC 21604000.01 CAD PAY [16545762.01] USD /108296	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	07/25/2018	07/27/2018	07/27/2018	Expiry		16,545,762	76586567			2,902							2,902			0002
REC 9613088.47 USD PAY [14075000.00] NZD /108309	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/25/2018	10/23/2018	10/23/2018	Expiry		9,613,088	68290300			391,148							391,148			0002
REC 8702000.00 NZD PAY [5942943.88] USD /108310	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/25/2018	07/27/2018	07/27/2018	Expiry		5,942,944	68294000			127,324							127,324			0002
REC 26258000.00 GBP PAY [34588613.08] USD /108311	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	07/25/2018	07/27/2018	07/27/2018	Expiry		34,588,613	1.31726000			156,498							156,498			0002
REC 41358580.80 USD PAY [31281000.00] GBP /108312	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	07/25/2018	10/23/2018	10/23/2018	Expiry		41,358,581	1.32216300			740,202							740,202			0002
REC 95198954.79 USD PAY [80804000.00] EUR /108337	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	07/25/2018	10/23/2018	10/23/2018	Expiry		95,199,855	1.17815770			2,501,506							2,501,506			0002
REC 67002000.00 EUR PAY [78424500.96] USD /108338	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	07/25/2018	07/27/2018	07/27/2018	Expiry		78,424,501	1.17048000			313,569							313,569			0002
REC 166209007.74 USD PAY [126112000.00] GBP /108361	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/26/2018	10/30/2018	10/30/2018	Expiry		166,209,008	1.31794760			5,920,656							5,920,656			0002
REC 123318000.00 GBP PAY [161890637.22] USD /108362	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/26/2018	07/30/2018	07/30/2018	Expiry		161,890,637	1.31279000			75,224							75,224			0002
REC 81309280.15 USD PAY [69500000.00] EUR /108393	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/27/2018	09/19/2018	09/19/2018	Expiry		81,309,280	1.16991770			174,980							174,980			0002
REC 69500000.00 EUR PAY [81011952.20] USD /108394	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/27/2018	07/30/2018	07/30/2018	Expiry		81,011,952	1.16563960			330,848							330,848			0002
REC 16648362.20 USD PAY [21677000.00] CAD /108409	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	07/30/2018	07/31/2018	07/31/2018	Expiry		16,648,362	76801966			6,077							6,077			0002
REC 21541000.00 CAD PAY [16557238.19] USD /108412	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	07/30/2018	09/19/2018	09/19/2018	Expiry		16,557,238	76863833			109,034							109,034			0002
REC 3283000.00 GBP PAY [4312786.82] USD /108421	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK	07/30/2018	08/02/2018	08/02/2018	Expiry		4,312,787	1.31367250			37,993							37,993			0002
REC 4391143.49 USD PAY [3343000.00] GBP /108422	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK	07/30/2018	07/31/2018	07/31/2018	Expiry		4,391,143	1.31353380			5,796							5,796			0002
REC 2113090.20 USD PAY [234000000.01] JPY /108437	ASSET HEDGE	Schedule BA, D	Currency	CREDIT AGRICOLE	07/31/2018	11/01/2018	11/01/2018	Expiry		2,113,090	00903030			30,490							30,490			0002
REC 22676000.00 GBP PAY [29770540.12] USD /108443	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/31/2018	08/02/2018	08/02/2018	Expiry		29,770,540	1.31287000			244,221							244,221			0002
REC 29449663.30 USD PAY [22787000.00] GBP /108444	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/31/2018	08/30/2018	08/30/2018	Expiry		29,949,863	1.31433990			313,091							313,091			0002
REC 28382936.53 USD PAY [21619000.00] GBP /108445	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/31/2018	08/02/2018	08/02/2018	Expiry		28,382,937	1.31287000			232,837							232,837			0002
REC 21703000.00 GBP PAY [28525118.86] USD /108446	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	07/31/2018	08/30/2018	08/30/2018	Expiry		28,525,119	1.31433990			298,197							298,197			0002
REC 4230000.00 GBP PAY [5552201.98] USD /108467	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/01/2018	08/02/2018	08/02/2018	Expiry		5,552,202	1.31257730			44,319							44,319			0002
REC 5573900.19 USD PAY [4230000.00] GBP /108468	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/01/2018	11/02/2018	11/02/2018	Expiry		5,573,900	1.31770690			91,820							91,820			0002
REC 80368000.00 EUR PAY [93873038.72] USD /108474	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	08/01/2018	08/03/2018	08/03/2018	Expiry		93,873,039	1.16804000			694,380							694,380			0002
REC 93757159.38 USD PAY [80046000.00] EUR /108475	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	08/01/2018	09/11/2018	09/11/2018	Expiry		93,757,159	1.17129100			855,772							855,772			0002
REC 20086000.00 GBP PAY [26410298.05] USD /108504	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/01/2018	09/19/2018	09/19/2018	Expiry		26,410,298	1.31486100			13,277							13,277			0002
REC 22951076.32 USD PAY [17488000.00] GBP /108505	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/01/2018	08/03/2018	08/03/2018	Expiry		22,951,076	1.31239000			183,449							183,449			0002
REC 4625000.00 EUR PAY [5366593.75] USD /108518	ASSET HEDGE	Schedule BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/02/2018	08/06/2018	08/06/2018	Expiry		5,365,694	1.16015000			122,431							122,431			0002
REC 5375603.46 USD PAY [4624000.00] EUR /108520	ASSET HEDGE	Schedule BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/02/2018	09/04/2018	09/04/2018	Expiry		5,375,603	1.16254400			20,087							20,087			0002

19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 2733134.00 USD PAY [2360000.00] EUR /108522	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/02/2018	08/06/2018	08/06/2018	Expiry	27,333,134	1.16015000			114,266								114,266			0002
REC 23894000.00 EUR PAY [27894080.73] USD /108523	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/02/2018	09/04/2018	09/04/2018	Expiry	27,894,081	1.16254400			(104,230)								(104,230)			0002
REC 18222505.19 USD PAY [156232000.00] EUR /108538	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/02/2018	10/31/2018	10/31/2018	Expiry	182,225,505	1.16637760			5,511,490								5,511,490			0002
REC 14548000.00 EUR PAY [168592407.60] GBP /108539	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/02/2018	08/06/2018	08/06/2018	Expiry	168,592,408	1.15887000			(519,364)								(519,364)			0002
REC 8290000.00 GBP PAY [10793414.20] USD /108540	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	08/02/2018	08/06/2018	08/06/2018	Expiry	10,793,414	1.30198000			(64,496)								(64,496)			0002
REC 9221067.16 USD PAY [7057000.00] GBP /108556	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	08/02/2018	10/31/2018	10/31/2018	Expiry	9,221,067	1.30665540			214,924								214,924			0002
REC 1657022.69 USD PAY [14622000.04] SEK /108562	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	08/02/2018	10/31/2018	10/31/2018	Expiry	1,657,023	1.1332394			63,225								63,225			0002
REC 17458000.03 SEK PAY [1965393.41] USD /108563	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	08/02/2018	08/06/2018	08/06/2018	Expiry	1,965,393	1.1257838			(11,843)								(11,843)			0002
REC 8409000.00 GBP PAY [10990378.00] USD /108575	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/02/2018	10/31/2018	10/31/2018	Expiry	10,990,378	1.30697800			(258,812)								(258,812)			0002
REC 1118675.70 USD PAY [859000.00] GBP /108577	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/02/2018	08/06/2018	08/06/2018	Expiry	1,118,676	1.30230000			6,958								6,958			0002
REC 89036000.00 GBP PAY [115951582.80] USD /108578	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/02/2018	08/06/2018	08/06/2018	Expiry	115,951,583	1.30230000			(721,192)								(721,192)			0002
REC 114602365.93 USD PAY [87685000.00] GBP /108579	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/02/2018	10/31/2018	10/31/2018	Expiry	114,602,366	1.30697800			2,698,769								2,698,769			0002
REC 17365000.00 GBP PAY [224785134.50] USD /108603	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/06/2018	08/08/2018	08/08/2018	Expiry	224,795,135	1.29453000			(1,099,205)								(1,099,205)			0002
REC 22565903.79 USD PAY [17365000.00] GBP /108604	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/06/2018	11/08/2018	11/08/2018	Expiry	225,659,304	1.29950650			(1,040,771)								(1,040,771)			0002
REC 2835000.00 AUD PAY [2106972.00] USD /108605	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	08/07/2018	08/09/2018	08/09/2018	Expiry	2,106,972	1.74320000			(17,010)								(17,010)			0002
REC 2107206.17 USD PAY [2835000.00] AUD /108606	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	08/07/2018	09/05/2018	09/05/2018	Expiry	2,107,206	1.74328260			68,558								68,558			0002
REC 14200000.00 EUR PAY [16474558.84] USD /108612	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/07/2018	08/08/2018	08/08/2018	Expiry	16,474,559	1.16018020			(17,321)								(17,321)			0002
REC 16514540.36 USD PAY [14200000.00] EUR /108613	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/07/2018	09/11/2018	09/11/2018	Expiry	16,514,540	1.16295980			34,020								34,020			0002
REC 2422000.00 NZD PAY [1633154.60] USD /108638	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/08/2018	08/13/2018	08/13/2018	Expiry	1,633,155	1.67430000			(39,479)								(39,479)			0002
REC 1512544.62 USD PAY [2243000.00] NZD /108639	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/08/2018	11/13/2018	11/13/2018	Expiry	1,512,545	1.67434000			(4,845)								(4,845)			0002
REC 132936000.00 GBP PAY [171293353.44] USD /108656	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/09/2018	08/13/2018	08/13/2018	Expiry	171,293,353	1.28854000			(1,534,081)								(1,534,081)			0002
REC 175597919.24 USD PAY [135750000.00] GBP /108657	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/09/2018	11/13/2018	11/13/2018	Expiry	175,597,919	1.29353900			(374,806)								(374,806)			0002
REC 51115309.53 USD PAY [43839000.00] EUR /108680	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	08/09/2018	11/13/2018	11/13/2018	Expiry	51,115,310	1.16597800			1,634,230								1,634,230			0002
REC 43627000.00 EUR PAY [50516575.84] USD /108681	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	08/09/2018	08/13/2018	08/13/2018	Expiry	50,516,576	1.15792000			(738,169)								(738,169)			0002
REC 95424000.00 GBP PAY [121877441.28] USD /108715	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	08/13/2018	08/15/2018	08/15/2018	Expiry	121,877,441	1.27722000			(717,588)								(717,588)			0002
REC 122354497.22 USD PAY [95424000.00] GBP /108716	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	08/13/2018	11/15/2018	11/15/2018	Expiry	122,354,437	1.28221870			393,023								393,023			0002
REC 9045355.00 USD PAY [12431000.00] AUD /108727	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	08/13/2018	09/05/2018	09/05/2018	Expiry	9,045,355	1.72764500			106,223								106,223			0002
REC 15078044.00 AUD PAY [10870822.51] USD /108730	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	08/13/2018	08/16/2018	08/16/2018	Expiry	10,970,823	1.72760250			(25,670)								(25,670)			0002
REC 700000.00 CHF PAY [706760.60] USD /108738	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/14/2018	08/15/2018	08/15/2018	Expiry	706,761	1.00965800			(2,421)								(2,421)			0002
REC 7500000.00 AUD PAY [54367987.51] USD /108746	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/14/2018	08/15/2018	08/15/2018	Expiry	54,367,988	1.72490650			(82,988)								(82,988)			0002
REC 54373485.00 USD PAY [75000000.00] AUD /108747	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/14/2018	10/05/2018	10/05/2018	Expiry	54,373,485	1.72497980			1,520,985								1,520,985			0002
REC 54854999.96 SEK PAY [5963362.09] USD /108772	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/15/2018	08/20/2018	08/20/2018	Expiry	5,963,362	1.0871137			32,289								32,289			0002
REC 7063211.19 USD PAY [64509000.00] SEK /108773	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	08/15/2018	11/20/2018	11/20/2018	Expiry	7,063,211	1.0949187			(32,779)								(32,779)			0002
REC 23110000.00 EUR PAY [26369457.51] USD /108819	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	08/17/2018	08/20/2018	08/20/2018	Expiry	26,369,458	1.14104100			(172,377)								(172,377)			0002
REC 26410551.71 USD PAY [23110000.00] EUR /108820	ASSET HEDGE	Schedule	Currency	CITIBANK N.A.	08/17/2018	09/11/2018	09/11/2018	Expiry	26,410,552	1.14281920			(410,914)								(410,914)			0002
REC 35258598.08 USD PAY [27692000.00] GBP /108825	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	08/17/2018	08/20/2018	08/20/2018	Expiry	35,258,598	1.27324130			(176,085)								(176,085)			0002

El 9162

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)	
REC 27692000.00 GBP PAY [35363470.45] USD /108826	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE HSC BANK USA, NATIONAL ASSOCIATION/ CLEARED THROUGH CITI GLOBAL	08/17/2018	10/30/2018	10/30/2018	Expiry		35,363,470	1.27702840			(166,938)							(166,938)			0002	
REC 12920000.00 EUR PAY [14766981.35] USD /108844	ASSET HEDGE	Scheduled	Currency	MARK MENUM2BPD07JBLVG310	08/20/2018	08/21/2018	08/21/2018	Expiry		14,786,981	1.14450320			157,583								157,583			0002
REC 14730622.41 USD PAY [12858000.00] EUR /108845	ASSET HEDGE	Scheduled	Currency	11EBVNS0JCE0V1H4R804	08/20/2018	09/04/2018	09/04/2018	Expiry		14,730,622	1.14563870			(161,513)								(161,513)			0002
REC 546000.00 GBP PAY [698113.47] USD /108855	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA	08/20/2018	08/30/2018	08/30/2018	Expiry		698,113	1.27859610			12,014								12,014			0002
REC 18808148.63 USD PAY [14710000.00] GBP /108856	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA	08/20/2018	08/30/2018	08/30/2018	Expiry		18,808,149	1.27859610			(323,677)								(323,677)			0002
REC 691492.19 USD PAY [541000.00] GBP /108857	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA	08/20/2018	08/21/2018	08/21/2018	Expiry		691,492	1.27817410			(6,398)								(6,398)			0002
REC 14611000.00 GBP PAY [18675401.78] USD /108858	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA	08/20/2018	08/21/2018	08/21/2018	Expiry		18,675,402	1.27817410			172,788								172,788			0002
REC 6934149.03 USD PAY [6018000.00] EUR /108878	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	08/21/2018	09/04/2018	09/04/2018	Expiry		6,934,149	1.15223480			(35,899)								(35,899)			0002
REC 8784411.33 USD PAY [6830000.00] GBP /108881	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA	08/21/2018	08/30/2018	08/30/2018	Expiry		8,784,411	1.28615100			(98,687)								(98,687)			0002
REC 6713000.00 GBP PAY [8631400.86] USD /108882	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA	08/21/2018	08/22/2018	08/22/2018	Expiry		8,631,401	1.28577400			33,740								33,740			0002
REC 62475840.00 USD PAY [54000000.00] EUR /108889	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	08/21/2018	08/22/2018	08/22/2018	Expiry		62,475,840	1.15696000			(142,560)								(142,560)			0002
REC 37244000.00 EUR PAY [43228520.50] USD /108900	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	08/21/2018	10/05/2018	10/05/2018	Expiry		43,229,521	1.16071100			(350,503)								(350,503)			0002
REC 2594843.67 USD PAY [2010000.00] GBP /108927	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/22/2018	08/30/2018	08/30/2018	Expiry		2,594,844	1.29096700			(19,362)								(19,362)			0002
REC 1883000.00 GBP PAY [2430286.43] USD /108928	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/22/2018	08/23/2018	08/23/2018	Expiry		2,430,286	1.29064601			(17,034)								(17,034)			0002
REC 9782505.00 USD PAY [13500000.00] AUD /108988	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/23/2018	08/27/2018	08/27/2018	Expiry		9,782,505	1.72463000			(134,595)								(134,595)			0002
REC 13840000.00 AUD PAY [10029889.52] USD /108989	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	08/23/2018	10/02/2018	10/02/2018	Expiry		10,029,890	1.72470300			(84,466)								(84,466)			0002
REC 2975934.51 USD PAY [2314000.00] GBP /109002	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	08/24/2018	08/30/2018	08/30/2018	Expiry		2,975,935	1.28605640			(33,654)								(33,654)			0002
REC 2917816.98 USD PAY [2508000.00] EUR /109003	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA	08/24/2018	09/04/2018	09/04/2018	Expiry		2,917,817	1.16340390			13,051								13,051			0002
REC 2558000.00 EUR PAY [2974316.30] USD /109004	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK USA	08/24/2018	08/27/2018	08/27/2018	Expiry		2,974,316	1.16275070			12,916								12,916			0002
REC 2173000.00 GBP PAY [2794395.87] USD /109005	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	08/24/2018	08/28/2018	08/28/2018	Expiry		2,794,396	1.28596220			2,255								2,255			0002
REC 4658000.00 EUR PAY [5475432.42] USD /109057	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	08/28/2018	10/23/2018	10/23/2018	Expiry		5,475,432	1.17549000			(131,775)								(131,775)			0002
REC 59639732.89 USD PAY [46238000.00] GBP /109066	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	08/28/2018	09/27/2018	09/27/2018	Expiry		59,639,733	1.28984240			(825,700)								(825,700)			0002
REC 46016000.00 GBP PAY [59290995.88] USD /109067	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	08/28/2018	08/30/2018	08/30/2018	Expiry		59,290,696	1.28848000			557,714								557,714			0002
REC 4872000.00 GBP PAY [6231666.21] USD /109068	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	08/28/2018	10/23/2018	10/23/2018	Expiry		6,231,666	1.29139290			34,626								34,626			0002
REC 24174461.76 USD PAY [18762000.00] GBP /109069	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	08/28/2018	08/30/2018	08/30/2018	Expiry		24,174,462	1.28848000			(227,395)								(227,395)			0002
REC 18831000.00 GBP PAY [24289022.24] USD /109070	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	08/28/2018	09/27/2018	09/27/2018	Expiry		24,289,022	1.28984240			336,276								336,276			0002
REC 4234000.00 GBP PAY [5469958.79] USD /109112	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	08/29/2018	10/30/2018	10/30/2018	Expiry		5,469,959	1.29191280			(88,545)								(88,545)			0002
REC 4238000.00 GBP PAY [5461100.36] USD /109113	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	08/29/2018	08/30/2018	08/30/2018	Expiry		5,461,100	1.28860320			50,842								50,842			0002
REC 11492856.27 USD PAY [8896000.00] GBP /109114	ASSET HEDGE	Scheduled	Currency	WELLS FARGO BANK, N.A.	08/29/2018	10/30/2018	10/30/2018	Expiry		11,492,856	1.29191280			(86,040)								(86,040)			0002
REC 24616000.00 AUD PAY [17984203.44] USD /109151	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	08/29/2018	08/31/2018	08/31/2018	Expiry		17,984,203	1.73059000			(295,146)								(295,146)			0002
REC 17988560.48 USD PAY [24616000.00] AUD /109156	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	08/29/2018	11/27/2018	11/27/2018	Expiry		17,988,560	1.73076700			205,962								205,962			0002
REC 14568100.00 USD PAY [20000000.00] AUD /109164	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	08/30/2018	10/02/2018	10/02/2018	Expiry		14,568,100	1.72840500			196,100								196,100			0002
REC 20000000.00 AUD PAY [14569000.00] USD /109165	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	08/30/2018	09/04/2018	09/04/2018	Expiry		14,569,000	1.72845000			(213,000)								(213,000)			0002
REC 178759000.00 AUD PAY [129708138.18] USD /109184	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	08/30/2018	09/05/2018	09/05/2018	Expiry		129,708,138	1.72560340			(1,162,541)								(1,162,541)			0002

19163

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A./C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 13153066.28 USD PAY [18124400.00] AUD /109185	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/30/2018	11/28/2018	11/28/2018	Expiry		131,533,066	72572370			(883,800)							(883,800)			0002
REC 21263000.00 EUR PAY [24813283.11] USD /109192	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/30/2018	09/04/2018	09/04/2018	Expiry		24,813,283	1.16697000			(186,477)							(186,477)			0002
REC 25006823.11 USD PAY [21290000.00] EUR /109193	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/30/2018	11/28/2018	11/28/2018	Expiry		25,006,823	1.17458070			804,351							804,351			0002
REC 19276000.00 EUR PAY [22641217.58] USD /109194	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/30/2018	11/28/2018	11/28/2018	Expiry		22,641,218	1.17458070			(728,261)							(728,261)			0002
REC 22403490.06 USD PAY [19198000.00] EUR /109195	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	08/30/2018	09/04/2018	09/04/2018	Expiry		22,403,490	1.16697000			(168,366)							(168,366)			0002
REC 59795000.02 CAD PAY [45313317.02] USD /109247	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/05/2018	09/06/2018	09/06/2018	Expiry		45,313,317	75781114			(172,739)							(172,739)			0002
REC 49130093.87 USD PAY [64726000.00] CAD /109248	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/05/2018	12/04/2018	12/04/2018	Expiry		49,130,094	75904727			(326,690)							(326,690)			0002
REC 7043869.56 USD PAY [6020000.00] EUR /109263	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	09/05/2018	12/04/2018	12/04/2018	Expiry		7,043,870	1.17007800			(215,384)							(215,384)			0002
REC 31620423.13 USD PAY [24413000.00] GBP /109264	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/05/2018	12/04/2018	12/04/2018	Expiry		31,620,423	1.29522890			(569,528)							(569,528)			0002
REC 24413000.00 GBP PAY [31499222.36] USD /109265	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/05/2018	09/06/2018	09/06/2018	Expiry		31,499,222	1.29026430			(59,463)							(59,463)			0002
REC 36100000.00 GBP PAY [46749139.00] USD /109318	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/07/2018	09/11/2018	09/11/2018	Expiry		46,749,139	1.29499000			(285,551)							(285,551)			0002
REC 47102580.61 USD PAY [36297000.00] GBP /109320	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/07/2018	10/30/2018	10/30/2018	Expiry		47,102,581	1.29769900			(969,094)							(969,094)			0002
REC 43310600.00 EUR PAY [50655397.38] USD /109337	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	09/07/2018	09/11/2018	09/11/2018	Expiry		500,553,597	1.15573000			(2,109,226)							(2,109,226)			0002
REC 509417443.81 USD PAY [437881000.00] EUR /109338	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	09/07/2018	12/06/2018	12/06/2018	Expiry		509,417,444	1.16336960			(11,546,747)							(11,546,747)			0002
REC 98833759.40 USD PAY [74700000.00] GBP /109352	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	09/07/2018	12/04/2018	12/04/2018	Expiry		96,833,759	1.29630200			(1,822,829)							(1,822,829)			0002
REC 74700000.00 GBP PAY [96924295.80] USD /109358	ASSET HEDGE	Schedule	Currency	DEUTSCHE BANK AG	09/07/2018	12/04/2018	12/04/2018	Expiry		96,924,296	1.29751400			(1,913,366)							(1,913,366)			0002
REC 97315000.00 GBP PAY [126708022.60] USD /109384	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/12/2018	09/14/2018	09/14/2018	Expiry		126,708,023	1.30204000			(502,145)							(502,145)			0002
REC 127195210.68 USD PAY [97315000.00] GBP /109385	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/12/2018	12/11/2018	12/11/2018	Expiry		127,195,211	1.30704630			(5,687,702)							(5,687,702)			0002
REC 51000000.00 AUD PAY [36859230.00] USD /109409	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	09/13/2018	09/17/2018	09/17/2018	Expiry		36,859,230	72273000			(251,430)							(251,430)			0002
REC 36872541.00 USD PAY [51000000.00] AUD /109410	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	09/13/2018	12/17/2018	12/17/2018	Expiry		36,872,541	72299100			(254,541)							(254,541)			0002
REC 29700000.00 GBP PAY [38938482.00] USD /109429	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	09/13/2018	09/17/2018	09/17/2018	Expiry		38,938,482	1.31106000			(146,718)							(146,718)			0002
REC 39092773.50 USD PAY [29700000.00] GBP /109430	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	09/13/2018	12/17/2018	12/17/2018	Expiry		39,092,774	1.31625500			(1,602,464)							(1,602,464)			0002
REC 3478000.00 EUR PAY [4066999.30] USD /109444	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/13/2018	09/17/2018	09/17/2018	Expiry		4,066,999	1.16935000			(2,956)							(2,956)			0002
REC 25150213.63 USD PAY [21505000.00] EUR /109450	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/13/2018	09/19/2018	09/19/2018	Expiry		25,150,214	1.16950540			(45,277)							(45,277)			0002
REC 8222000.00 EUR PAY [9615673.40] USD /109458	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/13/2018	09/19/2018	09/19/2018	Expiry		9,615,673	1.16950540			(17,311)							(17,311)			0002
REC 11509000.00 CHF PAY [11671164.35] USD /109521	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/17/2018	09/19/2018	09/19/2018	Expiry		11,671,164	1.04024716			(76,496)							(76,496)			0002
REC 12192874.00 USD PAY [11630000.00] CHF /109522	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/17/2018	12/17/2018	12/17/2018	Expiry		12,192,874	1.04840705			(483,890)							(483,890)			0002
REC 3301354.88 USD PAY [29274000.02] SEK /109528	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	09/17/2018	12/17/2018	12/17/2018	Expiry		3,301,355	11277429			(72,432)							(72,432)			0002
REC 28969999.96 SEK PAY [3243676.02] USD /109529	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	09/17/2018	09/19/2018	09/19/2018	Expiry		3,243,676	11197832			(20,905)							(20,905)			0002
REC 124188000.00 GBP PAY [163264996.08] USD /109549	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/17/2018	09/19/2018	09/19/2018	Expiry		163,264,996	1.31466000			(57,126)							(57,126)			0002
REC 184469122.09 USD PAY [139778000.00] GBP /109550	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/17/2018	12/17/2018	12/17/2018	Expiry		184,469,122	1.31972930			(8,027,353)							(8,027,353)			0002
REC 69500000.00 EUR PAY [81274690.00] USD /109583	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/17/2018	09/19/2018	09/19/2018	Expiry		81,274,690	1.16942000			(140,390)							(140,390)			0002
REC 259111000.00 EUR PAY [302874847.90] USD /109584	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	09/17/2018	09/19/2018	09/19/2018	Expiry		302,874,848	1.16890000			(388,667)							(388,667)			0002
REC 82238746.72 USD PAY [69844000.00] EUR /109593	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	09/17/2018	12/17/2018	12/17/2018	Expiry		82,238,747	1.17746330			(2,986,760)							(2,986,760)			0002
REC 300863579.26 USD PAY [255634000.00] EUR /109594	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	09/17/2018	12/17/2018	12/17/2018	Expiry		300,863,579	1.17693100			(10,795,679)							(10,795,679)			0002
REC 8993080.47 USD PAY [11658000.01] CAD /109664	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	09/18/2018	12/18/2018	12/18/2018	Expiry		8,993,080	77140851			(338,181)							(338,181)			0002

E19164

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 11520000.00 CAD PAY [9871638.48] USD /109670	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	09/18/2018	09/19/2018	09/19/2018	Expiry		8,871,638	77010751			41,386							41,386			0002
REC 1765000.00 EUR PAY [2058986.70] USD /109673	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	09/18/2018	09/20/2018	09/20/2018	Expiry		2,059,367	1.16678000			19,274							19,274			0002
REC 2073435.52 USD PAY [1765000.00] EUR /109674	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	09/18/2018	12/17/2018	12/17/2018	Expiry		2,073,436	1.17475100			70,690							70,690			0002
REC 7966213.76 USD PAY [6784000.00] EUR /109711	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	09/19/2018	12/06/2018	12/06/2018	Expiry		7,966,214	1.17426500			252,806							252,806			0002
REC 6784000.00 EUR PAY [7919370.24] USD /109712	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	09/19/2018	09/21/2018	09/21/2018	Expiry		7,919,370	1.16736000			45,724							45,724			0002
REC 4475779.56 USD PAY [3787000.00] EUR /109801	ASSET HEDGE	Scheduled	Currency	THE TORONTO-DOMINION BANK	09/21/2018	12/18/2018	12/18/2018	Expiry		4,475,780	1.18188000			172,233							172,233			0002
REC 2700000.00 AUD PAY [1963521.00] USD /109815	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK	09/24/2018	09/26/2018	09/26/2018	Expiry		1,963,521	72723000			(3,051)							(3,051)			0002
REC 1963467.00 USD PAY [2700000.00] AUD /109818	ASSET HEDGE	Scheduled	Currency	GOLDMAN SACHS BANK	09/24/2018	10/02/2018	10/02/2018	Expiry		1,963,467	72721000			23,247							23,247			0002
REC 6377000.00 EUR PAY [7516824.98] USD /109822	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/24/2018	09/26/2018	09/26/2018	Expiry		7,516,825	1.17874000			(28,314)							(28,314)			0002
REC 137967000.01 NOK PAY [16955095.12] USD /109830	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	09/24/2018	09/26/2018	09/26/2018	Expiry		16,955,095	12289240			56,236							56,236			0002
REC 17008401.57 USD PAY [13796699.99] NOK /109831	ASSET HEDGE	Scheduled	Currency	CREDIT AGRICOLE	09/24/2018	12/17/2018	12/17/2018	Expiry		17,008,402	12327877			1,059,416							1,059,416			0002
REC 13351462.15 USD PAY [11671199.98] SEK /109836	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	09/24/2018	12/17/2018	12/17/2018	Expiry		13,351,462	11439665			478,129							478,129			0002
REC 11671199.98 SEK PAY [13263722.05] USD /109837	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	09/24/2018	09/26/2018	09/26/2018	Expiry		13,263,722	11364489			(28,581)							(28,581)			0002
REC 7522258.19 USD PAY [6377000.00] EUR /109845	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/24/2018	10/05/2018	10/05/2018	Expiry		7,522,258	1.17959200			180,418							180,418			0002
REC 5678429.44 USD PAY [4324000.00] GBP /109853	ASSET HEDGE	Scheduled	Currency	BNP PARIBAS LONDON	09/24/2018	10/12/2018	10/12/2018	Expiry		5,678,429	1.31323530			(10,225)							(10,225)			0002
REC 1216483.56 USD PAY [927000.00] GBP /109854	ASSET HEDGE	Scheduled	Currency	BNP PARIBAS LONDON	09/24/2018	09/26/2018	09/26/2018	Expiry		1,216,484	1.31228000			(4,561)							(4,561)			0002
REC 2399000.00 GBP PAY [3150451.49] USD /109855	ASSET HEDGE	Scheduled	Currency	BNP PARIBAS LONDON	09/24/2018	10/12/2018	10/12/2018	Expiry		3,150,451	1.31323530			5,673							5,673			0002
REC 58921030.95 USD PAY [44651000.00] GBP /109887	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	09/25/2018	10/25/2018	10/25/2018	Expiry		58,921,031	1.31959040			1,691,844							1,691,844			0002
REC 44446000.00 GBP PAY [58577605.70] USD /109888	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	09/25/2018	09/27/2018	09/27/2018	Expiry		58,577,606	1.31795000			(455,572)							(455,572)			0002
REC 19320000.00 GBP PAY [25494486.53] USD /109889	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	09/25/2018	10/25/2018	10/25/2018	Expiry		25,494,487	1.31959040			(732,043)							(732,043)			0002
REC 25366583.65 USD PAY [19247000.00] GBP /109890	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	09/25/2018	09/27/2018	09/27/2018	Expiry		25,366,584	1.31795000			197,282							197,282			0002
REC 3365000.00 EUR PAY [3984799.01] USD /109907	ASSET HEDGE	Scheduled	Currency	BNP PARIBAS LONDON	09/25/2018	12/17/2018	12/17/2018	Expiry		3,984,799	1.18418990			(166,534)							(166,534)			0002
REC 31316000.00 GBP PAY [4136794.02] USD /109908	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	09/25/2018	10/30/2018	10/30/2018	Expiry		41,367,794	1.32097950			(1,565,158)							(1,565,158)			0002
REC 354022.51 USD PAY [268000.00] GBP /109909	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	09/25/2018	10/30/2018	10/30/2018	Expiry		354,023	1.32097951			13,395							13,395			0002
REC 1514578.88 USD PAY [1279000.00] EUR /109910	ASSET HEDGE	Scheduled	Currency	BNP PARIBAS LONDON	09/25/2018	12/17/2018	12/17/2018	Expiry		1,514,579	1.18418990			63,298							63,298			0002
REC 44480083.95 USD PAY [33723000.00] GBP /109911	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	09/25/2018	09/26/2018	09/26/2018	Expiry		44,480,084	1.31898360			60,148							60,148			0002
REC 4878957.84 USD PAY [4147000.00] EUR /109912	ASSET HEDGE	Scheduled	Currency	BNP PARIBAS LONDON	09/25/2018	09/27/2018	09/27/2018	Expiry		4,147,000	1.17672000			52,750							52,750			0002
REC 9554846.34 USD PAY [84193999.97] SEK /109934	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/25/2018	09/26/2018	09/26/2018	Expiry		9,554,846	11348607			7,247							7,247			0002
REC 84193999.97 SEK PAY [9617951.62] USD /109935	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/25/2018	12/17/2018	12/17/2018	Expiry		9,617,952	11423559			(331,353)							(331,353)			0002
REC 21385999.99 NOK PAY [2644694.57] USD /109956	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	09/26/2018	12/17/2018	12/17/2018	Expiry		2,644,695	12366476			(172,473)							(172,473)			0002
REC 2675034.07 USD PAY [21699999.97] NOK /109957	ASSET HEDGE	Scheduled	Currency	JPMORGAN CHASE BANK, N.A.	09/26/2018	09/27/2018	09/27/2018	Expiry		2,675,034	12327346			14,614							14,614			0002
REC 2532735.26 USD PAY [22206999.97] SEK /109963	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/26/2018	11/20/2018	11/20/2018	Expiry		2,532,735	11405121			89,965							89,965			0002
REC 22207000.02 SEK PAY [2521872.05] USD /109964	ASSET HEDGE	Scheduled	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	09/26/2018	09/28/2018	09/28/2018	Expiry		2,521,872	11356203			(21,364)							(21,364)			0002
REC 17532999.99 CAD PAY [13548412.02] USD /110027	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	09/28/2018	10/01/2018	10/01/2018	Expiry		13,548,412	77273781			132,588							132,588			0002
REC 13570885.10 USD PAY [17533000.00] CAD /110030	ASSET HEDGE	Scheduled	Currency	ROYAL BANK OF CANADA	09/28/2018	12/27/2018	12/27/2018	Expiry		13,570,885	77401957			694,650							694,650			0002
REC 184291663.02 USD PAY [254746000.00] AUD /110037	ASSET HEDGE	Scheduled	Currency	MORGAN STANLEY CAPITAL SERVICES	09/28/2018	12/27/2018	12/27/2018	Expiry		184,291,663	72343300			5,307,123							5,307,123			0002

19165

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 100162916.01 USD PAY [138455000.00] AUD /110038	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	09/28/2018	12/27/2018	12/27/2018	Expiry		100,162,916	72343300			2,884,433							2,884,433			0002
REC 137945000.00 AUD PAY [98732824.52] USD /110045	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	09/28/2018	10/02/2018	10/02/2018	Expiry		99,732,925	72299050			(605,648)							(605,648)			0002
REC 254813000.00 AUD PAY [184227378.27] USD /110051	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	09/28/2018	10/02/2018	10/02/2018	Expiry		184,227,378	72299050			(1,118,756)							(1,118,756)			0002
REC 128820000.00 AUD PAY [93073738.20] USD /110061	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/01/2018	10/03/2018	10/03/2018	Expiry		93,073,738	72251000			(1,585,774)							(1,585,774)			0002
REC 1600000.00 GBP PAY [2076133.92] USD /110074	Portfolio Hedge	BA, D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/02/2018	10/03/2018	10/03/2018	Expiry		2,076,134	1.29758370			(3,814)							(3,814)			0002
REC 173914000.00 GBP PAY [226674284.68] USD /110075	ASSET HEDGE	BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XOHC3ZE78	10/02/2018	10/04/2018	10/04/2018	Expiry		225,674,285	1.29762000			657,395							657,395			0002
REC 5232285.90 USD PAY [4500000.00] EUR /110079	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK, USA K03XUN70GT14HNAYLU02	10/02/2018	12/18/2018	12/18/2018	Expiry		5,232,286	1.16273020			118,486							118,486			0002
REC 4500000.00 EUR PAY [5201775.00] USD /110080	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK, USA K03XUN70GT14HNAYLU02	10/02/2018	10/04/2018	10/04/2018	Expiry		5,201,775	1.15589500			(20,475)							(20,475)			0002
REC 18975000.00 EUR PAY [21843450.75] USD /110104	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/03/2018	10/05/2018	10/05/2018	Expiry		21,843,451	1.15117000			2,467							2,467			0002
REC 134429000.00 AUD PAY [95764531.02] USD /110106	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK, USA K03XUN70GT14HNAYLU02	10/03/2018	10/05/2018	10/05/2018	Expiry		95,764,531	71238000			(1,032,415)							(1,032,415)			0002
REC 45358000.00 EUR PAY [52268744.88] USD /110133	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK, USA K03XUN70GT14HNAYLU02	10/03/2018	10/05/2018	10/05/2018	Expiry		52,268,745	1.15236000			(48,079)							(48,079)			0002
REC 12534530.07 USD PAY [10841000.00] EUR /110154	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/04/2018	11/28/2018	11/28/2018	Expiry		12,534,530	1.15621530			210,481							210,481			0002
REC 14800413.03 USD PAY [12788000.00] EUR /110155	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/04/2018	12/06/2018	12/06/2018	Expiry		14,800,413	1.15736730			260,457							260,457			0002
REC 12706000.00 EUR PAY [14634155.83] USD /110156	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/04/2018	10/04/2018	10/04/2018	Expiry		14,634,156	1.15175160			(4,467)							(4,467)			0002
REC 11715000.00 EUR PAY [13487734.89] USD /110157	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/04/2018	10/04/2018	10/04/2018	Expiry		13,487,735	1.15132180			916							916			0002
REC 191109000.00 GBP PAY [249015027.00] USD /110187	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	10/04/2018	10/09/2018	10/09/2018	Expiry		249,015,027	1.30300000			2,140,421							2,140,421			0002
REC 4049000.00 GBP PAY [5301952.12] USD /110215	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/05/2018	10/10/2018	10/10/2018	Expiry		5,301,952	1.30944730			41,918							41,918			0002
REC 177706000.00 GBP PAY [232991704.94] USD /110223	ASSET HEDGE	BA, D	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/05/2018	10/10/2018	10/10/2018	Expiry		232,991,705	1.31110770			1,544,674							1,544,674			0002
REC 8995381.54 USD PAY [7807000.00] EUR /110251	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	10/08/2018	11/28/2018	11/28/2018	Expiry		8,995,382	1.15222000			120,384							120,384			0002
REC 8648000.00 EUR PAY [9925742.00] USD /110252	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE 1VUV7VQFKU00S21A208	10/08/2018	10/09/2018	10/09/2018	Expiry		9,925,742	1.14775000			15,999							15,999			0002
REC 12750000.00 AUD PAY [9012703.43] USD /110260	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/08/2018	11/28/2018	11/28/2018	Expiry		9,012,703	70687870			302,447							302,447			0002
REC 8895464.50 USD PAY [12590000.00] AUD /110261	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/08/2018	10/10/2018	10/10/2018	Expiry		8,895,465	70655000			22,033							22,033			0002
REC 9340071.24 USD PAY [8098000.00] EUR /110321	ASSET HEDGE	BA, D	Currency	GOLDMAN SACHS BANK, USA K03XUN70GT14HNAYLU02	10/10/2018	10/12/2018	10/12/2018	Expiry		9,340,071	1.15338000			(22,836)							(22,836)			0002
REC 147186000.00 EUR PAY [169761388.68] USD /110326	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK, USA K03XUN70GT14HNAYLU02	10/10/2018	10/12/2018	10/12/2018	Expiry		169,761,389	1.15338000			415,065							415,065			0002
REC 257158000.00 GBP PAY [339659429.56] USD /110340	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A. 8B1H1DSPPRM1MCFX109	10/10/2018	10/12/2018	10/12/2018	Expiry		339,659,430	1.32082000			(1,342,365)							(1,342,365)			0002
REC 110455000.00 GBP PAY [145900000.50] USD /110388	ASSET HEDGE	BA, D	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	10/11/2018	10/15/2018	10/15/2018	Expiry		145,900,010	1.32090000			(530,184)							(530,184)			0002
REC 3629000.00 GBP PAY [4773980.39] USD /110412	ASSET HEDGE	BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XOHC3ZE78	10/12/2018	10/15/2018	10/15/2018	Expiry		4,773,960	1.31550300			2,167							2,167			0002
REC 12095478.90 USD PAY [9169000.00] GBP /110413	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE 21G119DL770XOHC3ZE78	10/12/2018	12/17/2018	12/17/2018	Expiry		12,095,479	1.31917100			521,450							521,450			0002
REC 5324630.22 USD PAY [4589000.00] EUR /110428	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	10/15/2018	10/17/2018	10/17/2018	Expiry		5,324,630	1.15778000			34,860							34,860			0002
REC 5518000.00 EUR PAY [6409521.19] USD /110433	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	10/15/2018	11/28/2018	11/28/2018	Expiry		5,409,521	1.16156600			(136,659)							(136,659)			0002
REC 17668806.32 USD PAY [15287000.00] EUR /110496	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	10/17/2018	12/06/2018	12/06/2018	Expiry		17,668,806	1.15580600			287,487							287,487			0002
REC 68301000.00 AUD PAY [48496988.45] USD /110522	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	10/18/2018	10/23/2018	10/23/2018	Expiry		48,496,988	71004800			(105,730)							(105,730)			0002
REC 14075000.00 NZD PAY [9213213.50] USD /110524	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA ES71P3U3RH1GC71XBU11	10/18/2018	10/23/2018	10/23/2018	Expiry		9,213,214	65458000			8,727							8,727			0002
REC 1669181000.15 JPY PAY [14896910.99] USD /110550	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK, USA K03XUN70GT14HNAYLU02	10/18/2018	10/23/2018	10/23/2018	Expiry		14,896,911	00892468			(41,200)							(41,200)			0002
REC 35000000.00 AUD PAY [25013100.00] USD /110587	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES 17331LVCZKQKX57XV54	10/19/2018	10/23/2018	10/23/2018	Expiry		25,013,100	71466000			(215,600)							(215,600)			0002
REC 26409000.00 GBP PAY [34447107.33] USD /110600	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A. 7H6GLXDRUGQFUS7RNE97	10/19/2018	10/23/2018	10/23/2018	Expiry		34,447,107	1.30437000			(155,021)							(155,021)			0002

E19166

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/(Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 76146000.00 EUR PAY [87676788.78] USD /110608	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/19/2018	10/23/2018	10/23/2018	Expiry		87,676,789	1.15143000			(322,098)							(322,098)			0002
REC 1915083.87 USD PAY [1464000.00] GBP /110628	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	10/19/2018	10/31/2018	10/31/2018	Expiry		1,915,084	1.30811740			46,727							46,727			0002
REC 1464000.00 GBP PAY [1914428.88] USD /110634	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	10/19/2018	10/23/2018	10/23/2018	Expiry		1,914,429	1.30767000			(13,425)							(13,425)			0002
REC 44651000.00 GBP PAY [57974679.79] USD /110671	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	10/22/2018	10/25/2018	10/25/2018	Expiry		57,974,680	1.29839600			(745,493)							(745,493)			0002
REC 25085010.73 USD PAY [19320000.00] GBP /110672	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	10/22/2018	10/25/2018	10/25/2018	Expiry		25,085,011	1.29839600			322,567							322,567			0002
REC 20806000.00 GBP PAY [27045906.65] USD /110681	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	10/22/2018	11/21/2018	11/21/2018	Expiry		27,045,907	1.29990900			(455,839)							(455,839)			0002
REC 54603977.45 USD PAY [42060000.00] GBP /110682	ASSET HEDGE	Schedule	Currency	ROYAL BANK OF CANADA	10/22/2018	11/21/2018	11/21/2018	Expiry		54,603,977	1.29990900			920,309							920,309			0002
REC 9630014.90 USD PAY [8377000.00] EUR /110683	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/22/2018	11/28/2018	11/28/2018	Expiry		9,630,015	1.14957800			(107,041)							(107,041)			0002
REC 8362000.00 EUR PAY [9586782.14] USD /110684	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/22/2018	10/24/2018	10/24/2018	Expiry		9,586,782	1.14647000			(59,956)							(59,956)			0002
REC 22946999.99 CAD PAY [17509709.81] USD /110705	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	10/22/2018	10/23/2018	10/23/2018	Expiry		17,509,710	1.76305000			26,388							26,388			0002
REC 13256000.00 GBP PAY [17220737.04] USD /110744	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/23/2018	10/25/2018	10/25/2018	Expiry		17,220,737	1.29909000			(230,522)							(230,522)			0002
REC 17441046.00 USD PAY [13410000.00] GBP /110754	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/23/2018	11/21/2018	11/21/2018	Expiry		17,441,046	1.30060000			303,066							303,066			0002
REC 8940000.00 EUR PAY [10259767.51] USD /110759	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	10/23/2018	10/24/2018	10/24/2018	Expiry		10,259,768	1.14762500			(74,426)							(74,426)			0002
REC 10417486.26 USD PAY [9053000.00] EUR /110760	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	10/23/2018	11/28/2018	11/28/2018	Expiry		10,417,486	1.15072200			126,036							126,036			0002
REC 15939000.00 GBP PAY [20557720.48] USD /110783	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	10/24/2018	10/25/2018	10/25/2018	Expiry		20,557,720	1.29001760			(132,549)							(132,549)			0002
REC 20393019.78 USD PAY [16213000.00] GBP /110786	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	10/24/2018	11/21/2018	11/21/2018	Expiry		20,393,020	1.29149570			218,806							218,806			0002
REC 9723000.00 EUR PAY [11070938.38] USD /110790	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	10/24/2018	10/25/2018	10/25/2018	Expiry		11,070,938	1.13863400			(12,970)							(12,970)			0002
REC 11232476.91 USD PAY [9839000.00] EUR /110794	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	10/24/2018	11/28/2018	11/28/2018	Expiry		11,232,477	1.14162790			47,502							47,502			0002
REC 2225650.00 AUD PAY [1577028.82] USD /110851	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/26/2018	10/30/2018	10/30/2018	Expiry		1,577,029	1.70857000			3,628							3,628			0002
REC 1577466.16 USD PAY [2225650.00] AUD /110854	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/26/2018	11/28/2018	11/28/2018	Expiry		1,577,466	1.70876650			(48,594)							(48,594)			0002
REC 30700000.00 AUD PAY [21728846.00] USD /110880	Portfolio Hedge	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	10/29/2018	10/31/2018	10/31/2018	Expiry		21,728,846	1.70778000			(5,526)							(5,526)			0002
REC 113608000.00 GBP PAY [145521282.45] USD /110896	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/29/2018	10/30/2018	10/30/2018	Expiry		145,521,282	1.28090700			(1,125,514)							(1,125,514)			0002
REC 10763856.36 USD PAY [8409000.00] GBP /110914	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/29/2018	10/31/2018	10/31/2018	Expiry		10,763,856	1.28004000			32,291							32,291			0002
REC 23400000.31 JPY PAY [2079730.10] USD /110921	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	10/29/2018	11/01/2018	11/01/2018	Expiry		2,079,730	0.08887740			2,870							2,870			0002
REC 89849000.00 GBP PAY [115010313.96] USD /110925	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/29/2018	10/31/2018	10/31/2018	Expiry		115,010,314	1.28004000			(345,020)							(345,020)			0002
REC 156232000.00 EUR PAY [177835760.96] USD /110943	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	10/29/2018	10/31/2018	10/31/2018	Expiry		177,835,761	1.13828000			(1,121,746)							(1,121,746)			0002
REC 7057000.00 GBP PAY [9032980.00] USD /110949	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/29/2018	10/31/2018	10/31/2018	Expiry		9,032,980	1.28000000			(26,817)							(26,817)			0002
REC 14621999.99 SEK PAY [1595988.67] USD /110964	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	10/29/2018	10/31/2018	10/31/2018	Expiry		1,599,589	1.09396020			(5,791)							(5,791)			0002
REC 681952.22 USD PAY [602000.00] EUR /111009	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	10/31/2018	11/28/2018	11/28/2018	Expiry		681,952	1.13281100			(2,401)							(2,401)			0002
REC 638000.00 EUR PAY [721290.90] USD /111010	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	10/31/2018	11/02/2018	11/02/2018	Expiry		721,291	1.13055000			4,945							4,945			0002
REC 10186255.50 USD PAY [9010000.00] EUR /111011	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	10/31/2018	11/02/2018	11/02/2018	Expiry		10,186,256	1.13055000			(69,828)							(69,828)			0002
REC 8862000.00 EUR PAY [10038971.08] USD /111012	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	10/31/2018	11/28/2018	11/28/2018	Expiry		10,038,971	1.13281100			35,351							35,351			0002
REC 341754.77 USD PAY [301000.00] EUR /111023	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/31/2018	12/18/2018	12/18/2018	Expiry		341,755	1.13539791			(302)							(302)			0002
REC 300000.00 EUR PAY [339414.00] USD /111024	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	10/31/2018	11/02/2018	11/02/2018	Expiry		339,414	1.13138000			2,076							2,076			0002
REC 6975381.24 USD PAY [5466000.00] GBP /111027	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	10/31/2018	11/02/2018	11/02/2018	Expiry		5,466,000	1.27614000			(108,555)							(108,555)			0002
REC 5320000.00 GBP PAY [6798390.78] USD /111028	ASSET HEDGE	Schedule	Currency	THE TORONTO-DOMINION BANK	10/31/2018	12/04/2018	12/04/2018	Expiry		6,798,391	1.27789300			(31,883)							(31,883)			0002

E19167

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)		
REC 8282000.00 EUR PAY [9403365.41] USD /111042	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	10/31/2018	12/18/2018	Expiry		9,403,365	1.13539790			8,299										0002		
REC 9453811.28 USD PAY [8356000.00] EUR /111043	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	10/31/2018	11/02/2018	Expiry		9,453,811	1.13138000			157,824											0002	
REC 4230000.00 GBP PAY [5403528.90] USD /111054	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	17331LVCZKQKX577XV54	10/31/2018	11/02/2018	Expiry		5,403,529	1.27743000			78,551											0002	
REC 10584000.00 GBP PAY [13850910.37] USD /111098	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	KD3XUN70GT14HNAYLU02	11/06/2018	11/21/2018	Expiry		13,850,910	1.30866500			(324,558)											0002	
REC 17365000.00 GBP PAY [22737370.50] USD /111099	ASSET HEDGE	BA, D	Currency	CREDIT AGRICOLE	11UJ7V7QFKU0G5J21A208	11/06/2018	11/08/2018	Expiry		227,337,371	1.30917000			(637,296)											0002	
REC 14118012.30 USD PAY [10794000.00] GBP /111103	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	KD3XUN70GT14HNAYLU02	11/06/2018	11/08/2018	Expiry		14,118,012	1.30795000			26,445											0002	
REC 21512000.00 EUR PAY [24636618.00] USD /111119	ASSET HEDGE	BA, D	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/07/2018	11/09/2018	Expiry		24,636,618	1.14525000			(261,371)											0002	
REC 239000.00 EUR /111121	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/07/2018	11/09/2018	Expiry		273,715	1.14525000			2,904											0002	
REC 1864000.00 EUR PAY [2129843.68] USD /111150	ASSET HEDGE	BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI19DL770XOHC3ZET8	11/08/2018	11/09/2018	Expiry		2,129,844	1.14262000			(17,745)											0002	
REC 4191775.44 USD PAY [3661000.00] EUR /111153	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI19DL770XOHC3ZET8	11/08/2018	12/06/2018	Expiry		4,191,775	1.14498100			29,218											0002	
REC 2215000.00 NZD PAY [1491913.25] USD /111184	ASSET HEDGE	BA, D	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI19DL770XOHC3ZET8	11/09/2018	11/13/2018	Expiry		1,491,913	67355000			6,534											0002	
REC 13335000.00 GBP PAY [173118970.50] USD /111190	ASSET HEDGE	Schedule	Currency	SOCIETE GENERAL	02RNE818XP4R0TD8P441	11/09/2018	11/13/2018	Expiry		173,118,971	1.29823000			(257,366)											0002	
REC 1309000.00 AUD PAY [946959.39] USD /111199	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE	11UJ7V7QFKU0G5J21A208	11/09/2018	12/17/2018	Expiry		946,959	72342199			(7,097)											0002	
REC 40365000.00 EUR PAY [45742322.60] USD /111214	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/09/2018	11/13/2018	Expiry		45,743,233	1.13324000			(183,257)											0002	
REC 25000.00 NZD PAY [16880.66] USD /111234	ASSET HEDGE	BA, D	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/12/2018	11/13/2018	Expiry		16,881	67522840			32											0002	
REC 3512285.70 USD PAY [2695000.00] GBP /111239	ASSET HEDGE	BA, D	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPR1MVCJFX09	11/13/2018	11/15/2018	Expiry		3,512,286	1.30326000			67,806											0002	
REC 95212000.00 GBP PAY [124085991.12] USD /111248	ASSET HEDGE	Schedule	Currency	WELLS FARGO BANK, N.A.	KB1H1DSPR1MVCJFX09	11/13/2018	11/15/2018	Expiry		124,085,991	1.30326000			(2,395,534)											0002	
REC 91088500.05 SEK PAY [10104137.90] USD /111310	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI19DL770XOHC3ZET8	11/16/2018	11/20/2018	Expiry		10,104,138	1.10926600			(84,403)											0002	
REC 62682000.00 EUR PAY [71612630.48] USD /111319	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/16/2018	11/28/2018	Expiry		71,612,630	1.14247520			(355,733)											0002	
REC 71440658.51 USD PAY [62569000.00] EUR /111324	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/16/2018	11/20/2018	Expiry		71,440,659	1.14179000			312,219											0002	
REC 36657000.00 GBP PAY [45832081.52] USD /111333	ASSET HEDGE	BA, D	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/19/2018	11/21/2018	Expiry		45,832,082	1.28536000			(262,436)											0002	
REC 46055165.64 USD PAY [35789000.00] GBP /111334	ASSET HEDGE	BA, D	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/19/2018	12/19/2018	Expiry		46,055,166	1.28688850			919,340											0002	
REC 74980000.00 AUD PAY [54690412.00] USD /111336	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/19/2018	11/21/2018	Expiry		54,690,412	72940000			(254,932)											0002	
REC 54734154.64 USD PAY [75015000.00] AUD /111337	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/19/2018	12/17/2018	Expiry		54,734,155	72964280			873,385											0002	
REC 28993607.44 USD PAY [22479000.00] GBP /111346	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/19/2018	11/21/2018	Expiry		28,993,607	1.28536000			165,445											0002	
REC 22578000.00 GBP PAY [29055368.56] USD /111347	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	7H6QLXDRUG0FU57RNE97	11/19/2018	12/19/2018	Expiry		29,055,369	1.28688850			(579,995)											0002	
REC 8593730.88 USD PAY [7504000.00] EUR /111365	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/19/2018	11/21/2018	Expiry		8,593,731	1.14522000			51,177											0002	
REC 33874000.00 EUR PAY [38708680.20] USD /111386	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/20/2018	12/17/2018	Expiry		38,708,680	1.14272540			(271,852)											0002	
REC 38632619.52 USD PAY [33874000.00] EUR /111391	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/20/2018	11/21/2018	Expiry		38,632,620	1.14048000			70,458											0002	
REC 22520000.00 AUD PAY [16345984.36] USD /111438	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI19DL770XOHC3ZET8	11/21/2018	11/27/2018	Expiry		16,345,984	72584300			(177,536)											0002	
REC 34510927.50 USD PAY [27000000.00] GBP /111464	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/21/2018	11/26/2018	Expiry		34,510,928	1.27818250			(78,773)											0002	
REC 167892000.00 AUD PAY [121426210.08] USD /111526	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	21GI19DL770XOHC3ZET8	11/26/2018	11/28/2018	Expiry		121,426,210	72324000			1,235,685											0002	
REC 15457000.00 GBP PAY [19813685.29] USD /111532	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/26/2018	11/27/2018	Expiry		19,813,685	1.28185840			(123,013)											0002	
REC 11248498.75 USD PAY [9925000.00] EUR /111573	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/26/2018	11/28/2018	Expiry		11,248,499	1.13335000			(34,241)											0002	
REC 9925000.00 EUR PAY [11256909.46] USD /111574	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/26/2018	12/06/2018	Expiry		11,256,609	1.13416720			28,116											0002	
REC 42980794.80 USD PAY [37922000.00] EUR /111583	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	G5GSEF7VJP5170UK5573	11/26/2018	11/28/2018	Expiry		42,980,795	1.13340000			(128,935)											0002	

E19168

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 14940000.00 GBP PAY [190557339.48] USD /111597	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	11/27/2018	12/04/2018	12/04/2018	Expiry		190,557,339	1.27548420			(535,479)							(535,479)			0002
REC 10929577.82 GBP PAY [12916959.33] USD /111604	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	11/27/2018	11/29/2018	11/29/2018	Expiry		13,916,959	1.27333000			60,878							60,878			0002
REC 1800000.00 GBP PAY [2292156.00] USD /111606	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	11/27/2018	11/29/2018	11/29/2018	Expiry		2,292,156	1.27342000			9,864							9,864			0002
REC 3000000.00 GBP PAY [38228004.00] USD /111607	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	11/27/2018	11/28/2018	11/28/2018	Expiry		38,228,004	1.27426680			243,996							243,996			0002
REC 190355171.40 USD PAY [14940000.00] GBP /111608	ASSET HEDGE	Schedule	Currency	DEUTSCHE BANK AG	11/27/2018	12/04/2018	12/04/2018	Expiry		190,355,171	1.27413100			333,311							333,311			0002
REC 38231196.00 USD PAY [30000000.00] GBP /111626	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	11/27/2018	11/30/2018	11/30/2018	Expiry		38,231,196	1.27437320			(33,804)							(33,804)			0002
REC 33337989.46 USD PAY [26133300.00] GBP /111689	ASSET HEDGE	Schedule	Currency	DEUTSCHE BANK AG	11/30/2018	12/04/2018	12/04/2018	Expiry		33,337,989	1.27569000			99,045							99,045			0002
REC 26133300.00 GBP PAY [33343738.81] USD /111711	ASSET HEDGE	Schedule	Currency	GOLDMAN SACHS BANK USA	11/30/2018	12/04/2018	12/04/2018	Expiry		33,343,738	1.27591000			(104,795)							(104,795)			0002
REC 18947000.00 GBP PAY [24186982.32] USD /111758	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	11/30/2018	12/04/2018	12/04/2018	Expiry		24,186,982	1.27656000			(88,293)							(88,293)			0002
REC 687032.58 USD PAY [607000.00] EUR /111772	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	11/30/2018	12/17/2018	12/17/2018	Expiry		687,033	1.13184939			(1,730)							(1,730)			0002
REC 607000.00 EUR PAY [686302.18] USD /111773	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	11/30/2018	12/03/2018	12/03/2018	Expiry		686,302	1.13064610			2,825							2,825			0002
REC 60000.00 EUR PAY [67951.03] USD /111778	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	11/30/2018	12/03/2018	12/03/2018	Expiry		67,951	1.13251717			167							167			0002
REC 2555742.24 USD PAY [225000.00] EUR /111780	ASSET HEDGE	Schedule	Currency	CREDIT AGRICOLE MORGAN	11/30/2018	12/04/2018	12/04/2018	Expiry		2,555,742	1.13136000			(6,641)							(6,641)			0002
REC 21953755.33 USD PAY [19417000.00] EUR /111781	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	11/30/2018	12/03/2018	12/03/2018	Expiry		21,953,755	1.13064610			(90,365)							(90,365)			0002
REC 19417000.00 EUR PAY [21977119.79] USD /111790	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	11/30/2018	12/17/2018	12/17/2018	Expiry		21,977,120	1.13184940			55,350							55,350			0002
REC 3000000.00 AUD PAY [22139100.00] USD /111808	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	12/03/2018	12/05/2018	12/05/2018	Expiry		22,139,100	1.73797000			(332,100)							(332,100)			0002
REC 66053000.00 CAD PAY [50089102.23] USD /111823	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	12/03/2018	12/04/2018	12/04/2018	Expiry		50,089,102	1.75831684			(285,140)							(285,140)			0002
REC 466476000.00 EUR PAY [52807079.20] USD /111847	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	12/04/2018	12/06/2018	12/06/2018	Expiry		528,077,079	1.13420000			1,306,133							1,306,133			0002
REC 2740000.00 GBP PAY [3482479.71] USD /111872	Portfolio Hedge	Schedule	Currency	THE TORONTO-DOMINION BANK	12/05/2018	12/05/2018	12/05/2018	Expiry		3,482,480	1.27097800			6,088							6,088			0002
REC 22500000.00 GBP PAY [28694130.75] USD /111893	Portfolio Hedge	Schedule	Currency	GOLDMAN SACHS BANK USA	12/06/2018	12/07/2018	12/07/2018	Expiry		28,694,131	1.27529470			(53,881)							(53,881)			0002
REC 98566000.00 GBP PAY [125481417.62] USD /111931	ASSET HEDGE	Schedule	Currency	BARCLAYS BANK PLC	12/07/2018	12/11/2018	12/11/2018	Expiry		125,481,418	1.27307000			(2,411,910)							(2,411,910)			0002
REC 100833300.00 GBP PAY [128283149.28] USD /111934	Portfolio Hedge	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	12/07/2018	12/11/2018	12/11/2018	Expiry		128,283,149	1.27223000			(2,382,691)							(2,382,691)			0002
REC 128481730.86 USD PAY [100833300.00] GBP /111935	Portfolio Hedge	Schedule	Currency	DEUTSCHE BANK AG	12/07/2018	12/11/2018	12/11/2018	Expiry		128,481,791	1.27420000			2,581,332							2,581,332			0002
REC 25000000.00 AUD PAY [17983500.00] USD /112035	ASSET HEDGE	Schedule	Currency	CANADIAN IMPERIAL BANK OF COMMERCE	12/11/2018	12/13/2018	12/13/2018	Expiry		17,983,500	1.71934000			81,500							81,500			0002
REC 5416000.00 GBP PAY [6778642.85] USD /112042	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	12/11/2018	12/17/2018	12/17/2018	Expiry		6,778,643	1.25159580			57,974							57,974			0002
REC 59778718.61 USD PAY [47762000.00] GBP /112051	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	12/11/2018	12/17/2018	12/17/2018	Expiry		59,778,719	1.25159580			(511,254)							(511,254)			0002
REC 7079113.23 USD PAY [5657000.00] GBP /112057	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	12/11/2018	12/13/2018	12/13/2018	Expiry		7,079,113	1.25139000			(80,952)							(80,952)			0002
REC 45931000.00 GBP PAY [57477594.09] USD /112061	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	12/11/2018	12/13/2018	12/13/2018	Expiry		57,477,594	1.25139000			657,273							657,273			0002
REC 8796626.37 USD PAY [7773000.00] EUR /112066	ASSET HEDGE	Schedule	Currency	BNP PARIBAS LONDON	12/11/2018	12/13/2018	12/13/2018	Expiry		8,796,626	1.13169000			(35,056)							(35,056)			0002
REC 7773000.00 EUR PAY [8799229.55] USD /112073	ASSET HEDGE	Schedule	Currency	BNP PARIBAS LONDON	12/11/2018	12/17/2018	12/17/2018	Expiry		8,799,230	1.13202490			20,794							20,794			0002
REC 237732000.00 EUR PAY [270163399.44] USD /112132	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	12/13/2018	12/17/2018	12/17/2018	Expiry		270,163,399	1.13642000			(408,899)							(408,899)			0002
REC 25675150.40 USD PAY [22595000.00] EUR /112135	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	12/13/2018	12/17/2018	12/17/2018	Expiry		25,675,150	1.13632000			36,604							36,604			0002
REC 129110000.00 AUD PAY [93302632.60] USD /112154	ASSET HEDGE	Schedule	Currency	JPMORGAN CHASE BANK, N.A.	12/13/2018	12/17/2018	12/17/2018	Expiry		93,302,633	1.22660000			(601,653)							(601,653)			0002
REC 221045000.00 GBP PAY [279960123.85] USD /112165	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	12/13/2018	12/17/2018	12/17/2018	Expiry		279,960,124	1.26653000			(935,020)							(935,020)			0002
REC 29213000.00 EUR PAY [33198821.72] USD /112180	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	12/13/2018	12/17/2018	12/17/2018	Expiry		33,198,822	1.13644000			(50,831)							(50,831)			0002
REC 1168260.32 USD PAY [1028000.00] EUR /112182	ASSET HEDGE	Schedule	Currency	MORGAN STANLEY CAPITAL SERVICES	12/13/2018	12/17/2018	12/17/2018	Expiry		1,168,260	1.13644000			1,789							1,789			0002

E19169

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)
REC 11508000.00 CHF PAY [1150493.89] USD /112199	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	12/13/2018	12/17/2018	12/17/2018	Expiry		11,580,494	1.00629943			5,761							5,761			0002
REC 116580999.97 NOK PAY [13623413.65] USD /112201	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE	12/13/2018	12/17/2018	12/17/2018	Expiry		13,623,414	11685792			(146,650)							(146,650)			0002
REC 3647265.02 USD PAY [5047000.00] AUD /112208	ASSET HEDGE	Schedule BA, D	Currency	JPMORGAN CHASE BANK, N.A.	12/13/2018	12/17/2018	12/17/2018	Expiry		3,647,265	72266000			23,519							23,519			0002
REC 62318000.01 SEK PAY [6881822.55] USD /112210	ASSET HEDGE	Schedule D	Currency	GOLDMAN SACHS BANK USA	12/13/2018	12/17/2018	12/17/2018	Expiry		6,881,823	11043074			(8,147)							(8,147)			0002
REC 11658000.00 CAD PAY [8696495.44] USD /112263	ASSET HEDGE	Schedule D	Currency	BARCLAYS BANK PLC	12/17/2018	12/18/2018	12/18/2018	Expiry		8,696,495	74596804			(41,596)							(41,596)			0002
REC 28466527.42 USD PAY [25035000.00] EUR /112301	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES	12/18/2018	12/18/2018	12/18/2018	Expiry		28,466,527	1.13706920			16,753							16,753			0002
REC 32000000.00 AUD PAY [22955520.00] USD /112327	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES/ CLEARED THROUGH CITI GLOBAL MARK	12/18/2018	12/20/2018	12/20/2018	Expiry		22,955,520	71736000			(213,120)							(213,120)			0002
REC 21186420.15 USD PAY [18501000.00] EUR /112402	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES/ CLEARED THROUGH CITI GLOBAL MARK	12/20/2018	12/24/2018	12/24/2018	Expiry		21,186,420	1.14515000			87,880							87,880			0002
REC 17787999.99 CAD PAY [13152816.08] USD /112449	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES/ CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/27/2018	12/27/2018	Expiry		13,152,816	73942074			(89,309)							(89,309)			0002
REC 250236000.00 AUD PAY [177164585.64] USD /112451	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES/ CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/27/2018	12/27/2018	Expiry		177,164,586	70799000			(1,348,772)							(1,348,772)			0002
REC 16593608.82 USD PAY [14599000.00] EUR /112470	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES/ CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/24/2018	12/24/2018	Expiry		16,593,609	1.13662640			(55,091)							(55,091)			0002
REC 33043735.23 USD PAY [29072000.00] EUR /112471	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES/ CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/24/2018	12/24/2018	Expiry		33,043,735	1.13661720			(109,974)							(109,974)			0002
REC 214000.00 GBP PAY [270109.41] USD /112500	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE/ CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/24/2018	12/24/2018	Expiry		270,109	1.26219350			1,949							1,949			0002
REC 10097548.00 USD PAY [8000000.00] GBP /112501	ASSET HEDGE	Schedule D	Currency	CREDIT AGRICOLE/ CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/24/2018	12/24/2018	Expiry		10,097,548	1.26219350			(72,852)							(72,852)			0002
REC 138455000.00 AUD PAY [97616313.20] USD /112512	ASSET HEDGE	Schedule D	Currency	MORGAN STANLEY CAPITAL SERVICES/ CLEARED THROUGH CITI GLOBAL MARK	12/21/2018	12/27/2018	12/27/2018	Expiry		97,616,313	70504000			(337,830)							(337,830)			0002
1229999999. Subtotal - Forwards - Hedging Other														172,503,101	(1,218,026)	XXX	75,474,623		172,503,101		XXX			
REC 10000000.00 USD PAY [1183500000.00] JPY /100631/Filed with the SVO and awaiting RSAT Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A.	10/05/2017	03/30/2018	03/30/2018	Expiry		100,000,000	00894174			(5,124,900)							(5,124,900)			0002
REC 50000000.00 USD PAY [5517029500.00] JPY /102651/Need to file with SVO Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	MORGAN STANLEY CAPITAL SERVICES	01/10/2018	06/29/2018	06/29/2018	Expiry		50,000,000	00906285			346,735							346,735			0002
REC 50000000.00 USD PAY [550660000.00] JPY /102658/Need to file with SVO Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	GOLDMAN SACHS BANK USA	01/11/2018	06/29/2018	06/29/2018	Expiry		50,000,000	00908090			445,460							445,460			0002
REC 25000000.00 USD PAY [2703998750.00] JPY /103239/Need to file with SVO Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	WELLS FARGO BANK, N.A.	01/24/2018	06/29/2018	06/29/2018	Expiry		25,000,000	00924557			664,011							664,011			0002
REC 45000000.00 USD PAY [480082500.00] JPY /103823/Need to file with SVO Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	GOLDMAN SACHS BANK USA	02/13/2018	06/29/2018	06/29/2018	Expiry		45,000,000	00937326			1,791,968							1,791,968			0002

E19.70

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART A - SECTION 2

Showing all Options, Caps, Floors, Collars, Swaps and Forwards Terminated During Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25							
Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule / Exhibit Identifier	Type(s) of Risk(s) (a)	Exchange, Counterparty or Central Clearinghouse	Trade Date	Date of Maturity or Expiration	Termination Date	Indicate Exercise, Expiration, Maturity or Sale	Number of Contracts	Notional Amount	Strike Price, Rate or Index Received (Paid)	Cumulative Prior Year(s) Initial Cost of Un-discounted Premium (Received) Paid	Current Year Initial Cost of Un-discounted Premium (Received) Paid	Consideration Received (Paid) on Termination	Current Year Income	Book/ Adjusted Carrying Value	Code	Unrealized Valuation Increase/ (Decrease)	Total Foreign Exchange Change in B./A.C.V.	Current Year's (Amortization)/ Accretion	Gain (Loss) on Termination Recognized	Adjustment to Carrying Value of Hedged Item	Gain (Loss) on Termination Deferred	Hedge Effectiveness at Inception and at Termination (b)							
REC 1118350000.37 JPY PAY [105330821.80] USD /105048 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A.	03/28/2018	03/30/2018	03/30/2018	Expiry		105,330,822	.00941841			(205,922)							(205,922)			0002							
REC 74145169.30 USD PAY [805775000.13] JPY /106624 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A.	05/31/2018	06/01/2018	06/01/2018	Expiry		74,145,169	.00920172			819,644							819,644			0002							
REC 18527980750.15 JPY PAY [17099281.30] USD /106626 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	MORGAN STANLEY CAPITAL SERVICES	05/31/2018	06/29/2018	06/29/2018	Expiry		170,999,281	.00922925			(4,247,455)							(4,247,455)			0002							
REC 48457162.42 USD PAY [526449999.64] JPY /106629 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	JPMORGAN CHASE BANK, N.A.	05/31/2018	06/01/2018	06/01/2018	Expiry		48,457,162	.00920451			550,212							550,212			0002							
REC 163371341.40 USD PAY [1774349999.65] JPY /106630 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	THE TORONTO-DOMINION BANK	05/31/2018	06/01/2018	06/01/2018	Expiry		163,371,341	.00920739			1,905,491							1,905,491			0002							
REC 48710752.21 USD PAY [528650000.15] JPY /106632 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	THE TORONTO-DOMINION BANK	05/31/2018	06/01/2018	06/01/2018	Expiry		48,710,752	.00921418			603,602							603,602			0002							
REC 170710848.60 USD PAY [18527980750.27] JPY /106633 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	MORGAN STANLEY CAPITAL SERVICES	05/31/2018	06/01/2018	06/01/2018	Expiry		170,710,848	.00921368			2,106,224							2,106,224			0002							
REC 48067387.97 USD PAY [532600000.25] JPY /106637 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	CREDIT AGRICOLE	05/31/2018	06/01/2018	06/01/2018	Expiry		49,067,388	.00921280			600,788							600,788			0002							
REC 48289403.42 USD PAY [534999999.66] JPY /106639 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	CREDIT AGRICOLE	05/31/2018	06/01/2018	06/01/2018	Expiry		49,289,403	.00921297			604,403							604,403			0002							
REC 50254239.78 USD PAY [545949999.52] JPY /106641 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	CREDIT AGRICOLE	05/31/2018	06/01/2018	06/01/2018	Expiry		50,254,240	.00920492			572,790							572,790			0002							
REC 50249591.38 USD PAY [546000000.33] JPY /106642 /Inverse JPY Long Term Bond	REPLICATION	Schedule DB, Part C - Sec 1	Currency	CREDIT AGRICOLE	05/31/2018	06/01/2018	06/01/2018	Expiry		50,249,591	.00920322			563,591							563,591			0002							
1239999999. Subtotal - Forwards - Replication																		1,996,644				XXX			1,996,644			XXX			
1269999999. Subtotal - Forwards																			174,499,745		(1,218,026)		XXX	75,474,623			174,499,745			XXX	
1399999999. Subtotal - Hedging Effective																														XXX	
1409999999. Subtotal - Hedging Other																		538,156,066	240,646,971	838,120,084	(150,312,454)		XXX	128,827,458			59,317,047			XXX	
1419999999. Subtotal - Replication																		29,882,627	62,685,742	109,542,861	11,504,804		XXX			(6,620,053)	25,854,998			XXX	
1429999999. Subtotal - Income Generation																							XXX							XXX	
1439999999. Subtotal - Other																							XXX								XXX
1449999999 - Totals																		568,038,694	303,332,713	947,662,945	(138,807,650)		XXX	128,827,458		(6,620,053)	85,172,045			XXX	

(a)	Code	Description of Hedged Risk(s)
-----	------	-------------------------------

(b)	Code	Financial or Economic Impact of the Hedge at the End of the Reporting Period
	0001	Interest rate hedges reduced the portfolio's interest rate risk (duration, convexity, volatility, yield curve)
	0002	Currency derivatives hedging foreign investments or liabilities back to USD
	0003	Equity derivatives hedging portfolio's exposure to equity markets
	0005	Bond index derivatives hedging portfolio's exposure to interest rates
	0007	Credit default swaps replicate corporate credit positions
	0008	Credit default swaps reduced credit risk through the purchase of credit protection
	0013	MBS forward contracts, efficient investments in MBS through liquid TBA market
	0014	Interest rate swaps replicate corporate bond

E19.71

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

(b)	Code	Financial or Economic Impact of the Hedge at the End of the Reporting Period
	0015	Interest rate swaps replicate corporate bank loan
	0016	Interest rate swaps replicate asset backed securities, bonds and bank loan

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 1

Futures Contracts Open December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	Highly Effective Hedges			18	19	20	21	22
														15	16	17					
Ticker Symbol	Number of Contracts	Notional Amount	Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Date of Maturity or Expiration	Exchange	Trade Date	Transaction Price	Reporting Date Price	Fair Value	Book/ Adjusted Carrying Value	Cumulative Variation Margin	Deferred Variation Margin	Change in Variation Margin Gain (Loss) Used to Adjust Basis of Hedged Item	Cumulative Variation Margin for All Other Hedges	Change in Variation Margin Gain (Loss) Recognized in Current Year	Potential Exposure	Hedge Effectiveness at Inception and at Year-end (b)	Value of One (1) Point
MF5H9	40	2,000	E-MINI MSCI EAFE /112221	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/14/2018	1,755,4000	1,716,0000	(78,949)	(78,949)		(78,949)	(78,949)	180,000	0003	50	
ESH9	170	8,500	S&P 500 EMINI Futures II /112222	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/14/2018	2,649,1000	2,505,2000	(101,314)	(101,314)		(101,314)	(101,314)	1,020,000	0003	50	
MESH9	145	7,250	MSCI EMERGING MARKETS /112226	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/14/2018	980,7000	966,8000	(1,223,714)	(1,223,714)		(1,223,714)	(1,223,714)	377,000	0003	50	
MESH9	25	1,250	MSCI EMERGING MARKETS /112627	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/31/2018	967,3000	966,8000	(718)	(718)		(718)	(718)	65,000	0003	50	
FVH9	670	67,000,000	US 5YR NOTE FUTURE II /111382	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/20/2018	112,8906	114,6900	1,201,799	1,201,799		1,201,799	1,201,799	455,600	0001	1,000	
FVH9	150	15,000,000	US 5YR NOTE FUTURE II /111385	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/20/2018	112,8906	114,6900	269,060	269,060		269,060	269,060	102,000	0001	1,000	
WNH9	4	400,000	US ULTRA BOND /111407	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	VVVVCKR63DVZLN70PB21	11/20/2018	152,2813	160,6600	33,491	33,491		33,491	33,491	14,600	0001	1,000	
WNH9	5	500,000	US ULTRA BOND /111409	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/20/2018	152,2813	160,6600	41,858	41,858		41,858	41,858	18,250	0001	1,000	
WNH9	6	600,000	US ULTRA BOND /111450	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/21/2018	152,5469	160,6600	48,636	48,636		48,636	48,636	21,900	0001	1,000	
WNH9	5	500,000	US ULTRA BOND /111453	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	VVVVCKR63DVZLN70PB21	11/21/2018	152,5469	160,6600	40,536	40,536		40,536	40,536	18,250	0001	1,000	
WNH9	138	13,800,000	US ULTRA BOND /111505	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	152,4453	160,6600	5,550,787	5,550,787		5,550,787	5,550,787	503,700	0001	1,000	
WNH9	944	94,400,000	US ULTRA BOND /111507	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	152,4453	160,6600	7,796,354	7,796,354		7,796,354	7,796,354	3,445,600	0001	1,000	
WNH9	185	18,500,000	US ULTRA BOND /111509	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	152,4453	160,6600	1,024,097	1,024,097		1,024,097	1,024,097	675,250	0001	1,000	
WNH9	504	50,400,000	US ULTRA BOND /111511	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	152,4453	160,6600	65,872,588	65,872,588		65,872,588	65,872,588	1,839,600	0001	1,000	
WNH9	260	26,000,000	US ULTRA BOND /111513	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	152,4453	160,6600	1,982,124	1,982,124		1,982,124	1,982,124	949,000	0001	1,000	
WNH9	5,792	579,200,000	US ULTRA BOND /111514	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	152,4453	160,6600	7,135,646	7,135,646		7,135,646	7,135,646	21,140,800	0001	1,000	
WNH9	3,606	360,600,000	US ULTRA BOND /111516	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	VVVVCKR63DVZLN70PB21	11/26/2018	152,4453	160,6600	1,420,522	1,420,522		1,420,522	1,420,522	13,161,900	0001	1,000	
USH9	840	84,000,000	US CBT LNG BOND II /111548	Portfolio Hedge	Exhibit 5	Interest	03/29/2019	CBOT	VVVVCKR63DVZLN70PB21	11/26/2018	139,3897	146,0000	1,132,646	1,132,646		1,132,646	1,132,646	2,142,000	0001	1,000	
USH9	1,180	118,000,000	US CBT LNG BOND II /111549	Portfolio Hedge	ScheduleD	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	139,3896	146,0000	7,747,956	7,747,956		7,747,956	7,747,956	3,009,000	0001	1,000	
USH9	155	15,500,000	US CBT LNG BOND II /111553	Portfolio Hedge	ScheduleD	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	139,3896	146,0000	1,518,402	1,518,402		1,518,402	1,518,402	395,250	0001	1,000	
USH9	9,970	997,000,000	US CBT LNG BOND II /111555	Portfolio Hedge	ScheduleD	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	139,3896	146,0000	4,136,620	4,136,620		4,136,620	4,136,620	25,423,500	0001	1,000	
USH9	300	30,000,000	US CBT LNG BOND II /111557	Portfolio Hedge	ScheduleD	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/26/2018	139,3896	146,0000	2,133,971	2,133,971		2,133,971	2,133,971	765,000	0001	1,000	

E20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 1

Futures Contracts Open December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	Highly Effective Hedges			18	19	20	21	22	
														15	16	17						
Ticker Symbol	Number of Contracts	Notional Amount	Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Date of Maturity or Expiration	Exchange	Trade Date	Transaction Price	Reporting Date Price	Fair Value	Book/ Adjusted Carrying Value	Cumulative Variation Margin	Deferred Variation Margin	Change in Variation Margin Gain (Loss) Used to Adjust Basis of Hedged Item	Cumulative Variation Margin for All Other Hedges	Change in Variation Margin Gain (Loss) Recognized in Current Year	Potential Exposure	Hedge Effectiveness at Inception and at Year-end (b)	Value of One (1) Point	
USH9	1,080	108,000,000	US CBT LNG BOND II /111561	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	11/26/2018	139.3896	146.0000	47,538,303	47,538,303			47,538,303	47,538,303	2,754,000	0001	1.000		
USH9	215	21,500,000	US CBT LNG BOND II /111563	Portfolio Hedge	ScheduleD	Interest	03/29/2019	CBOT	11/26/2018	139.3896	146.0000	29,600,680	29,600,680			29,600,680	29,600,680	548,250	0001	1.000		
TYH9	1,395	139,500,000	US 10Y NOTE FUTURE II /111634	Portfolio Hedge	ScheduleD	Interest	03/29/2019	CBOT	11/27/2018	118.9991	122.0200	4,203,491	4,203,491			4,203,491	4,203,491	1,464,750	0001	1.000		
TYH9	995	99,500,000	US 10Y NOTE FUTURE II /111636	Portfolio Hedge	ScheduleD	Interest	03/29/2019	CBOT	11/27/2018	118.9990	122.0200	2,999,383	2,999,383			2,999,383	2,999,383	1,044,750	0001	1.000		
TYH9	895	89,500,000	US 10Y NOTE FUTURE II /111637	Portfolio Hedge	ScheduleD	Interest	03/29/2019	CBOT	11/27/2018	118.9990	122.0200	2,697,938	2,697,938			2,697,938	2,697,938	939,750	0001	1.000		
USH9	140	14,000,000	US CBT LNG BOND II /111900	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	12/06/2018	143.4375	146.0000	358,446	358,446			358,446	358,446	357,000	0001	1.000		
USH9	125	12,500,000	US CBT LNG BOND II /112005	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	12/10/2018	143.8193	146.0000	272,316	272,316			272,316	272,316	318,750	0001	1.000		
USH9	125	12,500,000	US CBT LNG BOND II /112271	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	12/17/2018	143.3438	146.0000	331,754	331,754			331,754	331,754	318,750	0001	1.000		
USH9	125	12,500,000	US CBT LNG BOND II /112282	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	12/17/2018	143.3750	146.0000	327,854	327,854			327,854	327,854	318,750	0001	1.000		
USH9	125	12,500,000	US CBT LNG BOND II /112384	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	12/19/2018	145.3438	146.0000	81,754	81,754			81,754	81,754	318,750	0001	1.000		
USH9	135	13,500,000	US CBT LNG BOND II /112462	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	12/21/2018	144.7192	146.0000	172,615	172,615			172,615	172,615	344,250	0001	1.000		
USH9	145	14,500,000	US CBT LNG BOND II /112526	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	12/24/2018	145.3250	146.0000	97,560	97,560			97,560	97,560	369,750	0001	1.000		
USH9	145	14,500,000	US CBT LNG BOND II /112529	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/29/2019	CBOT	12/24/2018	145.2575	146.0000	107,348	107,348			107,348	107,348	369,750	0001	1.000		
1289999999. Subtotal - Long Futures - Hedging Other															196,471,840	196,471,840		196,471,839	196,471,839	85,190,450	XXX	XXX
1329999999. Subtotal - Long Futures															196,471,840	196,471,840		196,471,839	196,471,839	85,190,450	XXX	XXX
ESH9	25	1,250	S&P 500 EMINI Futures II /111988	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	12/07/2018	2,695.1000	2,505.2000	237,292	237,292			237,292	237,292	150,000	0003	50		
ESH9	25	1,250	S&P 500 EMINI Futures II /111999	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	12/10/2018	2,640.0500	2,505.2000	168,480	168,480			168,480	168,480	150,000	0003	50		

E20.1

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 1

Futures Contracts Open December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Reporting Date Price	13 Fair Value	14 Book/ Adjusted Carrying Value	Highly Effective Hedges			18 Cumulative Variation Margin for All Other Hedges	19 Change in Variation Margin Gain (Loss) Recognized in Current Year	20 Potential Exposure	21 Hedge Effectiveness at Inception and at Year-end (b)	22 Value of One (1) Point
														15 Cumulative Variation Margin	16 Deferred Variation Margin	17 Change in Variation Margin Gain (Loss) Used to Adjust Basis of Hedged Item					
ESH9	100	5,000	S&P 500 EMINI Futures II /112004	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/10/2018	2,591.7500	2,505.2000	432,380	432,380			432,380	432,380	600,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112007	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/10/2018	2,639.8000	2,505.2000	336,334	336,334			336,334	336,334	300,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112009	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/10/2018	2,639.8500	2,505.2000	336,459	336,459			336,459	336,459	300,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112021	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/10/2018	2,639.9250	2,505.2000	673,293	673,293			673,293	673,293	600,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112023	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/10/2018	2,639.9750	2,505.2000	673,543	673,543			673,543	673,543	600,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112025	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/11/2018	2,647.1500	2,505.2000	354,709	354,709			354,709	354,709	300,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112026	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/11/2018	2,647.1000	2,505.2000	354,584	354,584			354,584	354,584	300,000	0003	50
ESH9	25	1,250	S&P 500 EMINI Futures II /112029	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/11/2018	2,647.2000	2,505.2000	177,417	177,417			177,417	177,417	150,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112030	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/11/2018	2,647.2500	2,505.2000	354,959	354,959			354,959	354,959	300,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112050	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/11/2018	2,647.2500	2,505.2000	354,959	354,959			354,959	354,959	300,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112088	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/12/2018	2,645.3000	2,505.2000	81,718	81,718			81,718	81,718	600,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112090	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/12/2018	2,645.4000	2,505.2000	700,168	700,168			700,168	700,168	300,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112093	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/12/2018	2,645.4000	2,505.2000	350,334	350,334			350,334	350,334	600,000	0003	50
NSD9	10	200	NASDAQ 100 EMINI Futures II /112101	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/12/2018	6,742.0000	6,333.2500	700,668	700,668			700,668	700,668	76,000	0003	20

E20.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 1

Futures Contracts Open December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Reporting Date Price	13 Fair Value	14 Book/ Adjusted Carrying Value	Highly Effective Hedges			18 Cumulative Variation Margin for All Other Hedges	19 Change in Variation Margin Gain (Loss) Recognized in Current Year	20 Potential Exposure	21 Hedge Effectiveness at Inception and at Year-end (b)	22 Value of One (1) Point
														15 Cumulative Variation Margin	16 Deferred Variation Margin	17 Change in Variation Margin Gain (Loss) Used to Adjust Basis of Hedged Item					
NQH9	10	200	NASDAQ 100 EMINI Futures II /112104	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/13/2018	6,742.1000	6,333.2500	81,737	81,737			81,737	81,737	76,000	0003	20
ESH9	50	2,500	S&P 500 EMINI Futures II /112106	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/13/2018	2,656.6000	2,505.2000	184,694	184,694			184,694	184,694	300,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112109	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/13/2018	2,656.5500	2,505.2000	378,334	378,334			378,334	378,334	300,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112111	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/13/2018	2,656.5500	2,505.2000	378,209	378,209			378,209	378,209	300,000	0003	50
NQH9	20	400	NASDAQ 100 EMINI Futures II /112114	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/13/2018	6,795.1500	6,333.2500	378,209	378,209			378,209	378,209	152,000	0003	20
ESH9	100	5,000	S&P 500 EMINI Futures II /112234	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/14/2018	2,648.9500	2,505.2000	176,514	176,514			176,514	176,514	600,000	0003	50
RTYH9	150	7,500	Russell 2000 Index RTY /112235	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/14/2018	1,429.7333	1,349.0000	530,641	530,641			530,641	530,641	532,500	0003	50
NQH9	20	400	NASDAQ 100 EMINI Futures II /112236	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/14/2018	6,774.7000	6,333.2500	604,944	604,944			604,944	604,944	152,000	0003	20
NQH9	60	1,200	NASDAQ 100 EMINI Futures II /112241	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/14/2018	6,775.6167	6,333.2500	108,480	108,480			108,480	108,480	456,000	0003	20
RTYH9	25	1,250	Russell 2000 Index RTY /112243	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/14/2018	1,435.8500	1,349.0000	718,418	718,418			718,418	718,418	88,750	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112246	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/17/2018	2,605.5000	2,505.2000	209,256	209,256			209,256	209,256	600,000	0003	50
RTYH9	25	1,250	Russell 2000 Index RTY /112248	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/17/2018	1,415.9000	1,349.0000	92,628	92,628			92,628	92,628	88,750	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112253	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/17/2018	2,605.3500	2,505.2000	(42,719)	(42,719)			(42,719)	(42,719)	600,000	0003	50
RTYH9	25	1,250	Russell 2000 Index RTY /112255	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/17/2018	1,416.1500	1,349.0000	288,984	288,984			288,984	288,984	88,750	0003	50

E20.3

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 1

Futures Contracts Open December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Reporting Date Price	13 Fair Value	14 Book/ Adjusted Carrying Value	Highly Effective Hedges			18 Cumulative Variation Margin for All Other Hedges	19 Change in Variation Margin Gain (Loss) Recognized in Current Year	20 Potential Exposure	21 Hedge Effectiveness at Inception and at Year-end (b)	22 Value of One (1) Point
														15 Cumulative Variation Margin	16 Deferred Variation Margin	17 Change in Variation Margin Gain (Loss) Used to Adjust Basis of Hedged Item					
NQH9	50	1,000	NASDAQ 100 EMINI Futures II /112256	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/17/2018	6,622.4000	6,333.2500	289,184	289,184			289,184	289,184	380,000	0003	20
MFSH9	200	10,000	E-MINI MSCI EAFE /112260	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/17/2018	1,737.0000	1,716.0000	1,155,336	1,155,336			1,155,336	1,155,336	900,000	0003	50
MFSH9	100	5,000	E-MINI MSCI EAFE /112270	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/17/2018	1,734.6000	1,716.0000	83,542	83,542			83,542	83,542	450,000	0003	50
MESH9	200	10,000	MSCI EMERGING MARKETS /112272	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/17/2018	962.6025	966.8000	83,855	83,855			83,855	83,855	520,000	0003	50
ESH9	400	20,000	S&P 500 EMINI Futures II /112273	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/17/2018	2,605.0500	2,505.2000	501,168	501,168			501,168	501,168	2,400,000	0003	50
NQH9	50	1,000	NASDAQ 100 EMINI Futures II /112279	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/17/2018	6,622.6000	6,333.2500	500,418	500,418			500,418	500,418	380,000	0003	20
NQH9	200	4,000	NASDAQ 100 EMINI Futures II /112281	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/17/2018	6,622.2500	6,333.2500	1,995,672	1,995,672			1,995,672	1,995,672	1,520,000	0003	20
MFSH9	115	5,750	E-MINI MSCI EAFE /112298	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/18/2018	1,744.6791	1,716.0000	164,477	164,477			164,477	164,477	517,500	0003	50
NQH9	20	400	NASDAQ 100 EMINI Futures II /112300	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	6,488.2500	6,333.2500	255,091	255,091			255,091	255,091	152,000	0003	20
ESH9	53	2,650	S&P 500 EMINI Futures II /112313	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	2,555.3000	2,505.2000	121,628	121,628			121,628	121,628	318,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112317	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	2,555.3000	2,505.2000	207,294	207,294			207,294	207,294	600,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112318	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	2,555.3000	2,505.2000	75,256	75,256			75,256	75,256	600,000	0003	50
RTYH9	50	2,500	Russell 2000 Index RTY /112324	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	1,390.0000	1,349.0000	21,256	21,256			21,256	21,256	177,500	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112326	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	2,555.2500	2,505.2000	61,934	61,934			61,934	61,934	600,000	0003	50
MFSH9	200	10,000	E-MINI MSCI EAFE /112338	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/18/2018	1,741.5835	1,716.0000	102,334	102,334			102,334	102,334	900,000	0003	50

E20.4

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 1

Futures Contracts Open December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Reporting Date Price	13 Fair Value	14 Book/ Adjusted Carrying Value	Highly Effective Hedges			18 Cumulative Variation Margin for All Other Hedges	19 Change in Variation Margin Gain (Loss) Recognized in Current Year	20 Potential Exposure	21 Hedge Effectiveness at Inception and at Year-end (b)	22 Value of One (1) Point
														15 Cumulative Variation Margin	16 Deferred Variation Margin	17 Change in Variation Margin Gain (Loss) Used to Adjust Basis of Hedged Item					
RTYH9	25	1,250	Russell 2000 Index RTY /112341	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	1,389,5500	1,349,0000	50,605	50,605			50,605	50,605	88,750	0003	50
MESH9	200	10,000	MSCI EMERGING MARKETS /112342	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/18/2018	974,4000	966,8000	132,589	132,589			132,589	132,589	520,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112345	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	2,555,1000	2,505,2000	250,168	250,168			250,168	250,168	300,000	0003	50
MFSH9	100	5,000	E-MINI MSCI EAFE /112347	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/18/2018	1,740,4000	1,716,0000	250,168	250,168			250,168	250,168	450,000	0003	50
MESH9	200	10,000	MSCI EMERGING MARKETS /112355	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/18/2018	969,0000	966,8000	249,918	249,918			249,918	249,918	520,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112359	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/18/2018	2,554,6500	2,505,2000	124,584	124,584			124,584	124,584	300,000	0003	50
MFSH9	230	11,500	E-MINI MSCI EAFE /112362	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/18/2018	1,734,1000	1,716,0000	123,459	123,459			123,459	123,459	1,035,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112368	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/19/2018	2,538,0500	2,505,2000	139,128	139,128			139,128	139,128	600,000	0003	50
MFSH9	100	5,000	E-MINI MSCI EAFE /112370	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/19/2018	1,743,9000	1,716,0000	163,918	163,918			163,918	163,918	450,000	0003	50
ESH9	50	2,500	S&P 500 EMINI Futures II /112375	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/19/2018	2,537,8000	2,505,2000	81,334	81,334			81,334	81,334	300,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112376	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/19/2018	2,537,8500	2,505,2000	162,918	162,918			162,918	162,918	600,000	0003	50
ESH9	100	5,000	S&P 500 EMINI Futures II /112380	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/19/2018	2,538,9550	2,505,2000	168,405	168,405			168,405	168,405	600,000	0003	50
MESH9	200	10,000	MSCI EMERGING MARKETS /112395	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/20/2018	966,0000	966,8000	(19,187)	(19,187)			(19,187)	(19,187)	520,000	0003	50
RTYH9	150	7,500	Russell 2000 Index RTY /112399	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/20/2018	1,330,3000	1,349,0000	(8,744)	(8,744)			(8,744)	(8,744)	532,500	0003	50

E20.5

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 1

Futures Contracts Open December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	Highly Effective Hedges			18	19	20	21	22		
														15	16	17							
Ticker Symbol	Number of Contracts	Notional Amount	Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Date of Maturity or Expiration	Exchange	Trade Date	Transaction Price	Reporting Date Price	Fair Value	Book/ Adjusted Carrying Value	Cumulative Variation Margin	Deferred Variation Margin	Change in Variation Margin Gain (Loss) Used to Adjust Basis of Hedged Item	Cumulative Variation Margin for All Other Hedges	Change in Variation Margin Gain (Loss) Recognized in Current Year	Potential Exposure	Hedge Effectiveness at Inception and at Year-end (b)	Value of One (1) Point		
RTYH9	100	5,000	Russell 2000 Index RTY /112409	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/20/2018	1,314.9000	1,349.0000	(140,806)	(140,806)		(140,806)	(140,806)	355,000	0003	50			
MFSH9	100	5,000	E-MINI MSCI EAFE /112427	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/20/2018	1,712.2370	1,716.0000	(170,870)	(170,870)		(170,870)	(170,870)	450,000	0003	50			
ESH9	100	5,000	S&P 500 EMINI Futures II /112440	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/21/2018	2,488.0000	2,505.2000	(86,370)	(86,370)		(86,370)	(86,370)	600,000	0003	50			
ESH9	200	10,000	S&P 500 EMINI Futures II /112527	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/24/2018	2,393.5000	2,505.2000	(165,872)	(165,872)		(165,872)	(165,872)	1,200,000	0003	50			
MFSH9	100	5,000	E-MINI MSCI EAFE /112528	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	ICE	9R7GPTS07KV3UQJZ0078	12/24/2018	1,682.9000	1,716.0000	(1,117,740)	(1,117,740)		(1,117,740)	(1,117,740)	450,000	0003	50			
NQH9	50	1,000	NASDAQ 100 EMINI Futures II /112532	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/26/2018	5,975.2500	6,333.2500	(358,185)	(358,185)		(358,185)	(358,185)	380,000	0003	20			
ESH9	125	6,250	S&P 500 EMINI Futures II /112533	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/26/2018	2,353.5000	2,505.2000	(948,588)	(948,588)		(948,588)	(948,588)	750,000	0003	50			
RTYH9	150	7,500	Russell 2000 Index RTY /112618	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UQJZ0078	12/28/2018	1,336.0200	1,349.0000	(97,906)	(97,906)		(97,906)	(97,906)	532,500	0003	50			
WNH9	4	400,000	US ULTRA BOND /111406	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/20/2018	152.2969	160.6600	(33,451)	(33,451)		(33,451)	(33,451)	14,600	0001	1,000			
WNH9	206	20,600,000	US ULTRA BOND /111452	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/21/2018	152.5703	160.6600	(1,666,400)	(1,666,400)		(1,666,400)	(1,666,400)	751,900	0001	1,000			
WNH9	131	13,100,000	US ULTRA BOND /111485	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	9R7GPTS07KV3UQJZ0078	11/23/2018	152.4688	160.6600	(1,072,997)	(1,072,997)		(1,072,997)	(1,072,997)	478,150	0001	1,000			
TYH9	1,190	119,000,000	US 10Y NOTE FUTURE II /111632	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	1V8Y60CX6YJM20EL1146	11/27/2018	119.0000	122.0200	(3,591,117)	(3,591,117)		(3,591,117)	(3,591,117)	1,249,500	0001	1,000			
TYH9	1,380	138,000,000	US 10Y NOTE FUTURE II /111633	Portfolio Hedge	Schedule BA, D	Interest	03/29/2019	CBOT	1V8Y60CX6YJM20EL1146	11/27/2018	119.0000	122.0200	(4,164,488)	(4,164,488)		(4,164,488)	(4,164,488)	1,449,000	0001	1,000			
1349999999. Subtotal - Short Futures - Hedging Other																4,248,544	4,248,544	35,852,650	XXX	XXX			
1389999999. Subtotal - Short Futures																4,248,544	4,248,544	35,852,650	XXX	XXX			
1399999999. Subtotal - Hedging Effective																			XXX	XXX			
1409999999. Subtotal - Hedging Other																200,720,383	200,720,383		200,720,383	200,720,383	121,043,100	XXX	XXX
1419999999. Subtotal - Replication																					XXX	XXX	
1429999999. Subtotal - Income Generation																					XXX	XXX	
1439999999. Subtotal - Other																					XXX	XXX	
1449999999. Totals																200,720,383	200,720,383		200,720,383	200,720,383	121,043,100	XXX	XXX

E20.6

Broker Name	Beginning Cash Balance	Cumulative Cash Change	Ending Cash Balance
Securities in lieu of cash			

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

Securities in lieu of cash			
Total Net Cash Deposits			

(a)

Code	Description of Hedged Risk(s)

(b)

Code	Financial or Economic Impact of the Hedge at the End of the Reporting Period
0001	Interest rate hedges reduced the portfolio's interest rate risk (duration, convexity, volatility, yield curve)
0003	Equity derivatives hedging portfolio's exposure to equity markets

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESHB	25	1,250	S&P 500 EMINI Futures 11 /102459	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	12/27/2017	2,687.2500	01/02/2018	2,691.7500	Sale	5,440	19,595		0003	50
ESHB	20	1,000	S&P 500 EMINI Futures 11 /102460	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	12/27/2017	2,685.0000	01/04/2018	2,726.0000	Sale	40,852	49,926		0003	50
ESHB	5	250	S&P 500 EMINI Futures 11 /102473	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	12/29/2017	2,684.0000	01/04/2018	2,726.0000	Sale	10,463	12,482		0003	50
ESHB	20	1,000	S&P 500 EMINI Futures 11 /102473	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	12/29/2017	2,684.0000	01/10/2018	2,747.0000	Sale	62,852	70,926		0003	50
ESHB	5	250	S&P 500 EMINI Futures 11 /102474	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	12/29/2017	2,670.0000	01/10/2018	2,747.0000	Sale	19,213	17,732		0003	50
ESHB	20	1,000	S&P 500 EMINI Futures 11 /102474	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	12/29/2017	2,670.0000	01/11/2018	2,768.0000	Sale	97,852	91,926		0003	50
ESHB	25	1,250	S&P 500 EMINI Futures 11 /103371	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	01/30/2018	2,826.0000	01/31/2018	2,836.0000	Sale	12,315	12,315		0003	50
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103403	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	01/31/2018	2,825.0000	01/31/2018	2,833.0000	Sale	11,778	11,778		0003	50
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103404	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	01/31/2018	2,822.7500	01/31/2018	2,831.0000	Sale	12,153	12,153		0003	50
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103405	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	01/31/2018	2,817.7500	01/31/2018	2,831.0000	Sale	13,102	13,102		0003	50
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103413	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/01/2018	2,817.0000	02/01/2018	2,829.2500	Sale	18,042	18,042		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures 11 /103454	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/01/2018	2,819.2500	02/01/2018	2,826.2500	Sale	16,945	16,945		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures 11 /103459	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/01/2018	2,816.5000	02/01/2018	2,825.0000	Sale	20,880	20,880		0003	50
RTYHB	100	5,000	Russell 2000 Index RTY /102746	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	01/18/2018	1,583.4170	02/05/2018	1,537.5920	Sale	(229,865)	(229,865)		0003	50
RTYHB	75	3,750	Russell 2000 Index RTY /103210	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	01/23/2018	1,603.1000	02/05/2018	1,460.0000	Sale	(537,180)	(537,180)		0003	50
RTYHB	25	1,250	Russell 2000 Index RTY /103422	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/01/2018	1,572.7000	02/05/2018	1,460.0000	Sale	(141,060)	(141,060)		0003	50
MFSHB	20	1,000	E-MINI MSCI EAFE /103582	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UJZQ078	02/05/2018	2,013.0000	02/06/2018	2,026.0400	Sale	12,891	12,891		0003	50
RTYHB	50	2,500	Russell 2000 Index RTY /103422	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/01/2018	1,572.7000	02/06/2018	1,490.3600	Sale	(206,221)	(206,221)		0003	50
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103472	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/02/2018	2,801.0000	02/06/2018	2,654.0000	Sale	(220,722)	(220,722)		0003	50
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103519	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/02/2018	2,790.0000	02/06/2018	2,647.8333	Sale	(213,472)	(213,472)		0003	50
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103521	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/02/2018	2,792.0000	02/06/2018	2,680.0000	Sale	(112,148)	(112,148)		0003	50
ESHB	10	500	S&P 500 EMINI Futures 11 /103530	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/02/2018	2,781.0000	02/06/2018	2,680.0000	Sale	(50,574)	(50,574)		0003	50
ESHB	10	500	S&P 500 EMINI Futures 11 /103530	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/02/2018	2,781.0000	02/06/2018	2,693.5000	Sale	(43,824)	(43,824)		0003	50
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103535	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/02/2018	2,773.0000	02/06/2018	2,693.5000	Sale	(79,648)	(79,648)		0003	50
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103538	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/02/2018	2,759.0000	02/07/2018	2,709.0750	Sale	(50,073)	(50,073)		0003	50
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103568	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/05/2018	2,707.0000	02/07/2018	2,709.0750	Sale	2,891	2,891		0003	50
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103572	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/05/2018	2,687.7500	02/07/2018	2,704.0000	Sale	24,153	24,153		0003	50
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103580	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UJZQ078	02/05/2018	2,660.7500	02/07/2018	2,704.0000	Sale	43,102	43,102		0003	50

E21

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESHB	10	500	S&P 500 EMINI Futures 11 /103580	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,660.7500	02/07/2018	2,708.0000	Sale	23,551	23,551		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103585	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,640.0000	02/07/2018	2,708.0000	Sale	67,852	67,852		0003	50	
ESHB	21	1,050	S&P 500 EMINI Futures 11 /103586	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,751.0000	02/07/2018	2,700.3214	Sale	(53,343)	(53,343)		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103587	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,641.8917	02/07/2018	2,703.0000	Sale	91,440	91,440		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /103666	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/08/2018	2,029.4000	02/12/2018	2,023.3750	Sale	(6,174)	(6,174)		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103583	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,621.1583	02/12/2018	2,665.0000	Sale	43,694	43,694		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103585	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,640.0000	02/12/2018	2,655.0000	Sale	14,852	14,852		0003	50	
ESHB	10	500	S&P 500 EMINI Futures 11 /103585	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,640.0000	02/12/2018	2,665.0000	Sale	12,426	12,426		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /103677	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/08/2018	1,999.0000	02/13/2018	2,017.0000	Sale	17,851	17,851		0003	50	
ESHB	10	500	S&P 500 EMINI Futures 11 /103583	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,621.1583	02/13/2018	2,660.0000	Sale	19,347	19,347		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103588	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/06/2018	2,642.0000	02/13/2018	2,660.0000	Sale	26,778	26,778		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103627	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/06/2018	2,638.1750	02/13/2018	2,660.0000	Sale	21,677	21,677		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /103678	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/08/2018	2,002.8250	02/14/2018	2,018.5600	Sale	15,586	15,586		0003	50	
MFSHB	10	500	E-MINI MSCI EAFE /103680	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/08/2018	1,998.2533	02/14/2018	2,029.8067	Sale	15,702	15,702		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /103680	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/08/2018	1,998.2533	02/14/2018	2,030.0000	Sale	31,598	31,598		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /103804	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/13/2018	2,010.0000	02/14/2018	2,029.8067	Sale	19,658	19,658		0003	50	
ESHB	10	500	S&P 500 EMINI Futures 11 /103627	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/06/2018	2,638.1750	02/14/2018	2,641.0417	Sale	1,359	1,359		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103651	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/07/2018	2,690.0000	02/14/2018	2,641.0417	Sale	(49,106)	(49,106)		0003	50	
ESHB	10	500	S&P 500 EMINI Futures 11 /103651	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/07/2018	2,690.0000	02/14/2018	2,650.0000	Sale	(20,074)	(20,074)		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103655	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/07/2018	2,685.0000	02/14/2018	2,650.0000	Sale	(35,148)	(35,148)		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103655	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/07/2018	2,685.0000	02/14/2018	2,673.0000	Sale	(18,222)	(18,222)		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103658	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/07/2018	2,690.0000	02/14/2018	2,680.0000	Sale	(15,222)	(15,222)		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103659	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/07/2018	2,677.5000	02/14/2018	2,692.5000	Sale	22,278	22,278		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103659	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/07/2018	2,677.5000	02/14/2018	2,699.0000	Sale	21,352	21,352		0003	50	
ESHB	10	500	S&P 500 EMINI Futures 11 /103668	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/08/2018	2,648.0000	02/14/2018	2,699.0000	Sale	25,426	25,426		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103668	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/08/2018	2,648.0000	02/14/2018	2,699.5000	Sale	51,352	51,352		0003	50	
ESHB	10	500	S&P 500 EMINI Futures 11 /103684	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/08/2018	2,592.7500	02/14/2018	2,699.5000	Sale	53,301	53,301		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103684	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/08/2018	2,592.7500	02/15/2018	2,710.0000	Sale	117,102	117,102		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103803	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/13/2018	2,640.0000	02/15/2018	2,705.0000	Sale	64,852	64,852		0003	50	
ESHB	10	500	S&P 500 EMINI Futures 11 /103803	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/13/2018	2,640.0000	02/15/2018	2,710.0000	Sale	34,926	34,926		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103839	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/14/2018	2,634.0000	02/15/2018	2,705.0000	Sale	106,278	106,278		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /103885	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/15/2018	2,691.2700	02/15/2018	2,714.5000	Sale	34,512	34,512		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /103885	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/15/2018	2,691.2700	02/16/2018	2,747.5000	Sale	56,082	56,082		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures 11 /104007	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/20/2018	2,714.2500	02/21/2018	2,734.2500	Sale	24,815	24,815		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /104114	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/21/2018	2,709.5000	02/22/2018	2,722.0000	Sale	18,528	18,528		0003	50	
ESHB	20	1,000	S&P 500 EMINI Futures 11 /104154	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/22/2018	2,685.0000	02/22/2018	2,722.0000	Sale	36,778	36,778		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /104154	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/22/2018	2,685.0000	02/23/2018	2,723.0000	Sale	56,778	56,778		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /104169	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/22/2018	2,709.7500	02/23/2018	2,739.5000	Sale	44,403	44,403		0003	50	
RTYH	100	5,000	Russell 2000 Index RTY /103676	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/08/2018	1,481.7247	03/01/2018	1,502.9930	Sale	105,601	105,601		0003	50	
MESHB	25	1,250	MSCI EMERGING MARKETS /104335	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	ICE	03/05/2018	1,181.2920	03/05/2018	1,184.8000	Sale	4,199	4,199		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures 11 /104268	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/28/2018	2,725.0000	03/05/2018	2,715.0000	Sale	(12,685)	(12,685)		0003	50	
ESHB	50	2,500	S&P 500 EMINI Futures 11 /104269	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/28/2018	2,714.2500	03/05/2018	2,720.0000	Sale	14,005	14,005		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures 11 /104288	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	03/01/2018	2,709.2500	03/05/2018	2,721.0000	Sale	14,503	14,503		0003	50	
MFSHB	25	1,250	E-MINI MSCI EAFE /104099	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/21/2018	2,056.9720	03/06/2018	2,037.0000	Sale	(25,151)	(25,151)		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /104263	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/28/2018	2,052.7250	03/06/2018	2,040.0000	Sale	(12,874)	(12,874)		0003	50	
ESHB	5	250	S&P 500 EMINI Futures 11 /104288	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	03/01/2018	2,709.2500	03/06/2018	2,725.0000	Sale	3,901	3,901		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures 11 /104290	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	03/01/2018	2,681.0000	03/06/2018	2,725.0000	Sale	54,815	54,815		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /104267	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/28/2018	2,048.0000	03/07/2018	2,035.0000	Sale	(13,149)	(13,149)		0003	50	
ESHB	5	250	S&P 500 EMINI Futures 11 /104290	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	03/01/2018	2,681.0000	03/07/2018	2,715.0000	Sale	8,463	8,463		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures 11 /104339	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	03/05/2018	2,710.0000	03/07/2018	2,715.0000	Sale	6,065	6,065		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /104355	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	03/06/2018	2,713.0000	03/07/2018	2,723.0000	Sale	14,778	14,778		0003	50	
ESHB	30	1,500	S&P 500 EMINI Futures 11 /104378	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	03/07/2018	2,690.0000	03/07/2018	2,730.0000	Sale	59,778	59,778		0003	50	
MFSHB	4	200	E-MINI MSCI EAFE /104270	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	02/28/2018	2,038.8500	03/08/2018	2,040.0000	Sale	200	200		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /104283	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/01/2018	2,016.5300	03/08/2018	2,040.0000	Sale	23,321	23,321		0003	50	
MFSHB	1	50	E-MINI MSCI EAFE /104287	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/01/2018	2,020.0000	03/08/2018	2,040.0000	Sale	993	993		0003	50	
MFSHB	20	1,000	E-MINI MSCI EAFE /104287	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/01/2018	2,020.0000	03/08/2018	2,043.0000	Sale	22,851	22,851		0003	50	
MFSHB	5	250	E-MINI MSCI EAFE /104299	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/02/2018	1,994.5000	03/08/2018	2,043.0000	Sale	12,088	12,088		0003	50	
NQHB	15	300	NASDAQ 100 EMINI Futures 11 /103828	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	6,799.4500	03/08/2018	6,924.5000	Sale	37,410	37,410		0003	20	
NQHB	60	1,200	NASDAQ 100 EMINI Futures 11 /104209	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/26/2018	6,961.2197	03/08/2018	6,924.5000	Sale	(44,485)	(44,485)		0003	20	

E21.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESHB	.87	4,350	S&P 500 EMINI Futures II /103588	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	02/05/2018	2,751.1293	03/08/2018	2,723.3000	Sale	(121,668)	(121,668)		0003	.50	
MFSHB	.20	1,000	E-MINI MSCI EAFE /104299	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/02/2018	1,994.5000	03/09/2018	2,047.2200	Sale	52,571	52,571		0003	.50	
MFSHB	.5	250	E-MINI MSCI EAFE /104301	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/02/2018	1,992.0000	03/09/2018	2,047.2200	Sale	13,768	13,768		0003	.50	
MFSHB	.20	1,000	E-MINI MSCI EAFE /104301	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/02/2018	1,992.0000	03/09/2018	2,050.0000	Sale	57,851	57,851		0003	.50	
MFSHB	.5	250	E-MINI MSCI EAFE /104379	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/07/2018	2,027.4000	03/09/2018	2,050.0000	Sale	5,613	5,613		0003	.50	
MFSHB	.25	1,250	E-MINI MSCI EAFE /104379	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	03/07/2018	2,027.4000	03/09/2018	2,053.0000	Sale	31,814	31,814		0003	.50	
RTYHB	.50	2,500	Russell 2000 Index RTY /103676	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/08/2018	1,481.7247	03/09/2018	1,582.2400	Sale	250,918	250,918		0003	.50	
RTYHB	.50	2,500	Russell 2000 Index RTY /103802	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/12/2018	1,492.4333	03/09/2018	1,582.2400	Sale	224,147	224,147		0003	.50	
RTYHB	.100	5,000	Russell 2000 Index RTY /103802	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/12/2018	1,492.4333	03/12/2018	1,600.3750	Sale	538,968	538,968		0003	.50	
RTYHB	.100	5,000	Russell 2000 Index RTY /103920	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/16/2018	1,539.0000	03/12/2018	1,604.0570	Sale	324,545	324,545		0003	.50	
ESMB	.30	1,500	S&P 500 EMINI Futures II /104587	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/13/2018	2,777.7500	03/14/2018	2,780.0000	Sale	3,153	3,153		0003	.50	
MFSMB	.20	1,000	E-MINI MSCI EAFE /104592	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/13/2018	2,023.0000	03/16/2018	2,025.6000	Sale	2,451	2,451		0003	.50	
MFSMB	.8	400	E-MINI MSCI EAFE /104592	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/13/2018	2,023.0000	03/16/2018	2,026.0000	Sale	1,140	1,140		0003	.50	
NQMB	.75	1,500	NASDAQ 100 EMINI Futures II /104433	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/08/2018	6,950.8500	03/19/2018	6,853.3673	Sale	(146,751)	(146,751)		0003	.20	
ESMB	.87	4,350	S&P 500 EMINI Futures II /104450	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/08/2018	2,728.3000	03/19/2018	2,715.5000	Sale	(56,291)	(56,291)		0003	.50	
MESMB	.25	1,250	MSCI EMERGING MARKETS /104639	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/14/2018	1,218.3900	03/20/2018	1,209.9000	Sale	(10,799)	(10,799)		0003	.50	
MESMB	.5	250	MSCI EMERGING MARKETS /104639	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/14/2018	1,218.3900	03/20/2018	1,211.0000	Sale	(1,885)	(1,885)		0003	.50	
MESMB	.20	1,000	MSCI EMERGING MARKETS /104719	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/19/2018	1,195.3000	03/20/2018	1,211.0000	Sale	15,551	15,551		0003	.50	
MESMB	.5	250	MSCI EMERGING MARKETS /104719	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/19/2018	1,195.3000	03/20/2018	1,211.7000	Sale	4,063	4,063		0003	.50	
MESMB	.25	1,250	MSCI EMERGING MARKETS /104742	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/19/2018	1,196.3000	03/20/2018	1,211.7000	Sale	19,064	19,064		0003	.50	
ESMB	.25	1,250	S&P 500 EMINI Futures II /104595	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/13/2018	2,767.0000	03/26/2018	2,635.0000	Sale	(165,185)	(165,185)		0003	.50	
ESMB	.5	250	S&P 500 EMINI Futures II /104595	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/13/2018	2,767.0000	03/28/2018	2,630.0000	Sale	(34,287)	(34,287)		0003	.50	
ESMB	.25	1,250	S&P 500 EMINI Futures II /104621	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/14/2018	2,769.2500	03/28/2018	2,630.0000	Sale	(174,248)	(174,248)		0003	.50	
ESMB	.5	250	S&P 500 EMINI Futures II /104621	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/14/2018	2,769.2500	03/29/2018	2,638.0000	Sale	(32,850)	(32,850)		0003	.50	
ESMB	.20	1,000	S&P 500 EMINI Futures II /104629	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/14/2018	2,756.2500	03/29/2018	2,638.0000	Sale	(118,398)	(118,398)		0003	.50	
ESMB	.10	500	S&P 500 EMINI Futures II /104629	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/14/2018	2,756.2500	03/29/2018	2,642.0000	Sale	(57,199)	(57,199)		0003	.50	
ESMB	.15	750	S&P 500 EMINI Futures II /104714	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/19/2018	2,726.0000	03/29/2018	2,642.0000	Sale	(63,111)	(63,111)		0003	.50	
ESMB	.10	500	S&P 500 EMINI Futures II /104714	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/19/2018	2,726.0000	03/29/2018	2,655.0000	Sale	(35,574)	(35,574)		0003	.50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESMB	15	750	S&P 500 EMINI Futures 11 /104871	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/22/2018	2,646.7500	03/29/2018	2,655.0000	Sale	6,077	6,077		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /104871	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/22/2018	2,646.7500	04/04/2018	2,645.0000	Sale	(1,424)	(1,424)		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /104904	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/23/2018	2,639.2500	04/04/2018	2,645.0000	Sale	2,801	2,801		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /104904	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/23/2018	2,639.2500	04/05/2018	2,670.0000	Sale	30,602	30,602		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /104906	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/23/2018	2,633.5000	04/05/2018	2,670.0000	Sale	36,352	36,352		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /104908	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/23/2018	2,621.7500	04/05/2018	2,670.0000	Sale	36,077	36,077		0003	50	
MFSMB	2	100	E-MINI MSCI EAFE /104592	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/13/2018	2,023.0000	04/09/2018	2,016.0000	Sale	(715)	(715)		0003	50	
MFSMB	15	750	E-MINI MSCI EAFE /104640	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/14/2018	2,025.0000	04/09/2018	2,016.0000	Sale	(6,862)	(6,862)		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /104908	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/23/2018	2,621.7500	04/09/2018	2,634.7500	Sale	3,213	3,213		0003	50	
ESMB	25	1,250	S&P 500 EMINI Futures 11 /104916	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/26/2018	2,610.0000	04/09/2018	2,634.7500	Sale	30,753	30,753		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /105049	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/28/2018	2,605.2500	04/09/2018	2,640.0000	Sale	51,903	51,903		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /105052	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/28/2018	2,621.3450	04/09/2018	2,653.0000	Sale	47,261	47,261		0003	50	
MFSMB	15	750	E-MINI MSCI EAFE /104640	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/14/2018	2,025.0000	04/10/2018	2,026.4000	Sale	938	938		0003	50	
MFSMB	5	250	E-MINI MSCI EAFE /104721	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/19/2018	2,004.3000	04/10/2018	2,026.4000	Sale	5,488	5,488		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /105052	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/28/2018	2,621.3450	04/10/2018	2,636.0000	Sale	14,507	14,507		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /105094	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/02/2018	2,632.7500	04/10/2018	2,636.0000	Sale	1,551	1,551		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105094	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/02/2018	2,632.7500	04/10/2018	2,643.0000	Sale	7,577	7,577		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105187	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/05/2018	2,645.0000	04/10/2018	2,643.0000	Sale	(1,611)	(1,611)		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105187	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/05/2018	2,645.0000	04/10/2018	2,647.0000	Sale	1,389	1,389		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105188	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/06/2018	2,639.0000	04/10/2018	2,647.0000	Sale	5,889	5,889		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105188	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/06/2018	2,639.0000	04/10/2018	2,657.0000	Sale	4,463	4,463		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105240	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/06/2018	2,612.2500	04/10/2018	2,647.9833	Sale	8,896	8,896		0003	50	
ESMB	25	1,250	S&P 500 EMINI Futures 11 /105240	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/06/2018	2,612.2500	04/10/2018	2,657.0000	Sale	55,753	55,753		0003	50	
ESMB	25	1,250	S&P 500 EMINI Futures 11 /105277	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/09/2018	2,630.0000	04/10/2018	2,647.9833	Sale	22,294	22,294		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105277	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/09/2018	2,630.0000	04/11/2018	2,645.0000	Sale	3,713	3,713		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /105278	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/09/2018	2,625.0000	04/11/2018	2,645.0000	Sale	29,778	29,778		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105279	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/09/2018	2,620.0000	04/11/2018	2,645.0000	Sale	18,639	18,639		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105279	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/09/2018	2,620.0000	04/11/2018	2,655.0000	Sale	26,139	26,139		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105331	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/11/2018	2,632.0000	04/11/2018	2,655.0000	Sale	17,084	17,084		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105331	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/11/2018	2,632.0000	04/12/2018	2,660.0000	Sale	20,889	20,889		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESMB	15	750	S&P 500 EMINI Futures 11 /105332	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/11/2018	2,632.0000	04/12/2018	2,660.0000	Sale	20,889	20,889		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /104721	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/19/2018	2,004.3000	04/16/2018	2,034.0500	Sale	14,801	14,801		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /105332	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/11/2018	2,632.0000	04/16/2018	2,682.5000	Sale	50,352	50,352		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /104721	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/19/2018	2,004.3000	04/17/2018	2,040.4000	Sale	17,976	17,976		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /104869	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/22/2018	1,979.7850	04/17/2018	2,045.0000	Sale	32,533	32,533		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105332	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/11/2018	2,632.0000	04/17/2018	2,696.0000	Sale	47,889	47,889		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105377	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/11/2018	2,639.0000	04/17/2018	2,696.0000	Sale	14,213	14,213		0003	50	
ESMB	25	1,250	S&P 500 EMINI Futures 11 /105377	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/11/2018	2,639.0000	04/17/2018	2,708.0000	Sale	86,065	86,065		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /104869	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/22/2018	1,979.7850	04/18/2018	2,054.9500	Sale	37,508	37,508		0003	50	
ESMB	25	1,250	S&P 500 EMINI Futures 11 /105597	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/19/2018	2,691.2500	04/23/2018	2,673.0000	Sale	(22,998)	(22,998)		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /105607	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/20/2018	2,680.7500	04/26/2018	2,661.0000	Sale	(19,898)	(19,898)		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105620	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/20/2018	2,670.0000	04/26/2018	2,661.0000	Sale	(2,287)	(2,287)		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105620	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/20/2018	2,670.0000	04/26/2018	2,665.0000	Sale	(3,861)	(3,861)		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105623	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/20/2018	2,668.5000	04/26/2018	2,665.0000	Sale	(2,736)	(2,736)		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105623	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/20/2018	2,668.5000	04/26/2018	2,673.0000	Sale	1,088	1,088		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /105626	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/20/2018	2,660.0000	04/26/2018	2,673.0000	Sale	12,852	12,852		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /105626	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/20/2018	2,660.0000	04/27/2018	2,669.0000	Sale	4,426	4,426		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105637	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/23/2018	2,660.0000	04/27/2018	2,669.0000	Sale	6,639	6,639		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /105637	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/23/2018	2,660.0000	04/30/2018	2,678.0000	Sale	8,926	8,926		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105657	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/24/2018	2,658.0000	04/30/2018	2,678.0000	Sale	14,889	14,889		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105657	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/24/2018	2,658.0000	05/01/2018	2,650.0000	Sale	(6,111)	(6,111)		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105659	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/24/2018	2,635.5000	05/01/2018	2,650.0000	Sale	10,764	10,764		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105659	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/24/2018	2,635.5000	05/02/2018	2,657.5000	Sale	16,389	16,389		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /105660	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/24/2018	2,625.7500	05/02/2018	2,657.5000	Sale	47,403	47,403		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105882	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/30/2018	2,663.5000	05/02/2018	2,657.5000	Sale	(1,537)	(1,537)		0003	50	
ESMB	25	1,250	S&P 500 EMINI Futures 11 /105881	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/30/2018	2,661.0000	05/04/2018	2,659.0000	Sale	(2,685)	(2,685)		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /105882	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/30/2018	2,663.5000	05/04/2018	2,655.0000	Sale	(8,648)	(8,648)		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105883	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/30/2018	2,665.0000	05/04/2018	2,655.0000	Sale	(2,537)	(2,537)		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /105883	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/30/2018	2,665.0000	05/04/2018	2,659.0000	Sale	(6,148)	(6,148)		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105890	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/01/2018	2,638.0000	05/04/2018	2,659.0000	Sale	5,213	5,213		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESMB	25	1,250	S&P 500 EMINI Futures 11 /105890	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/01/2018	2,638.0000	05/04/2018	2,667.7500	Sale	37,003	37,003		0003	50	
ESMB	5	250	S&P 500 EMINI Futures 11 /105891	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/01/2018	2,636.0000	05/04/2018	2,667.7500	Sale	7,901	7,901		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /105891	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/01/2018	2,636.0000	05/08/2018	2,667.0000	Sale	30,852	30,852		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /105916	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/02/2018	2,650.0000	05/08/2018	2,667.0000	Sale	8,426	8,426		0003	50	
ESMB	25	1,250	S&P 500 EMINI Futures 11 /105916	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/02/2018	2,650.0000	05/08/2018	2,669.0000	Sale	23,565	23,565		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /105624	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	04/20/2018	2,036.0000	05/09/2018	2,039.0000	Sale	1,426	1,426		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105916	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/02/2018	2,650.0000	05/09/2018	2,678.0000	Sale	20,889	20,889		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /105918	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/02/2018	2,630.0000	05/09/2018	2,678.0000	Sale	35,889	35,889		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /105918	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/02/2018	2,630.0000	05/09/2018	2,691.5000	Sale	30,676	30,676		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /106054	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/08/2018	2,661.0000	05/09/2018	2,691.5000	Sale	22,764	22,764		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /105624	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	04/20/2018	2,036.0000	05/10/2018	2,042.0000	Sale	2,926	2,926		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /105636	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	04/23/2018	2,030.0000	05/10/2018	2,047.0000	Sale	8,426	8,426		0003	50	
MFSMB	20	1,000	E-MINI MSCI EAFE /105658	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	04/24/2018	2,034.0000	05/10/2018	2,050.0000	Sale	15,851	15,851		0003	50	
MESMB	20	1,000	MSCI EMERGING MARKETS /104864	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/22/2018	1,188.5000	05/10/2018	1,160.0000	Sale	(28,649)	(28,649)		0003	50	
MESMB	10	500	MSCI EMERGING MARKETS /104864	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/22/2018	1,188.5000	05/10/2018	1,166.0000	Sale	(11,324)	(11,324)		0003	50	
MESMB	10	500	MSCI EMERGING MARKETS /105625	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	04/20/2018	1,156.9000	05/10/2018	1,166.0000	Sale	4,476	4,476		0003	50	
ESMB	15	750	S&P 500 EMINI Futures 11 /106054	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/08/2018	2,661.0000	05/10/2018	2,708.0000	Sale	35,139	35,139		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /106056	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/08/2018	2,660.0000	05/10/2018	2,708.0000	Sale	23,926	23,926		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106056	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/08/2018	2,660.0000	05/10/2018	2,712.0000	Sale	51,852	51,852		0003	50	
MESMB	20	1,000	MSCI EMERGING MARKETS /105625	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	04/20/2018	1,156.9000	05/14/2018	1,170.2300	Sale	13,181	13,181		0003	50	
MFSMB	20	1,000	E-MINI MSCI EAFE /106266	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/15/2018	2,040.0000	05/16/2018	2,045.9800	Sale	5,831	5,831		0003	50	
MESMB	20	1,000	MSCI EMERGING MARKETS /105662	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	04/24/2018	1,143.0000	05/16/2018	1,153.7050	Sale	10,556	10,556		0003	50	
MESMB	20	1,000	MSCI EMERGING MARKETS /105889	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/01/2018	1,142.3000	05/16/2018	1,155.2350	Sale	12,786	12,786		0003	50	
MESMB	20	1,000	MSCI EMERGING MARKETS /105892	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/01/2018	1,144.3000	05/16/2018	1,158.0000	Sale	13,551	13,551		0003	50	
MESMB	20	1,000	MSCI EMERGING MARKETS /106250	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/15/2018	1,144.1850	05/16/2018	1,160.0000	Sale	15,666	15,666		0003	50	
MESMB	10	500	MSCI EMERGING MARKETS /106252	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/15/2018	1,139.4000	05/16/2018	1,160.0000	Sale	10,226	10,226		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /106251	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/15/2018	2,711.2500	05/16/2018	2,721.0000	Sale	14,403	14,403		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106251	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/15/2018	2,711.2500	05/16/2018	2,728.0000	Sale	16,602	16,602		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /106261	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/15/2018	2,701.0000	05/16/2018	2,728.0000	Sale	13,426	13,426		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106261	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/15/2018	2,701.0000	05/17/2018	2,721.5000	Sale	20,352	20,352		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESMB	5	250	S&P 500 EMINI Futures 11 /106281	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/17/2018	2,714.7500	05/17/2018	2,721.5000	Sale	1,632	1,632		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106281	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/17/2018	2,714.7500	05/17/2018	2,724.7500	Sale	9,778	9,778		0003	50	
ESMB	50	2,500	S&P 500 EMINI Futures 11 /106295	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/17/2018	2,713.0000	05/17/2018	2,722.5000	Sale	23,380	23,380		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /106355	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/18/2018	2,040.6400	05/21/2018	2,048.0000	Sale	3,606	3,606		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /106352	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/18/2018	2,709.2500	05/21/2018	2,730.0000	Sale	30,903	30,903		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106352	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/18/2018	2,709.2500	05/21/2018	2,734.2500	Sale	24,852	24,852		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /106441	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/23/2018	2,710.0000	05/23/2018	2,720.0000	Sale	14,778	14,778		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106443	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/23/2018	2,708.0000	05/23/2018	2,720.0000	Sale	11,778	11,778		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /106443	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/23/2018	2,708.0000	05/24/2018	2,725.0000	Sale	25,278	25,278		0003	50	
ESMB	50	2,500	S&P 500 EMINI Futures 11 /106448	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/23/2018	2,711.5000	05/24/2018	2,726.7500	Sale	37,755	37,755		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106528	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/24/2018	2,715.7500	05/30/2018	2,705.0000	Sale	(10,898)	(10,898)		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106528	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/24/2018	2,715.7500	05/30/2018	2,710.0000	Sale	(5,898)	(5,898)		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /106528	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/24/2018	2,715.7500	05/30/2018	2,716.0000	Sale	51	51		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /106573	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/25/2018	2,715.5000	05/30/2018	2,716.0000	Sale	176	176		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /106573	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/25/2018	2,715.5000	05/30/2018	2,723.0000	Sale	11,028	11,028		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /106573	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/25/2018	2,715.5000	06/01/2018	2,728.5000	Sale	6,426	6,426		0003	50	
ESMB	40	2,000	S&P 500 EMINI Futures 11 /106599	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/29/2018	2,682.2500	06/01/2018	2,728.5000	Sale	92,204	92,204		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /106599	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/29/2018	2,682.2500	06/01/2018	2,734.0000	Sale	25,801	25,801		0003	50	
ESMB	20	1,000	S&P 500 EMINI Futures 11 /106647	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/31/2018	2,711.0000	06/01/2018	2,734.0000	Sale	22,852	22,852		0003	50	
MFSMB	20	1,000	E-MINI MSCI EAFE /106442	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/23/2018	2,024.0000	06/04/2018	2,016.5000	Sale	(7,649)	(7,649)		0003	50	
MESMB	10	500	MSCI EMERGING MARKETS /106252	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/15/2018	1,139.4000	06/04/2018	1,147.8000	Sale	4,126	4,126		0003	50	
MESMB	10	500	MSCI EMERGING MARKETS /106253	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/15/2018	1,137.9000	06/04/2018	1,147.8000	Sale	4,876	4,876		0003	50	
ESMB	10	500	S&P 500 EMINI Futures 11 /106647	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/31/2018	2,711.0000	06/04/2018	2,743.0000	Sale	15,926	15,926		0003	50	
ESMB	30	1,500	S&P 500 EMINI Futures 11 /106697	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	05/31/2018	2,700.0000	06/04/2018	2,743.0000	Sale	64,278	64,278		0003	50	
RTYMB	20	1,000	Russell 2000 Index RTY /104890	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/23/2018	1,539.0000	06/05/2018	1,654.5000	Sale	115,360	115,360		0003	50	
MFSMB	20	1,000	E-MINI MSCI EAFE /106447	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/23/2018	2,021.0000	06/06/2018	2,020.0000	Sale	(1,149)	(1,149)		0003	50	
MESMB	10	500	MSCI EMERGING MARKETS /106253	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/15/2018	1,137.9000	06/06/2018	1,146.8400	Sale	4,396	4,396		0003	50	
MESMB	20	1,000	MSCI EMERGING MARKETS /106267	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/15/2018	1,137.0000	06/06/2018	1,146.8400	Sale	9,691	9,691		0003	50	
RTYMB	20	1,000	Russell 2000 Index RTY /104890	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/23/2018	1,539.0000	06/06/2018	1,666.1000	Sale	126,960	126,960		0003	50	

E21.7

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
MFSM8	20	1,000	E-MINI MSCI EAFE /106542	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/24/2018	2,013.5000	06/07/2018	2,011.9000	Sale	(1,749)	(1,749)		0003	50	
MFSM8	20	1,000	E-MINI MSCI EAFE /106574	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/25/2018	2,006.4850	06/07/2018	2,011.9000	Sale	5,266	5,266		0003	50	
MFSM8	20	1,000	E-MINI MSCI EAFE /106603	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/29/2018	1,964.2100	06/07/2018	2,011.9000	Sale	47,541	47,541		0003	50	
MESM8	20	1,000	MSCI EMERGING MARKETS /106279	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/17/2018	1,143.0000	06/07/2018	1,138.9000	Sale	(4,249)	(4,249)		0003	50	
MESM8	30	1,500	MSCI EMERGING MARKETS /106280	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/17/2018	1,144.0000	06/07/2018	1,138.9000	Sale	(7,873)	(7,873)		0003	50	
MESM8	20	1,000	MSCI EMERGING MARKETS /106294	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/17/2018	1,140.0000	06/07/2018	1,138.9000	Sale	(1,249)	(1,249)		0003	50	
MESM8	20	1,000	MSCI EMERGING MARKETS /106296	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	05/17/2018	1,139.0000	06/07/2018	1,138.9000	Sale	(249)	(249)		0003	50	
RTYM8	30	1,500	Russell 2000 Index RTY /104890	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/23/2018	1,539.0000	06/07/2018	1,678.3000	Sale	208,739	208,739		0003	50	
ESM8	33	1,650	S&P 500 EMINI Futures /105888	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	04/30/2018	2,659.7500	06/07/2018	2,772.2000	Sale	185,311	185,311		0003	50	
MFSUB	30	1,500	E-MINI MSCI EAFE /106955	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	06/07/2018	2,014.8000	06/11/2018	2,033.7833	Sale	28,252	28,252		0003	50	
RTYM8	5	250	Russell 2000 Index RTY /104890	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/23/2018	1,539.0000	06/11/2018	1,671.1000	Sale	32,990	32,990		0003	50	
RTYM8	15	750	Russell 2000 Index RTY /105887	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	04/30/2018	1,546.2800	06/11/2018	1,671.1000	Sale	93,510	93,510		0003	50	
RTYM8	60	3,000	Russell 2000 Index RTY /105887	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	04/30/2018	1,546.2800	06/12/2018	1,676.4000	Sale	389,939	389,939		0003	50	
RTYM8	55	2,750	Russell 2000 Index RTY /106934	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	06/07/2018	1,671.3291	06/12/2018	1,676.4000	Sale	13,559	13,559		0003	50	
ESUB	30	1,500	S&P 500 EMINI Futures /107200	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/13/2018	2,781.0000	06/14/2018	2,793.0000	Sale	17,778	17,778		0003	50	
ESUB	30	1,500	S&P 500 EMINI Futures /107232	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/15/2018	2,772.0000	06/15/2018	2,785.0000	Sale	19,278	19,278		0003	50	
ESUB	30	1,500	S&P 500 EMINI Futures /107233	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/15/2018	2,775.5000	06/15/2018	2,785.0000	Sale	14,028	14,028		0003	50	
ESUB	25	1,250	S&P 500 EMINI Futures /107285	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/18/2018	2,767.2500	06/18/2018	2,778.7500	Sale	14,098	14,098		0003	50	
ESUB	33	1,650	S&P 500 EMINI Futures /106938	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/07/2018	2,776.0500	06/25/2018	2,709.0000	Sale	(110,864)	(110,864)		0003	50	
RTYUB	20	1,000	Russell 2000 Index RTY /106772	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/05/2018	1,659.7000	06/26/2018	1,668.2073	Sale	8,367	8,367		0003	50	
RTYUB	20	1,000	Russell 2000 Index RTY /106783	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/06/2018	1,671.1000	06/26/2018	1,668.2073	Sale	(3,033)	(3,033)		0003	50	
RTYUB	15	750	Russell 2000 Index RTY /106946	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/07/2018	1,683.0500	06/26/2018	1,668.2073	Sale	(11,237)	(11,237)		0003	50	
ESUB	25	1,250	S&P 500 EMINI Futures /107285	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/18/2018	2,767.2500	06/27/2018	2,740.0000	Sale	(34,248)	(34,248)		0003	50	
ESUB	5	250	S&P 500 EMINI Futures /107295	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/19/2018	2,768.0000	06/27/2018	2,740.0000	Sale	(7,037)	(7,037)		0003	50	
ESUB	20	1,000	S&P 500 EMINI Futures /107295	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/19/2018	2,768.0000	06/28/2018	2,722.0000	Sale	(46,148)	(46,148)		0003	50	
ESUB	10	500	S&P 500 EMINI Futures /107453	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/25/2018	2,720.0000	06/28/2018	2,722.0000	Sale	926	926		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESUB	30	1,500	S&P 500 EMINI Futures 11 /107453	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/25/2018	2,720.0000	06/29/2018	2,735.0000	Sale	22,278	22,278		0003	50	
ESUB	10	500	S&P 500 EMINI Futures 11 /107453	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/25/2018	2,720.0000	06/29/2018	2,740.0000	Sale	9,926	9,926		0003	50	
ESUB	20	1,000	S&P 500 EMINI Futures 11 /107463	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/25/2018	2,707.0000	06/29/2018	2,740.0000	Sale	32,852	32,852		0003	50	
ESUB	10	500	S&P 500 EMINI Futures 11 /107463	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/25/2018	2,707.0000	07/03/2018	2,739.0000	Sale	15,926	15,926		0003	50	
ESUB	30	1,500	S&P 500 EMINI Futures 11 /107510	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/26/2018	2,722.2500	07/03/2018	2,739.0000	Sale	24,903	24,903		0003	50	
ESUB	10	500	S&P 500 EMINI Futures 11 /10752	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/27/2018	2,704.2500	07/03/2018	2,739.0000	Sale	17,301	17,301		0003	50	
ESUB	20	1,000	S&P 500 EMINI Futures 11 /10752	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/27/2018	2,704.2500	07/05/2018	2,735.0000	Sale	30,602	30,602		0003	50	
ESUB	30	1,500	S&P 500 EMINI Futures 11 /107684	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/29/2018	2,727.2500	07/05/2018	2,735.0000	Sale	11,403	11,403		0003	50	
ESUB	20	1,000	S&P 500 EMINI Futures 11 /107684	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/29/2018	2,727.2500	07/05/2018	2,736.0000	Sale	8,602	8,602		0003	50	
ESUB	30	1,500	S&P 500 EMINI Futures 11 /107783	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	07/03/2018	2,720.7500	07/05/2018	2,736.0000	Sale	22,653	22,653		0003	50	
ESUB	20	1,000	S&P 500 EMINI Futures 11 /107783	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	07/03/2018	2,720.7500	07/09/2018	2,776.0000	Sale	55,102	55,102		0003	50	
ESUB	10	500	S&P 500 EMINI Futures 11 /107820	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	07/05/2018	2,723.0000	07/09/2018	2,776.0000	Sale	26,426	26,426		0003	50	
ESUB	20	1,000	S&P 500 EMINI Futures 11 /107820	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	07/05/2018	2,723.0000	07/09/2018	2,783.5000	Sale	60,352	60,352		0003	50	
ESUB	20	1,000	S&P 500 EMINI Futures 11 /107820	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	07/05/2018	2,723.0000	07/10/2018	2,794.2500	Sale	71,102	71,102		0003	50	
ESUB	50	2,500	S&P 500 EMINI Futures 11 /108004	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	07/11/2018	2,776.5000	07/12/2018	2,790.5000	Sale	34,630	34,630		0003	50	
MFSUB	20	1,000	E-MINI MSCI EAFE /106955	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	06/07/2018	2,014.8000	07/24/2018	2,000.0000	Sale	(14,949)	(14,949)		0003	50	
MFSUB	10	500	E-MINI MSCI EAFE /106955	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	06/07/2018	2,014.8000	07/25/2018	2,010.3467	Sale	(2,301)	(2,301)		0003	50	
MFSUB	20	1,000	E-MINI MSCI EAFE /107300	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	06/19/2018	1,958.7000	07/25/2018	2,010.3467	Sale	51,498	51,498		0003	50	
MFSUB	18	900	E-MINI MSCI EAFE /108706	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	08/10/2018	1,946.5000	08/20/2018	1,943.2000	Sale	(3,104)	(3,104)		0003	50	
MFSUB	12	600	E-MINI MSCI EAFE /108706	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	08/10/2018	1,946.5000	08/21/2018	1,953.0000	Sale	3,811	3,811		0003	50	
MFSUB	8	400	E-MINI MSCI EAFE /108710	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	08/10/2018	1,942.0000	08/21/2018	1,953.0000	Sale	4,340	4,340		0003	50	
MFSUB	17	850	E-MINI MSCI EAFE /108710	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	08/10/2018	1,942.0000	08/21/2018	1,953.9000	Sale	9,989	9,989		0003	50	
MFSUB	5	250	E-MINI MSCI EAFE /108759	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	08/14/2018	1,933.4400	08/21/2018	1,953.9000	Sale	5,078	5,078		0003	50	
MFSUB	20	1,000	E-MINI MSCI EAFE /108759	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	08/14/2018	1,933.4400	08/24/2018	1,961.8000	Sale	28,211	28,211		0003	50	
MFSUB	20	1,000	E-MINI MSCI EAFE /108780	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	08/15/2018	1,900.6900	08/27/2018	1,982.1700	Sale	81,331	81,331		0003	50	
RTYUB	15	750	Russell 2000 Index RTY /106946	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/07/2018	1,683.0500	09/10/2018	1,716.3187	Sale	24,846	24,846		0003	50	
RTYUB	20	1,000	Russell 2000 Index RTY /107136	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	1,676.3500	09/10/2018	1,716.3187	Sale	39,828	39,828		0003	50	
RTYUB	40	2,000	Russell 2000 Index RTY /107160	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/12/2018	1,681.8500	09/10/2018	1,716.3187	Sale	68,656	68,656		0003	50	

E21.9

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
MFSUB	25	1,250	E-MINI MSCI EAFE /109234	Portfolio Hedge	ScheduleD	Equity/Index	09/21/2018	ICE	09/04/2018	1,938.9667	09/13/2018	1,942.0000	Sale	3,606	3,606		0003	50	
MFSUB	5	250	E-MINI MSCI EAFE /109234	Portfolio Hedge	ScheduleD	Equity/Index	09/21/2018	ICE	09/04/2018	1,938.9667	09/14/2018	1,948.0000	Sale	2,221	2,221		0003	50	
MFSUB	10	500	E-MINI MSCI EAFE /109241	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	09/05/2018	1,918.6033	09/14/2018	1,938.1000	Sale	9,674	9,674		0003	50	
MFSUB	20	1,000	E-MINI MSCI EAFE /109241	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	09/05/2018	1,918.6033	09/14/2018	1,948.0000	Sale	29,248	29,248		0003	50	
MFSUB	20	1,000	E-MINI MSCI EAFE /109300	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	09/06/2018	1,911.0000	09/14/2018	1,938.1000	Sale	26,951	26,951		0003	50	
RTYUB	20	1,000	Russell 2000 Index RTY /107160	Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/12/2018	1,681.8500	09/14/2018	1,715.0000	Sale	33,017	33,017		0003	50	
RTYUB	20	1,000	Russell 2000 Index RTY /107162	Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/12/2018	1,681.8500	09/14/2018	1,715.0000	Sale	33,017	33,017		0003	50	
RTYUB	10	500	Russell 2000 Index RTY /107164	Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/12/2018	1,681.8500	09/14/2018	1,715.0000	Sale	16,509	16,509		0003	50	
RTYUB	25	1,250	Russell 2000 Index RTY /107164	Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/12/2018	1,681.8500	09/14/2018	1,723.8710	Sale	52,351	52,351		0003	50	
RTYUB	75	3,750	Russell 2000 Index RTY /108210	Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	07/24/2018	1,710.7587	09/14/2018	1,723.8710	Sale	48,616	48,616		0003	50	
MESUB	90	4,500	MSCI EMERGING MARKETS /106957	Portfolio Hedge	ScheduleD	Equity/Index	09/21/2018	ICE	06/07/2018	1,133.1000	09/17/2018	1,019.7000	Sale	(510,970)	(510,970)		0003	50	
MESUB	30	1,500	MSCI EMERGING MARKETS /107301	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	06/19/2018	1,064.8000	09/17/2018	1,019.7000	Sale	(67,873)	(67,873)		0003	50	
MESUB	25	1,250	MSCI EMERGING MARKETS /108760	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	ICE	08/14/2018	1,042.7760	09/17/2018	1,019.7000	Sale	(29,031)	(29,031)		0003	50	
MFSZ8	20	1,000	E-MINI MSCI EAFE /110425	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	10/15/2018	1,853.9550	10/16/2018	1,871.0150	Sale	16,911	16,911		0003	50	
ESZ8	25	1,250	S&P 500 EMINI Futures II /110316	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/10/2018	2,846.7500	10/16/2018	2,805.0000	Sale	(52,373)	(52,373)		0003	50	
ESZ8	25	1,250	S&P 500 EMINI Futures II /110316	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/10/2018	2,846.7500	10/17/2018	2,800.0000	Sale	(58,623)	(58,623)		0003	50	
ESZ8	25	1,250	S&P 500 EMINI Futures II /110317	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/10/2018	2,845.2500	10/19/2018	2,800.0000	Sale	(56,748)	(56,748)		0003	50	
RTYZ8	50	2,500	Russell 2000 Index RTY /109486	Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	1,720.0500	10/26/2018	1,500.0000	Sale	(550,476)	(550,476)		0003	50	
RTYZ8	25	1,250	Russell 2000 Index RTY /109962	Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/26/2018	1,712.6900	10/26/2018	1,500.0000	Sale	(266,048)	(266,048)		0003	50	
RTYZ8	75	3,750	Russell 2000 Index RTY /109962	Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/26/2018	1,712.6900	10/30/2018	1,503.0040	Sale	(786,878)	(786,878)		0003	50	
MFSZ8	25	1,250	E-MINI MSCI EAFE /110549	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	10/18/2018	1,839.0000	11/07/2018	1,860.0000	Sale	26,064	26,064		0003	50	
ESZ8	25	1,250	S&P 500 EMINI Futures II /110354	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/10/2018	2,831.7500	11/07/2018	2,795.0000	Sale	(46,123)	(46,123)		0003	50	
ESZ8	5	250	S&P 500 EMINI Futures II /110356	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/10/2018	2,803.7500	11/07/2018	2,795.0000	Sale	(2,225)	(2,225)		0003	50	
ESZ8	20	1,000	S&P 500 EMINI Futures II /110356	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/10/2018	2,803.7500	11/07/2018	2,807.0000	Sale	3,102	3,102		0003	50	
ESZ8	10	500	S&P 500 EMINI Futures II /110358	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/10/2018	2,786.0000	11/07/2018	2,807.0000	Sale	10,426	10,426		0003	50	
ESZ8	15	750	S&P 500 EMINI Futures II /110358	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/10/2018	2,786.0000	11/07/2018	2,815.0000	Sale	21,639	21,639		0003	50	

E21.10

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESZ8	15	.750	S&P 500 EMINI Futures 11 /110483	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	10/17/2018	2,787.0000	11/07/2018	2,815.0000	Sale	20,889	20,889		0003	.50
ESZ8	10	.500	S&P 500 EMINI Futures 11 /110483	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	10/17/2018	2,787.0000	11/08/2018	2,814.2500	Sale	13,551	13,551		0003	.50
ESZ8	20	1,000	S&P 500 EMINI Futures 11 /110506	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	10/18/2018	2,785.0000	11/08/2018	2,814.2500	Sale	29,102	29,102		0003	.50
MFSZ8	20	1,000	E-MINI MSCI EAFE /111231	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	11/09/2018	1,831.8000	11/26/2018	1,810.0000	Sale	(21,949)	(21,949)		0003	.50
MFSZ8	5	.250	E-MINI MSCI EAFE /111231	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	11/09/2018	1,831.8000	11/28/2018	1,819.0000	Sale	(3,237)	(3,237)		0003	.50
MFSZ8	15	.750	E-MINI MSCI EAFE /111236	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	11/12/2018	1,813.6400	11/28/2018	1,819.0000	Sale	3,908	3,908		0003	.50
MFSZ8	10	.500	E-MINI MSCI EAFE /111236	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	11/12/2018	1,813.6400	11/28/2018	1,826.0000	Sale	6,106	6,106		0003	.50
MFSZ8	10	.500	E-MINI MSCI EAFE /111402	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	11/20/2018	1,775.0000	11/28/2018	1,826.0000	Sale	25,426	25,426		0003	.50
MFSZ8	10	.500	E-MINI MSCI EAFE /111402	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	11/20/2018	1,775.0000	11/28/2018	1,830.0000	Sale	27,426	27,426		0003	.50
ESZ8	5	.250	S&P 500 EMINI Futures 11 /110506	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	10/18/2018	2,785.0000	11/28/2018	2,700.0000	Sale	(21,287)	(21,287)		0003	.50
ESZ8	20	1,000	S&P 500 EMINI Futures 11 /110585	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	10/19/2018	2,784.0000	11/28/2018	2,700.0000	Sale	(84,148)	(84,148)		0003	.50
ESZ8	5	.250	S&P 500 EMINI Futures 11 /110585	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	10/19/2018	2,784.0000	11/30/2018	2,758.2500	Sale	(6,475)	(6,475)		0003	.50
ESZ8	25	1,250	S&P 500 EMINI Futures 11 /110719	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	10/22/2018	2,759.7500	11/30/2018	2,758.2500	Sale	(2,060)	(2,060)		0003	.50
ESZ8	30	1,500	S&P 500 EMINI Futures 11 /111161	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	11/08/2018	2,807.0000	12/03/2018	2,793.5000	Sale	(20,472)	(20,472)		0003	.50
RTYZ8	50	2,500	Russell 2000 Index RTY /109962	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	09/26/2018	1,712.6900	12/06/2018	1,446.2880	Sale	(666,375)	(666,375)		0003	.50
RTYZ8	100	5,000	Russell 2000 Index RTY /110120	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	10/03/2018	1,681.6000	12/06/2018	1,446.2880	Sale	(1,177,300)	(1,177,300)		0003	.50
MFSZ8	20	1,000	E-MINI MSCI EAFE /111843	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	12/04/2018	1,801.0000	12/14/2018	1,753.8000	Sale	(47,349)	(47,349)		0003	.50
MFSZ8	20	1,000	E-MINI MSCI EAFE /111870	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	12/04/2018	1,792.4000	12/14/2018	1,753.8000	Sale	(38,749)	(38,749)		0003	.50
MESZ8	145	7,250	MSCI EMERGING MARKETS /109508	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	9R7GPTS07KV3UJZQ0078	09/17/2018	1,022.7000	12/14/2018	978.2000	Sale	(323,704)	(323,704)		0003	.50
ESZ8	30	1,500	S&P 500 EMINI Futures 11 /111172	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	11/09/2018	2,788.0000	12/14/2018	2,645.6000	Sale	(213,811)	(213,811)		0003	.50
ESZ8	30	1,500	S&P 500 EMINI Futures 11 /111230	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	11/09/2018	2,770.5000	12/14/2018	2,645.6000	Sale	(187,561)	(187,561)		0003	.50
ESZ8	30	1,500	S&P 500 EMINI Futures 11 /111235	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	11/12/2018	2,755.7500	12/14/2018	2,645.6000	Sale	(165,436)	(165,436)		0003	.50
ESZ8	25	1,250	S&P 500 EMINI Futures 11 /111493	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	11/23/2018	2,630.7500	12/14/2018	2,645.6000	Sale	18,387	18,387		0003	.50
ESZ8	30	1,500	S&P 500 EMINI Futures 11 /111842	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	12/04/2018	2,742.0000	12/14/2018	2,645.6000	Sale	(144,811)	(144,811)		0003	.50
ESZ8	30	1,500	S&P 500 EMINI Futures 11 /111844	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	12/04/2018	2,741.5000	12/14/2018	2,645.6000	Sale	(144,061)	(144,061)		0003	.50
ESZ8	30	1,500	S&P 500 EMINI Futures 11 /111863	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	12/04/2018	2,724.0000	12/14/2018	2,645.6000	Sale	(117,811)	(117,811)		0003	.50
ESZ8	25	1,250	S&P 500 EMINI Futures 11 /111869	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	9R7GPTS07KV3UJZQ0078	12/04/2018	2,700.0000	12/14/2018	2,645.6000	Sale	(68,176)	(68,176)		0003	.50
ESH9	75	3,750	S&P 500 EMINI Futures 11 /112118	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UJZQ0078	12/13/2018	2,653.8667	12/17/2018	2,544.8000	Sale	(409,555)	(409,555)		0003	.50
ESH9	39	1,950	S&P 500 EMINI Futures 11 /112277	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	CME	9R7GPTS07KV3UJZQ0078	12/17/2018	2,550.5000	12/18/2018	2,545.5000	Sale	(10,039)	(10,039)		0003	.50

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESH9	30	1,500	S&P 500 EMINI Futures II /112222	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	CME	12/14/2018	2,649.1000	12/31/2018	2,503.5000	Sale	(218,611)	(218,611)		0003	50	
ESH9	30	1,500	S&P 500 EMINI Futures II /112222	Portfolio Hedge	Schedule BA, D	Equity/Index	03/15/2019	CME	12/14/2018	2,649.1000	12/31/2018	2,510.0000	Sale	(208,861)	(208,861)		0003	50	
WNH8	85	8,500,000	US ULTRA BOND /101283	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/16/2017	166.4844	01/03/2018	166.1930	Sale	(25,210)	(124,598)		0001	1,000	
WNH8	46	4,600,000	US ULTRA BOND /101283	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/16/2017	166.4844	01/05/2018	166.2596	Sale	(10,582)	(64,368)		0001	1,000	
WNH8	39	3,900,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	01/05/2018	166.2596	Sale	4,739	(54,573)		0001	1,000	
WNH8	87	8,700,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	01/10/2018	163.3125	Sale	(245,822)	(378,134)		0001	1,000	
WNH8	85	8,500,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	01/11/2018	164.0938	Sale	(173,765)	(303,035)		0001	1,000	
WNH8	85	8,500,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	01/12/2018	163.9375	Sale	(187,046)	(316,316)		0001	1,000	
WNH8	85	8,500,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	01/16/2018	165.0938	Sale	(88,765)	(218,035)		0001	1,000	
WNH8	85	8,500,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	01/23/2018	163.3750	Sale	(234,859)	(364,129)		0001	1,000	
WNH8	85	8,500,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	01/24/2018	161.6434	Sale	(382,046)	(511,316)		0001	1,000	
WNH8	85	8,500,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	01/26/2018	163.0000	Sale	(266,734)	(396,004)		0001	1,000	
USH8	348	34,800,000	US CBT LNG BOND II /101413	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/21/2017	152.5391	02/14/2018	152.5391	Sale	(891)	(160,406)		0001	1,000	
WNH8	1,364	136,400,000	US ULTRA BOND /101348	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/14/2018	166.1328	Sale	(3,560)	(2,077,969)		0001	1,000	
WNH8	1,966	196,600,000	US ULTRA BOND /101350	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/14/2018	166.1328	Sale	(5,131)	(2,985,078)		0001	1,000	
WNH8	190	19,000,000	US ULTRA BOND /101363	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/14/2018	156.3750	Sale	(1,855,261)	(2,144,078)		0001	1,000	
WNH8	95	9,500,000	US ULTRA BOND /101363	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/15/2018	155.9181	Sale	(971,036)	(1,115,444)		0001	1,000	
WNH8	62	6,200,000	US ULTRA BOND /101339	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/16/2017	166.4844	02/16/2018	156.2500	Sale	(634,950)	(707,396)		0001	1,000	
WNH8	89	8,900,000	US ULTRA BOND /101363	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/16/2018	157.0313	Sale	(810,632)	(945,920)		0001	1,000	
WNH8	25	2,500,000	US ULTRA BOND /103898	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	02/14/2018	166.1328	02/16/2018	156.2500	Sale	(247,126)	(247,126)		0001	1,000	
WNH8	11	1,100,000	US ULTRA BOND /101335	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/16/2017	166.4844	02/20/2018	156.4688	Sale	(110,246)	(123,099)		0001	1,000	
WNH8	72	7,200,000	US ULTRA BOND /101336	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/16/2017	166.4844	02/20/2018	156.4688	Sale	(721,608)	(805,739)		0001	1,000	
WNH8	14	1,400,000	US ULTRA BOND /101337	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/16/2017	166.4844	02/20/2018	156.4688	Sale	(140,313)	(156,671)		0001	1,000	
WNH8	38	3,800,000	US ULTRA BOND /101338	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/16/2017	166.4844	02/20/2018	156.4688	Sale	(380,849)	(425,251)		0001	1,000	

E21.12

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
WNHB	379	37,900,000	US ULTRA BOND /101339	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	03/30/2018	166.4844	02/20/2018	156.4688	Sale	(3,798,463)	(4,241,321)		0001	1,000	
WNHB	3	300,000	US ULTRA BOND /101340	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	03/30/2018	165.7109	02/20/2018	156.4688	Sale	(27,746)	(33,572)		0001	1,000	
WNHB	64	6,400,000	US ULTRA BOND /101355	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	03/30/2018	166.1328	02/20/2018	156.4688	Sale	(618,927)	(716,212)		0001	1,000	
WNHB	439	43,900,000	US ULTRA BOND /101357	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	03/30/2018	166.1328	02/20/2018	156.4688	Sale	(4,245,450)	(4,912,770)		0001	1,000	
WNHB	96	8,600,000	US ULTRA BOND /101359	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	03/30/2018	166.1328	02/20/2018	156.4688	Sale	(831,683)	(962,411)		0001	1,000	
WNHB	235	23,500,000	US ULTRA BOND /101361	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	03/30/2018	166.1328	02/20/2018	156.4688	Sale	(2,272,622)	(2,629,843)		0001	1,000	
WNHB	606	60,600,000	US ULTRA BOND /101363	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	03/30/2018	166.1328	02/20/2018	156.4688	Sale	(5,860,462)	(6,781,637)		0001	1,000	
WNHB	2,761	276,100,000	US ULTRA BOND /101365	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	03/30/2018	166.1328	02/20/2018	156.4688	Sale	(26,700,886)	(30,897,854)		0001	1,000	
WNHB	1,818	181,800,000	US ULTRA BOND /103898	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	03/30/2018	166.1328	02/20/2018	156.4688	Sale	(17,573,283)	(17,573,283)		0001	1,000	
FVHB	150	15,000,000	US 5YR NOTE FUTURE II /101401	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/20/2017	116.7498	02/21/2018	114.2109	Sale	(381,785)	(293,450)		0001	1,000	
FVHB	670	67,000,000	US 5YR NOTE FUTURE II /101403	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/20/2017	116.7498	02/21/2018	114.2109	Sale	(1,705,304)	(1,310,743)		0001	1,000	
USHB	83	8,300,000	US CBT LNG BOND II /101426	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/21/2017	152.5391	02/21/2018	143.8750	Sale	(719,654)	(757,634)		0001	1,000	
USHB	38	3,800,000	US CBT LNG BOND II /103899	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	02/14/2018	152.5391	02/21/2018	143.8750	Sale	(329,316)	(329,316)		0001	1,000	
WNHB	63	6,300,000	US ULTRA BOND /101355	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/21/2018	155.9063	Sale	(644,693)	(740,459)		0001	1,000	
WNHB	433	43,300,000	US ULTRA BOND /101357	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/21/2018	155.9063	Sale	(4,430,989)	(5,089,188)		0001	1,000	
WNHB	85	8,500,000	US ULTRA BOND /101359	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/21/2018	155.9063	Sale	(869,825)	(999,032)		0001	1,000	
WNHB	231	23,100,000	US ULTRA BOND /101361	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/21/2018	155.9063	Sale	(2,363,876)	(2,715,017)		0001	1,000	
WNHB	54	5,400,000	US ULTRA BOND /101363	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/21/2018	155.9063	Sale	(552,594)	(634,679)		0001	1,000	
WNHB	2,598	259,800,000	US ULTRA BOND /101365	Portfolio Hedge	ScheduleA	Interest	03/30/2018	CBOT	11/20/2017	166.1328	02/21/2018	155.9063	Sale	(26,585,932)	(30,535,125)		0001	1,000	
WNHB	85	8,500,000	US ULTRA BOND /103601	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	02/06/2018	158.8324	02/21/2018	155.9063	Sale	(249,291)	(249,291)		0001	1,000	
WNHB	95	9,500,000	US ULTRA BOND /103690	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	02/09/2018	156.0000	02/21/2018	155.9063	Sale	(9,542)	(9,542)		0001	1,000	
WNHB	190	19,000,000	US ULTRA BOND /103702	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	02/09/2018	156.7058	02/21/2018	155.9063	Sale	(153,186)	(153,186)		0001	1,000	
WNHB	1,487	148,700,000	US ULTRA BOND /103898	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	02/14/2018	166.1328	02/21/2018	155.9063	Sale	(15,210,110)	(15,210,110)		0001	1,000	
TYHB	995	99,500,000	US 10Y NOTE FUTURE II /101432	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/21/2017	124.4287	02/22/2018	120.2031	Sale	(4,208,676)	(3,826,641)		0001	1,000	
TYHB	1,395	139,500,000	US 10Y NOTE FUTURE II /101433	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/21/2017	124.4296	02/22/2018	120.2031	Sale	(5,905,077)	(5,366,628)		0001	1,000	
TYHB	895	89,500,000	US 10Y NOTE FUTURE II /101434	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/21/2017	124.4287	02/22/2018	120.2031	Sale	(3,785,694)	(3,442,054)		0001	1,000	
USHB	215	21,500,000	US CBT LNG BOND II /101416	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/21/2017	152.5391	02/22/2018	142.6875	Sale	(2,119,519)	(2,217,901)		0001	1,000	
USHB	155	15,500,000	US CBT LNG BOND II /101418	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/21/2017	152.5391	02/22/2018	142.6875	Sale	(1,528,026)	(1,598,952)		0001	1,000	
USHB	1,180	118,000,000	US CBT LNG BOND II /101420	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/21/2017	152.5391	02/22/2018	142.6875	Sale	(11,632,711)	(12,172,668)		0001	1,000	
USHB	300	30,000,000	US CBT LNG BOND II /101422	Portfolio Hedge	ScheduleD	Interest	03/30/2018	CBOT	11/21/2017	152.5391	02/22/2018	142.6875	Sale	(2,957,469)	(3,094,746)		0001	1,000	
USHB	985	98,500,000	US CBT LNG BOND II /101424	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	11/21/2017	152.5391	02/22/2018	142.6875	Sale	(9,710,357)	(10,161,083)		0001	1,000	

E21.13

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
USH8	9,887	988,700,000	US CBT LNG BOND II /101426	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule D	Interest	03/30/2018	CBOT	11/21/2017	152.5391	02/22/2018	142.6875	Sale	(97,468,320)	(101,992,512)		0001	1,000	
USH8	310	31,000,000	US CBT LNG BOND II /103899	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	03/30/2018	CBOT	02/14/2018	152.5391	02/22/2018	142.6875	Sale	(3,054,654)	(3,054,654)		0001	1,000	
WNM8	95	9,500,000	US ULTRA BOND /104063	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/10/2018	156.3438	Sale	63,190	63,190		0001	1,000	
WNM8	95	9,500,000	US ULTRA BOND /104063	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/15/2018	154.5000	Sale	(111,971)	(111,971)		0001	1,000	
WNM8	95	9,500,000	US ULTRA BOND /104063	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/17/2018	153.2115	Sale	(234,378)	(234,378)		0001	1,000	
WNM8	62	6,200,000	US ULTRA BOND /103982	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/16/2018	155.4531	05/18/2018	153.1563	Sale	(142,819)	(142,819)		0001	1,000	
WNM8	25	2,500,000	US ULTRA BOND /103983	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/16/2018	155.4531	05/18/2018	153.1563	Sale	(57,531)	(57,531)		0001	1,000	
WNM8	87	8,700,000	US ULTRA BOND /104055	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/18/2018	153.1563	Sale	(219,444)	(219,444)		0001	1,000	
WNM8	17	1,700,000	US ULTRA BOND /104059	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/18/2018	153.1563	Sale	(42,880)	(42,880)		0001	1,000	
WNM8	46	4,600,000	US ULTRA BOND /104061	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/18/2018	153.1563	Sale	(116,028)	(116,028)		0001	1,000	
WNM8	77	7,700,000	US ULTRA BOND /104063	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/18/2018	153.1563	Sale	(194,220)	(194,220)		0001	1,000	
WNM8	471	47,100,000	US ULTRA BOND /104064	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/18/2018	153.1563	Sale	(1,188,022)	(1,188,022)		0001	1,000	
WNM8	49	4,900,000	US ULTRA BOND /104068	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/18/2018	153.1563	Sale	(123,481)	(123,481)		0001	1,000	
WNM8	13	1,300,000	US ULTRA BOND /104070	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/18/2018	153.1563	Sale	(32,790)	(32,790)		0001	1,000	
FVMB	670	67,000,000	US 5YR NOTE FUTURE II /104105	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	113.9219	05/21/2018	113.0781	Sale	(569,594)	(569,594)		0001	1,000	
FVMB	150	15,000,000	US 5YR NOTE FUTURE II /104106	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	113.9219	05/21/2018	113.0781	Sale	(127,521)	(127,521)		0001	1,000	
WNM8	191	19,100,000	US ULTRA BOND /104055	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/21/2018	154.1250	Sale	(296,745)	(296,745)		0001	1,000	
WNM8	37	3,700,000	US ULTRA BOND /104059	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/21/2018	154.1250	Sale	(57,485)	(57,485)		0001	1,000	
WNM8	102	10,200,000	US ULTRA BOND /104061	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/21/2018	154.1250	Sale	(158,471)	(158,471)		0001	1,000	
WNM8	170	17,000,000	US ULTRA BOND /104063	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/21/2018	154.1250	Sale	(264,119)	(264,119)		0001	1,000	
WNM8	1,172	117,200,000	US ULTRA BOND /104064	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/21/2018	154.1250	Sale	(1,820,866)	(1,820,866)		0001	1,000	
WNM8	800	80,000,000	US ULTRA BOND /104068	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/21/2018	154.1250	Sale	(1,241,056)	(1,241,056)		0001	1,000	
WNM8	28	2,800,000	US ULTRA BOND /104070	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/21/2018	154.1250	Sale	(43,502)	(43,502)		0001	1,000	
WNM8	15	1,500,000	US ULTRA BOND /104055	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/22/2018	154.2500	Sale	(21,430)	(21,430)		0001	1,000	
WNM8	3	300,000	US ULTRA BOND /104059	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/22/2018	154.2500	Sale	(4,286)	(4,286)		0001	1,000	
WNM8	8	800,000	US ULTRA BOND /104061	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/22/2018	154.2500	Sale	(11,429)	(11,429)		0001	1,000	
WNM8	14	1,400,000	US ULTRA BOND /104063	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/22/2018	154.2500	Sale	(20,001)	(20,001)		0001	1,000	
WNM8	95	9,500,000	US ULTRA BOND /104064	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/22/2018	154.2500	Sale	(135,721)	(135,721)		0001	1,000	
WNM8	65	6,500,000	US ULTRA BOND /104068	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/22/2018	154.2500	Sale	(92,711)	(92,711)		0001	1,000	
WNM8	2	200,000	US ULTRA BOND /104070	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/22/2018	154.2500	Sale	(2,857)	(2,857)		0001	1,000	
USMB	83	8,300,000	US CBT LNG BOND II /104118	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	142.8750	05/23/2018	141.2500	Sale	(135,410)	(135,410)		0001	1,000	
USMB	38	3,800,000	US CBT LNG BOND II /104120	Portfolio Hedge VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/21/2018	142.8750	05/23/2018	141.2500	Sale	(61,915)	(61,915)		0001	1,000	

E21.14

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Change in Variation Margin			19	20
															16	17	18		
Ticker Symbol	Number of Contracts	Notional Amount	Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Date of Maturity or Expiration	Exchange	Trade Date	Transaction Price	Termination Date	Termination Price	Indicate Exercise, Expiration, Maturity or Sale	Cumulative Variation Margin at Termination	Gain (Loss) Recognized in Current Year	Gain (Loss) Used to Adjust Basis of Hedged Item	Deferred	Hedge Effectiveness at Inception and at Termination (b)	Value of One (1) Point
USMB	215	21,500,000	US CBT LNG BOND II /104132	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	141.6875	05/23/2018	141.2500	Sale	(95,490)	(95,490)			0001	1,000
USMB	155	15,500,000	US CBT LNG BOND II /104135	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	141.6875	05/23/2018	141.2500	Sale	(68,842)	(68,842)			0001	1,000
USMB	1,180	118,000,000	US CBT LNG BOND II /104137	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	141.6875	05/23/2018	141.2500	Sale	(524,085)	(524,085)			0001	1,000
USMB	300	30,000,000	US CBT LNG BOND II /104141	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	141.6875	05/23/2018	141.2500	Sale	(133,242)	(133,242)			0001	1,000
USMB	985	98,500,000	US CBT LNG BOND II /104144	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/22/2018	141.6875	05/23/2018	141.2500	Sale	(437,478)	(437,478)			0001	1,000
USMB	9,887	988,700,000	US CBT LNG BOND II /104146	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	141.6875	05/23/2018	141.2500	Sale	(4,391,212)	(4,391,212)			0001	1,000
USMB	310	31,000,000	US CBT LNG BOND II /104188	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/22/2018	141.6875	05/23/2018	141.2500	Sale	(136,843)	(136,843)			0001	1,000
USMB	95	9,500,000	US CBT LNG BOND II /105019	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	03/27/2018	145.6563	05/23/2018	141.2500	Sale	(419,229)	(419,229)			0001	1,000
WNMB	218	21,800,000	US ULTRA BOND /104055	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/23/2018	154.1563	Sale	(331,870)	(331,870)			0001	1,000
WNMB	43	4,300,000	US ULTRA BOND /104059	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/23/2018	154.1563	Sale	(65,461)	(65,461)			0001	1,000
WNMB	117	11,700,000	US ULTRA BOND /104061	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/23/2018	154.1563	Sale	(178,114)	(178,114)			0001	1,000
WNMB	60	6,000,000	US ULTRA BOND /104063	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/23/2018	154.1563	Sale	(91,340)	(91,340)			0001	1,000
WNMB	1,405	140,500,000	US ULTRA BOND /104064	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/23/2018	154.1563	Sale	(2,138,888)	(2,138,888)			0001	1,000
WNMB	904	90,400,000	US ULTRA BOND /104068	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/23/2018	154.1563	Sale	(1,374,107)	(1,374,107)			0001	1,000
WNMB	32	3,200,000	US ULTRA BOND /104070	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6719	05/23/2018	154.1563	Sale	(48,715)	(48,715)			0001	1,000
WNMB	63	6,300,000	US ULTRA BOND /104086	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1094	05/23/2018	154.1563	Sale	(60,470)	(60,470)			0001	1,000
WNMB	433	43,300,000	US ULTRA BOND /104088	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1094	05/23/2018	154.1563	Sale	(415,611)	(415,611)			0001	1,000
WNMB	85	8,500,000	US ULTRA BOND /104090	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1094	05/23/2018	154.1563	Sale	(81,586)	(81,586)			0001	1,000
WNMB	231	23,100,000	US ULTRA BOND /104092	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1094	05/23/2018	154.1563	Sale	(221,723)	(221,723)			0001	1,000
WNMB	424	42,400,000	US ULTRA BOND /104094	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/21/2018	155.1094	05/23/2018	154.1563	Sale	(406,972)	(406,972)			0001	1,000
WNMB	2,598	259,800,000	US ULTRA BOND /104096	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1094	05/23/2018	154.1563	Sale	(2,493,664)	(2,493,664)			0001	1,000
WNMB	1,487	148,700,000	US ULTRA BOND /104098	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	02/21/2018	155.1094	05/23/2018	154.1563	Sale	(1,423,847)	(1,423,847)			0001	1,000
WNMB	95	9,500,000	US ULTRA BOND /104302	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	03/02/2018	156.0000	05/23/2018	154.1563	Sale	(175,572)	(175,572)			0001	1,000
WNMB	95	9,500,000	US ULTRA BOND /105047	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	03/28/2018	159.3214	05/23/2018	154.1563	Sale	(491,105)	(491,105)			0001	1,000
WNMB	95	9,500,000	US ULTRA BOND /105098	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	06/29/2018	CBOT	04/02/2018	160.7862	05/23/2018	154.1563	Sale	(630,261)	(630,261)			0001	1,000
TYMB	995	99,500,000	US 10Y NOTE FUTURE II /104123	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	119.6250	05/25/2018	119.5000	Sale	(128,594)	(128,594)			0001	1,000
TYMB	895	89,500,000	US 10Y NOTE FUTURE II /104125	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	119.6250	05/25/2018	119.5000	Sale	(115,670)	(115,670)			0001	1,000
TYMB	1,395	139,500,000	US 10Y NOTE FUTURE II /104150	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	119.6250	05/25/2018	119.5000	Sale	(183,498)	(183,498)			0001	1,000
WNMB	77	7,700,000	US ULTRA BOND /106374	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/18/2018	152.4453	06/12/2018	155.9020	Sale	265,647	265,647			0001	1,000

E21.15

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
WNJB	18	1,800,000	US ULTRA BOND /106402	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/21/2018	153.4141	06/12/2018	155.9020	Sale	44,661	44,661		0001	1,000	
WNJB	95	9,500,000	US ULTRA BOND /106402	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/21/2018	153.4141	06/14/2018	157.1563	Sale	354,869	354,869		0001	1,000	
WNJB	57	5,700,000	US ULTRA BOND /106402	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/21/2018	153.4141	07/06/2018	160.8125	Sale	421,325	421,325		0001	1,000	
WNJB	14	1,400,000	US ULTRA BOND /106433	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/22/2018	153.5391	07/06/2018	160.8125	Sale	101,733	101,733		0001	1,000	
WNJB	24	2,400,000	US ULTRA BOND /106466	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/23/2018	153.4453	07/06/2018	160.8125	Sale	176,651	176,651		0001	1,000	
WNJB	95	9,500,000	US ULTRA BOND /106466	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/03/2018	156.1250	Sale	253,931	253,931		0001	1,000	
WNJB	1	100,000	US ULTRA BOND /106360	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/21/2018	159.7813	Sale	7,332	7,332		0001	1,000	
FVUB	150	15,000,000	US 5YR NOTE FUTURE II /106389	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/21/2018	112.7734	08/22/2018	113.7031	Sale	138,504	138,504		0001	1,000	
FVUB	670	67,000,000	US 5YR NOTE FUTURE II /106391	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/21/2018	112.7734	08/22/2018	113.7031	Sale	618,651	618,651		0001	1,000	
WNJB	73	7,300,000	US ULTRA BOND /106360	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/22/2018	159.2813	Sale	498,705	498,705		0001	1,000	
WNJB	8	800,000	US ULTRA BOND /106366	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/22/2018	159.2813	Sale	54,634	54,634		0001	1,000	
WNJB	52	5,200,000	US ULTRA BOND /106369	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/22/2018	159.2813	Sale	355,122	355,122		0001	1,000	
WNJB	10	1,000,000	US ULTRA BOND /106371	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/22/2018	159.2813	Sale	68,293	68,293		0001	1,000	
WNJB	28	2,800,000	US ULTRA BOND /106373	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/22/2018	159.2813	Sale	191,219	191,219		0001	1,000	
WNJB	323	32,300,000	US ULTRA BOND /106376	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/22/2018	159.2813	Sale	2,205,851	2,205,851		0001	1,000	
WNJB	127	12,700,000	US ULTRA BOND /106410	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/21/2018	153.4141	08/22/2018	159.2813	Sale	744,572	744,572		0001	1,000	
WNJB	20	2,000,000	US ULTRA BOND /106466	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/22/2018	159.2813	Sale	116,585	116,585		0001	1,000	
WNJB	5	500,000	US ULTRA BOND /106366	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/23/2018	159.7188	Sale	36,334	36,334		0001	1,000	
WNJB	35	3,500,000	US ULTRA BOND /106369	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/23/2018	159.7188	Sale	254,337	254,337		0001	1,000	
WNJB	7	700,000	US ULTRA BOND /106371	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/23/2018	159.7188	Sale	50,867	50,867		0001	1,000	
WNJB	18	1,800,000	US ULTRA BOND /106373	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/23/2018	159.7188	Sale	130,802	130,802		0001	1,000	
WNJB	210	21,000,000	US ULTRA BOND /106376	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/18/2018	152.4453	08/23/2018	159.7188	Sale	1,526,020	1,526,020		0001	1,000	
WNJB	28	2,800,000	US ULTRA BOND /106394	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/21/2018	153.4141	08/23/2018	159.7188	Sale	176,343	176,343		0001	1,000	
WNJB	191	19,100,000	US ULTRA BOND /106395	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/21/2018	153.4141	08/23/2018	159.7188	Sale	1,202,910	1,202,910		0001	1,000	
WNJB	37	3,700,000	US ULTRA BOND /106398	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/21/2018	153.4141	08/23/2018	159.7188	Sale	233,025	233,025		0001	1,000	
WNJB	102	10,200,000	US ULTRA BOND /106400	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/21/2018	153.4141	08/23/2018	159.7188	Sale	642,392	642,392		0001	1,000	
WNJB	1,172	117,200,000	US ULTRA BOND /106404	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/21/2018	153.4141	08/23/2018	159.7188	Sale	7,381,209	7,381,209		0001	1,000	
WNJB	673	67,300,000	US ULTRA BOND /106410	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/21/2018	153.4141	08/23/2018	159.7188	Sale	4,240,082	4,240,082		0001	1,000	
WNJB	2	200,000	US ULTRA BOND /106425	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/22/2018	153.5391	08/23/2018	159.7188	Sale	12,346	12,346		0001	1,000	
WNJB	15	1,500,000	US ULTRA BOND /106427	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/22/2018	153.5391	08/23/2018	159.7188	Sale	92,594	92,594		0001	1,000	
WNJB	3	300,000	US ULTRA BOND /106429	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/22/2018	153.5391	08/23/2018	159.7188	Sale	18,519	18,519		0001	1,000	
WNJB	8	800,000	US ULTRA BOND /106431	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/22/2018	153.5391	08/23/2018	159.7188	Sale	49,384	49,384		0001	1,000	
WNJB	95	9,500,000	US ULTRA BOND /106435	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/22/2018	153.5391	08/23/2018	159.7188	Sale	586,431	586,431		0001	1,000	
WNJB	65	6,500,000	US ULTRA BOND /106437	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/22/2018	153.5391	08/23/2018	159.7188	Sale	401,383	401,383		0001	1,000	

E21.16

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
WNJB	2,676	267,600,000	US ULTRA BOND /106456	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/23/2018	159.7188	Sale	16,776,005	16,776,005		0001	1,000	
WNJB	95	9,500,000	US ULTRA BOND /106457	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/23/2018	159.7188	Sale	595,342	595,342		0001	1,000	
WNJB	651	65,100,000	US ULTRA BOND /106459	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/23/2018	159.7188	Sale	4,079,661	4,079,661		0001	1,000	
WNJB	128	12,800,000	US ULTRA BOND /106461	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/23/2018	159.7188	Sale	802,145	802,145		0001	1,000	
WNJB	348	34,800,000	US ULTRA BOND /106463	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/23/2018	159.7188	Sale	2,180,832	2,180,832		0001	1,000	
WNJB	345	34,500,000	US ULTRA BOND /106466	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/23/2018	159.7188	Sale	2,162,032	2,162,032		0001	1,000	
WNJB	4,003	400,300,000	US ULTRA BOND /106468	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/23/2018	153.4453	08/23/2018	159.7188	Sale	25,085,840	25,085,840		0001	1,000	
USUB	215	21,500,000	US CBT LNG BOND II /106509	Portfolio Hedge	Schedule BA, D	Interest	09/28/2018	CBOT	05/23/2018	140.4063	08/24/2018	145.6563	Sale	1,127,322	1,127,322		0001	1,000	
USUB	155	15,500,000	US CBT LNG BOND II /106512	Portfolio Hedge	Schedule BA, D	Interest	09/28/2018	CBOT	05/23/2018	140.4063	08/24/2018	145.6563	Sale	812,721	812,721		0001	1,000	
USUB	1,180	118,000,000	US CBT LNG BOND II /106514	Portfolio Hedge	Schedule BA, D	Interest	09/28/2018	CBOT	05/23/2018	140.4063	08/24/2018	145.6563	Sale	6,187,165	6,187,165		0001	1,000	
USUB	300	30,000,000	US CBT LNG BOND II /106516	Portfolio Hedge	Schedule BA, D	Interest	09/28/2018	CBOT	05/23/2018	140.4063	08/24/2018	145.6563	Sale	1,573,008	1,573,008		0001	1,000	
USUB	1,080	108,000,000	US CBT LNG BOND II /106518	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/23/2018	140.4063	08/24/2018	145.6563	Sale	5,662,829	5,662,829		0001	1,000	
USUB	9,970	997,000,000	US CBT LNG BOND II /106520	Portfolio Hedge	Schedule BA, D	Interest	09/28/2018	CBOT	05/23/2018	140.4063	08/24/2018	145.6563	Sale	52,276,299	52,276,299		0001	1,000	
USUB	348	34,800,000	US CBT LNG BOND II /106522	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	05/23/2018	140.4063	08/24/2018	145.6563	Sale	1,825,472	1,825,472		0001	1,000	
USUB	95	9,500,000	US CBT LNG BOND II /108794	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	09/28/2018	CBOT	08/15/2018	144.9688	08/24/2018	145.6563	Sale	64,891	64,891		0001	1,000	
TYUB	995	99,500,000	US 10Y NOTE FUTURE II /106562	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/25/2018	119.1719	08/27/2018	120.5156	Sale	1,332,817	1,332,817		0001	1,000	
TYUB	1,395	139,500,000	US 10Y NOTE FUTURE II /106564	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/25/2018	119.1719	08/27/2018	120.5156	Sale	1,865,338	1,865,338		0001	1,000	
TYUB	895	89,500,000	US 10Y NOTE FUTURE II /106566	Portfolio Hedge	ScheduleD	Interest	09/28/2018	CBOT	05/25/2018	119.1719	08/27/2018	120.5156	Sale	1,198,865	1,198,865		0001	1,000	
WNZB	20	2,000,000	US ULTRA BOND /108948	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/22/2018	159.5859	09/21/2018	153.8366	Sale	(115,121)	(115,121)		0001	1,000	
WNZB	85	8,500,000	US ULTRA BOND /108972	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/23/2018	160.0391	09/21/2018	153.8366	Sale	(527,785)	(527,785)		0001	1,000	
FVZB	150	15,000,000	US 5YR NOTE FUTURE II /108921	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	113.4609	11/20/2018	112.9453	Sale	(78,291)	(78,291)		0001	1,000	
FVZB	670	67,000,000	US 5YR NOTE FUTURE II /108922	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	113.4609	11/20/2018	112.9453	Sale	(349,700)	(349,700)		0001	1,000	
WNZB	1	100,000	US ULTRA BOND /108918	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/21/2018	160.0781	11/20/2018	151.5000	Sale	(8,583)	(8,583)		0001	1,000	
WNZB	5	500,000	US ULTRA BOND /108950	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/20/2018	151.5000	Sale	(40,463)	(40,463)		0001	1,000	
WNZB	3	300,000	US ULTRA BOND /108954	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/20/2018	151.5000	Sale	(24,271)	(24,271)		0001	1,000	
WNZB	6	600,000	US ULTRA BOND /108950	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/21/2018	151.7813	Sale	(46,868)	(46,868)		0001	1,000	
WNZB	5	500,000	US ULTRA BOND /108954	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/21/2018	151.7813	Sale	(39,045)	(39,045)		0001	1,000	
USZB	443	44,300,000	US CBT LNG BOND II /109023	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/24/2018	144.9216	11/26/2018	140.0000	Sale	(2,182,236)	(2,182,236)		0001	1,000	

E21.17

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Change in Variation Margin			19	20
															16	17	18		
Ticker Symbol	Number of Contracts	Notional Amount	Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Date of Maturity or Expiration	Exchange	Trade Date	Transaction Price	Termination Date	Termination Price	Indicate Exercise, Expiration, Maturity or Sale	Cumulative Variation Margin at Termination	Gain (Loss) Recognized in Current Year	Gain (Loss) Used to Adjust Basis of Hedged Item	Deferred	Hedge Effectiveness at Inception and at Termination (b)	Value of One (1) Point
USZ8	215	21,500,000	US CBT LNG BOND II /109026	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/24/2018	144.9216	11/26/2018	140.0000	Sale	(1,059,572)	(1,059,572)			0001	1,000
USZ8	155	15,500,000	US CBT LNG BOND II /109028	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/24/2018	144.9216	11/26/2018	140.0000	Sale	(763,877)	(763,877)			0001	1,000
USZ8	1,180	118,000,000	US CBT LNG BOND II /109031	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/24/2018	144.9216	11/26/2018	140.0000	Sale	(5,815,323)	(5,815,323)			0001	1,000
USZ8	300	30,000,000	US CBT LNG BOND II /109033	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/24/2018	144.9216	11/26/2018	140.0000	Sale	(1,478,472)	(1,478,472)			0001	1,000
USZ8	1,080	108,000,000	US CBT LNG BOND II /109035	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/24/2018	144.9216	11/26/2018	140.0000	Sale	(5,322,499)	(5,322,499)			0001	1,000
USZ8	9,970	997,000,000	US CBT LNG BOND II /109037	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/24/2018	144.9216	11/26/2018	140.0000	Sale	(49,134,553)	(49,134,553)			0001	1,000
USZ8	127	12,700,000	US CBT LNG BOND II /110731	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	10/23/2018	138.8750	11/26/2018	140.0000	Sale	142,311	142,311			0001	1,000
USZ8	145	14,500,000	US CBT LNG BOND II /110800	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	10/24/2018	139.0938	11/26/2018	140.0000	Sale	130,755	130,755			0001	1,000
USZ8	125	12,500,000	US CBT LNG BOND II /110849	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	10/26/2018	139.5313	11/26/2018	140.0000	Sale	58,033	58,033			0001	1,000
WNZ8	8	800,000	US ULTRA BOND /108940	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/26/2018	151.6563	Sale	(63,491)	(63,491)			0001	1,000
WNZ8	52	5,200,000	US ULTRA BOND /108942	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/26/2018	151.6563	Sale	(412,690)	(412,690)			0001	1,000
WNZ8	10	1,000,000	US ULTRA BOND /108944	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/26/2018	151.6563	Sale	(79,363)	(79,363)			0001	1,000
WNZ8	28	2,800,000	US ULTRA BOND /108946	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/26/2018	151.6563	Sale	(222,218)	(222,218)			0001	1,000
WNZ8	312	31,200,000	US ULTRA BOND /108950	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/26/2018	151.6563	Sale	(2,476,138)	(2,476,138)			0001	1,000
WNZ8	192	19,200,000	US ULTRA BOND /108954	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/22/2018	159.5859	11/26/2018	151.6563	Sale	(1,523,336)	(1,523,336)			0001	1,000
WNZ8	130	13,000,000	US ULTRA BOND /108965	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/23/2018	160.0391	11/26/2018	151.6563	Sale	(1,090,640)	(1,090,640)			0001	1,000
WNZ8	892	89,200,000	US ULTRA BOND /108967	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/23/2018	160.0391	11/26/2018	151.6563	Sale	(7,483,470)	(7,483,470)			0001	1,000
WNZ8	175	17,500,000	US ULTRA BOND /108969	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/23/2018	160.0391	11/26/2018	151.6563	Sale	(1,468,170)	(1,468,170)			0001	1,000
WNZ8	476	47,600,000	US ULTRA BOND /108970	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/23/2018	160.0391	11/26/2018	151.6563	Sale	(3,993,421)	(3,993,421)			0001	1,000
WNZ8	260	26,000,000	US ULTRA BOND /108972	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/23/2018	160.0391	11/26/2018	151.6563	Sale	(2,181,280)	(2,181,280)			0001	1,000
WNZ8	5,480	548,000,000	US ULTRA BOND /108975	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/23/2018	160.0391	11/26/2018	151.6563	Sale	(45,974,679)	(45,974,679)			0001	1,000
WNZ8	3,414	341,400,000	US ULTRA BOND /108976	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Interest	12/31/2018	CBOT	08/23/2018	160.0391	11/26/2018	151.6563	Sale	(28,634,037)	(28,634,037)			0001	1,000
TYZ8	995	99,500,000	US 10Y NOTE FUTURE II /109045	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/27/2018	120.3984	11/27/2018	119.1406	Sale	(1,255,742)	(1,255,742)			0001	1,000
TYZ8	1,395	139,500,000	US 10Y NOTE FUTURE II /109046	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/27/2018	120.3984	11/27/2018	119.1406	Sale	(1,763,754)	(1,763,754)			0001	1,000
TYZ8	895	89,500,000	US 10Y NOTE FUTURE II /109048	Portfolio Hedge	ScheduleD	Interest	12/31/2018	CBOT	08/27/2018	120.3984	11/27/2018	119.1406	Sale	(1,129,537)	(1,129,537)			0001	1,000
1289999999. Subtotal - Long Futures - Hedging Other														(310,211,929)	(333,526,406)			XXX	XXX
1329999999. Subtotal - Long Futures														(310,211,929)	(333,526,406)			XXX	XXX
RTYH8	25	1,250	Russell 2000 Index RTY /102033	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/08/2017	1,523.8000	01/03/2018	1,556.2421	Sale	(40,728)	(24,770)			0003	50
RTYH8	50	2,500	Russell 2000 Index RTY /102037	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/08/2017	1,523.9000	01/03/2018	1,556.2421	Sale	(81,206)	(49,540)			0003	50
RTYH8	20	1,000	Russell 2000 Index RTY /102043	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/08/2017	1,524.0000	01/03/2018	1,556.2421	Sale	(32,382)	(19,816)			0003	50

E21.18

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
MFSHB	50	2,500	E-MINI MSCI EAFE /101886	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE 9R7GPTS07KV3UQJZ0078	12/05/2017	2,002.9000	01/04/2018	2,089.6000	Sale	(217,122)	(110,436)		0003	50	
NQHB	10	200	NASDAQ 100 EMINI Futures II /101892	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/06/2017	6,290.3000	01/04/2018	6,613.7500	Sale	(64,760)	(41,037)		0003	20	
NQHB	50	1,000	NASDAQ 100 EMINI Futures II /101897	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/06/2017	6,290.3500	01/04/2018	6,613.7500	Sale	(323,751)	(205,185)		0003	20	
ESHB	25	1,250	S&P 500 EMINI Futures II /101853	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/04/2017	2,646.0500	01/04/2018	2,718.5000	Sale	(90,738)	(53,218)		0003	50	
ESHB	50	2,500	S&P 500 EMINI Futures II /101870	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/05/2017	2,640.4000	01/04/2018	2,718.5000	Sale	(195,601)	(106,435)		0003	50	
ESHB	9	450	S&P 500 EMINI Futures II /101874	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/05/2017	2,640.4500	01/04/2018	2,718.5000	Sale	(35,186)	(19,158)		0003	50	
RTYHB	30	1,500	Russell 2000 Index RTY /102043	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/08/2017	1,524.0000	01/05/2018	1,558.0129	Sale	(51,230)	(32,380)		0003	50	
RTYHB	50	2,500	Russell 2000 Index RTY /102051	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/08/2017	1,524.1000	01/05/2018	1,558.0129	Sale	(85,133)	(53,967)		0003	50	
RTYHB	5	250	Russell 2000 Index RTY /102083	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/11/2017	1,524.3000	01/05/2018	1,558.0129	Sale	(8,465)	(5,397)		0003	50	
ESHB	41	2,050	S&P 500 EMINI Futures II /101874	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/05/2017	2,640.4500	01/05/2018	2,731.7500	Sale	(187,452)	(114,439)		0003	50	
ESHB	50	2,500	S&P 500 EMINI Futures II /101890	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/05/2017	2,640.5500	01/05/2018	2,731.7500	Sale	(228,351)	(139,560)		0003	50	
MFSHB	50	2,500	E-MINI MSCI EAFE /101898	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE 9R7GPTS07KV3UQJZ0078	12/06/2017	1,994.6000	01/08/2018	2,101.9400	Sale	(268,722)	(141,286)		0003	50	
MFSHB	50	2,500	E-MINI MSCI EAFE /101909	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE 9R7GPTS07KV3UQJZ0078	12/07/2017	2,001.1000	01/09/2018	2,103.1960	Sale	(255,612)	(144,426)		0003	50	
MFSHB	25	1,250	E-MINI MSCI EAFE /102007	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE 9R7GPTS07KV3UQJZ0078	12/08/2017	2,008.9000	01/09/2018	2,103.1960	Sale	(118,056)	(72,213)		0003	50	
NQHB	50	1,000	NASDAQ 100 EMINI Futures II /101902	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/06/2017	6,290.7500	01/10/2018	6,649.6000	Sale	(359,201)	(241,035)		0003	20	
ESHB	75	3,750	S&P 500 EMINI Futures II /101893	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/06/2017	2,630.7750	01/10/2018	2,746.0000	Sale	(432,620)	(262,778)		0003	50	
RTYHB	70	3,500	Russell 2000 Index RTY /102083	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/11/2017	1,524.3000	01/12/2018	1,595.7500	Sale	(250,593)	(207,634)		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures II /101893	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/06/2017	2,630.7750	01/12/2018	2,783.0000	Sale	(190,457)	(133,843)		0003	50	
ESHB	50	2,500	S&P 500 EMINI Futures II /101904	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/07/2017	2,631.9000	01/12/2018	2,783.0000	Sale	(378,101)	(267,685)		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures II /101906	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME 9R7GPTS07KV3UQJZ0078	12/07/2017	2,631.9000	01/12/2018	2,783.0000	Sale	(189,050)	(133,843)		0003	50	

E21.19

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESHB	25	1,250	S&P 500 EMINI Futures II /101906	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/07/2017	2,631.9000	01/16/2018	2,798.7500	Sale	(208,738)	(153,530)		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures II /101923	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/07/2017	2,631.9000	01/16/2018	2,798.7500	Sale	(417,476)	(307,060)		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures II /101926	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/07/2017	2,631.9500	01/16/2018	2,798.7500	Sale	(417,351)	(307,060)		0003	50
MFSHB	25	1,250	E-MINI MSCI EAFE /102007	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/08/2017	2,008.9000	01/18/2018	2,141.3467	Sale	(165,744)	(119,901)		0003	50
MFSHB	50	2,500	E-MINI MSCI EAFE /102010	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/08/2017	2,008.9000	01/18/2018	2,141.3467	Sale	(331,488)	(239,803)		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures II /102002	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/07/2017	2,631.9500	01/19/2018	2,799.2500	Sale	(418,601)	(308,310)		0003	50
ESHB	25	1,250	S&P 500 EMINI Futures II /102004	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/07/2017	2,631.9500	01/19/2018	2,799.2500	Sale	(209,300)	(154,155)		0003	50
MFSHB	50	2,500	E-MINI MSCI EAFE /102012	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/08/2017	2,008.7000	01/22/2018	2,162.0893	Sale	(383,845)	(291,659)		0003	50
MFSHB	25	1,250	E-MINI MSCI EAFE /102070	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/11/2017	2,015.7000	01/22/2018	2,162.0893	Sale	(183,172)	(145,830)		0003	50
ESHB	75	3,750	S&P 500 EMINI Futures II /102004	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/07/2017	2,631.9500	01/22/2018	2,820.7500	Sale	(708,526)	(543,090)		0003	50
ESHB	25	1,250	S&P 500 EMINI Futures II /102013	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/08/2017	2,642.2000	01/22/2018	2,820.7500	Sale	(223,363)	(181,030)		0003	50
ESHB	75	3,750	S&P 500 EMINI Futures II /102013	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/08/2017	2,642.2000	01/23/2018	2,839.5000	Sale	(740,401)	(613,403)		0003	50
ESHB	25	1,250	S&P 500 EMINI Futures II /102019	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/08/2017	2,642.3000	01/23/2018	2,839.5000	Sale	(246,675)	(204,468)		0003	50
MFSHB	25	1,250	E-MINI MSCI EAFE /102070	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/11/2017	2,015.7000	01/24/2018	2,187.1000	Sale	(214,436)	(177,093)		0003	50
MFSHB	50	2,500	E-MINI MSCI EAFE /102072	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/11/2017	2,015.7000	01/24/2018	2,187.1000	Sale	(428,872)	(354,186)		0003	50
NQHB	50	1,000	NASDAQ 100 EMINI Futures II /102046	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/08/2017	6,341.5000	01/24/2018	6,997.0000	Sale	(655,851)	(588,435)		0003	20
NQHB	15	300	NASDAQ 100 EMINI Futures II /102049	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/08/2017	6,341.5000	01/24/2018	6,997.0000	Sale	(196,755)	(176,531)		0003	20
ESHB	25	1,250	S&P 500 EMINI Futures II /102019	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/08/2017	2,642.3000	02/01/2018	2,830.0000	Sale	(234,800)	(192,593)		0003	50
ESHB	75	3,750	S&P 500 EMINI Futures II /102030	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/08/2017	2,642.3000	02/01/2018	2,830.0000	Sale	(704,401)	(577,778)		0003	50
MFSHB	10	500	E-MINI MSCI EAFE /102321	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/15/2017	2,015.4000	02/02/2018	2,115.0000	Sale	(49,874)	(34,787)		0003	50

E21.20

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
MF5H8	20	1,000	E-MINI MSCI EAFE /102321	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	12/15/2017	2,015.4000	02/02/2018	2,128.8950	Sale	(113,644)	(83,469)		0003	.50	
MF5H8	10	500	E-MINI MSCI EAFE /102327	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	12/18/2017	2,044.0000	02/02/2018	2,115.0000	Sale	(35,574)	(34,787)		0003	.50	
MF5H8	20	1,000	E-MINI MSCI EAFE /102327	Portfolio Hedge	Schedule BA, D	Equity/Index	03/20/2018	ICE	12/18/2017	2,044.0000	02/05/2018	2,089.2750	Sale	(45,424)	(43,849)		0003	.50	
RTYH8	5	250	Russell 2000 Index RTY /102319	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	12/15/2017	1,532.6160	02/05/2018	1,528.0000	Sale	1,117	2,107		0003	.50	
RTYH8	10	500	Russell 2000 Index RTY /102319	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	12/15/2017	1,532.6160	02/05/2018	1,530.0000	Sale	1,234	3,213		0003	.50	
RTYH8	10	500	Russell 2000 Index RTY /102319	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	12/15/2017	1,532.6160	02/05/2018	1,531.0000	Sale	734	2,713		0003	.50	
RTYH8	10	500	Russell 2000 Index RTY /102320	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	12/15/2017	1,532.9480	02/05/2018	1,524.0400	Sale	4,380	6,193		0003	.50	
RTYH8	10	500	Russell 2000 Index RTY /102320	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	12/15/2017	1,532.9480	02/05/2018	1,526.9300	Sale	2,935	4,748		0003	.50	
RTYH8	5	250	Russell 2000 Index RTY /102320	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	CME	12/15/2017	1,532.9480	02/05/2018	1,528.0000	Sale	1,200	2,107		0003	.50	
ESH8	25	1,250	S&P 500 EMINI Futures II /102030	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/08/2017	2,642.3000	02/06/2018	2,690.1900	Sale	(60,038)	(17,830)		0003	.50	
ESH8	75	3,750	S&P 500 EMINI Futures II /102036	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/08/2017	2,642.3500	02/06/2018	2,690.1900	Sale	(179,926)	(53,490)		0003	.50	
ESH8	25	1,250	S&P 500 EMINI Futures II /102036	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/08/2017	2,642.3500	02/07/2018	2,676.7500	Sale	(43,175)	(1,030)		0003	.50	
ESH8	75	3,750	S&P 500 EMINI Futures II /102041	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/08/2017	2,642.4000	02/07/2018	2,676.7500	Sale	(129,338)	(3,090)		0003	.50	
MESH8	25	1,250	MSCI EMERGING MARKETS /102322	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	ICE	12/15/2017	1,123.8000	02/08/2018	1,141.5000	Sale	(22,311)	27,657		0003	.50	
MESH8	25	1,250	MSCI EMERGING MARKETS /102322	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	ICE	12/15/2017	1,123.8000	02/08/2018	1,150.9840	Sale	(34,166)	15,802		0003	.50	
MESH8	25	1,250	MSCI EMERGING MARKETS /102324	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	ICE	12/18/2017	1,135.7000	02/08/2018	1,139.0040	Sale	(4,316)	30,777		0003	.50	
MESH8	25	1,250	MSCI EMERGING MARKETS /102324	Portfolio Hedge	Schedule BA, D	Equity/Index	03/16/2018	ICE	12/18/2017	1,135.7000	02/08/2018	1,150.0000	Sale	(18,061)	17,032		0003	.50	
MF5H8	50	2,500	E-MINI MSCI EAFE /102072	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/11/2017	2,015.7000	02/12/2018	2,019.7700	Sale	(10,547)	64,139		0003	.50	
MF5H8	50	2,500	E-MINI MSCI EAFE /102097	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/11/2017	2,016.9000	02/12/2018	2,019.7700	Sale	(7,547)	64,139		0003	.50	
ESH8	25	1,250	S&P 500 EMINI Futures II /102041	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/08/2017	2,642.4000	02/12/2018	2,658.0000	Sale	(19,675)	22,408		0003	.50	
ESH8	50	2,500	S&P 500 EMINI Futures II /102085	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/11/2017	2,653.8500	02/12/2018	2,658.0000	Sale	(10,726)	44,815		0003	.50	
ESH8	25	1,250	S&P 500 EMINI Futures II /102089	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/11/2017	2,653.9000	02/12/2018	2,658.0000	Sale	(5,300)	22,408		0003	.50	
ESH8	50	2,500	S&P 500 EMINI Futures II /102089	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/11/2017	2,653.9000	02/13/2018	2,648.2100	Sale	13,875	69,290		0003	.50	
ESH8	25	1,250	S&P 500 EMINI Futures II /102089	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/11/2017	2,653.9000	02/15/2018	2,707.2500	Sale	(66,863)	(39,155)		0003	.50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESHB	25	1,250	S&P 500 EMINI Futures II /102094	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/11/2017	2,653.9500	02/15/2018	2,707.2500	Sale	(66,800)	(39,155)		0003	50
ESHB	25	1,250	S&P 500 EMINI Futures II /102094	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/11/2017	2,653.9500	02/15/2018	2,709.0000	Sale	(68,988)	(41,343)		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures II /102125	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/11/2017	2,653.9000	02/15/2018	2,709.0000	Sale	(138,101)	(82,685)		0003	50
ESHB	100	5,000	S&P 500 EMINI Futures II /102187	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/12/2017	2,664.3500	02/15/2018	2,718.5000	Sale	(271,451)	(212,870)		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures II /102190	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/12/2017	2,664.3500	02/15/2018	2,733.5000	Sale	(173,226)	(143,935)		0003	50
NQHB	35	700	NASDAQ 100 EMINI Futures II /102049	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/08/2017	6,341.5000	02/16/2018	6,808.7846	Sale	(327,345)	(280,154)		0003	20
NQHB	30	600	NASDAQ 100 EMINI Futures II /102068	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/11/2017	6,358.8500	02/16/2018	6,808.7846	Sale	(270,171)	(240,132)		0003	20
MFSHB	50	2,500	E-MINI MSCI EAFE /102097	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/11/2017	2,016.9000	02/21/2018	2,051.0622	Sale	(85,777)	(14,092)		0003	50
MFSHB	40	2,000	E-MINI MSCI EAFE /102135	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/12/2017	2,018.4680	02/21/2018	2,051.0622	Sale	(65,486)	(11,273)		0003	50
MFSHB	10	500	E-MINI MSCI EAFE /102135	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/12/2017	2,018.4680	02/27/2018	2,063.6882	Sale	(22,684)	(9,131)		0003	50
MFSHB	75	3,750	E-MINI MSCI EAFE /102138	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/12/2017	2,015.1620	02/27/2018	2,063.6882	Sale	(182,531)	(68,485)		0003	50
ESHB	75	3,750	S&P 500 EMINI Futures II /103475	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/02/2018	2,793.2500	02/27/2018	2,783.3900	Sale	36,420	36,420		0003	50
ESHB	25	1,250	S&P 500 EMINI Futures II /103475	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/02/2018	2,793.2500	03/06/2018	2,718.4000	Sale	93,387	93,387		0003	50
ESHB	75	3,750	S&P 500 EMINI Futures II /103547	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/05/2018	2,754.1800	03/06/2018	2,718.4000	Sale	133,649	133,649		0003	50
MFSHB	25	1,250	E-MINI MSCI EAFE /102138	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/12/2017	2,015.1620	03/07/2018	2,027.2571	Sale	(15,305)	22,711		0003	50
MFSHB	24	1,200	E-MINI MSCI EAFE /102144	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	12/12/2017	2,016.1540	03/07/2018	2,027.2571	Sale	(13,502)	21,802		0003	50
NQHB	20	400	NASDAQ 100 EMINI Futures II /102068	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/11/2017	6,358.8500	03/07/2018	6,907.7500	Sale	(219,693)	(199,666)		0003	20
NQHB	10	200	NASDAQ 100 EMINI Futures II /102092	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/11/2017	6,359.1000	03/07/2018	6,907.7500	Sale	(109,796)	(99,833)		0003	20
ESHB	25	1,250	S&P 500 EMINI Futures II /103547	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/05/2018	2,754.1800	03/07/2018	2,718.2500	Sale	44,728	44,728		0003	50
ESHB	25	1,250	S&P 500 EMINI Futures II /103560	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/05/2018	2,738.9075	03/07/2018	2,718.2500	Sale	25,637	25,637		0003	50

E21.22

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESHB	75	3,750	S&P 500 EMINI Futures II /103560	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/05/2018	2,738.9075	03/07/2018	2,723.9000	Sale	55,752	55,752		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures II /103565	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/05/2018	2,713.5983	03/07/2018	2,723.9000	Sale	(13,053)	(13,053)		0003	50	
MFSHB	40	2,000	E-MINI MSCI EAFE /102144	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/12/2017	2,016.1540	03/08/2018	2,040.5375	Sale	(49,064)	9,776		0003	50	
NQHB	40	800	NASDAQ 100 EMINI Futures II /102092	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/11/2017	6,359.1000	03/08/2018	6,924.5000	Sale	(452,585)	(412,733)		0003	20	
NQHB	20	400	NASDAQ 100 EMINI Futures II /102142	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/12/2017	6,416.5000	03/08/2018	6,924.5000	Sale	(203,333)	(206,366)		0003	20	
ESHB	125	6,250	S&P 500 EMINI Futures II /103565	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/05/2018	2,713.5983	03/08/2018	2,723.3000	Sale	(61,513)	(61,513)		0003	50	
ESHB	25	1,250	S&P 500 EMINI Futures II /103571	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/05/2018	2,646.4083	03/08/2018	2,723.3000	Sale	(96,290)	(96,290)		0003	50	
MFSHB	36	1,800	E-MINI MSCI EAFE /102144	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/12/2017	2,016.1540	03/09/2018	2,046.2000	Sale	(54,350)	(1,394)		0003	50	
MFSHB	24	1,200	E-MINI MSCI EAFE /102154	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/12/2017	2,019.0000	03/09/2018	2,046.2000	Sale	(32,818)	(929)		0003	50	
MFSHB	76	3,800	E-MINI MSCI EAFE /102154	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/12/2017	2,019.0000	03/09/2018	2,052.5088	Sale	(127,898)	(26,916)		0003	50	
MFSHB	4	200	E-MINI MSCI EAFE /102191	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/13/2017	2,021.0000	03/09/2018	2,052.5088	Sale	(6,331)	(1,417)		0003	50	
NQHB	50	1,000	NASDAQ 100 EMINI Futures II /102139	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/12/2017	6,416.7000	03/09/2018	6,974.2500	Sale	(557,882)	(565,666)		0003	20	
NQHB	30	600	NASDAQ 100 EMINI Futures II /102142	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/12/2017	6,416.5000	03/09/2018	7,071.3000	Sale	(393,090)	(397,641)		0003	20	
NQHB	30	600	NASDAQ 100 EMINI Futures II /102153	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/12/2017	6,416.5000	03/09/2018	6,974.2500	Sale	(334,849)	(339,400)		0003	20	
ESHB	125	6,250	S&P 500 EMINI Futures II /103571	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/05/2018	2,646.4083	03/09/2018	2,756.5000	Sale	(688,998)	(688,998)		0003	50	
ESHB	150	7,500	S&P 500 EMINI Futures II /103590	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/05/2018	2,650.3817	03/09/2018	2,739.3000	Sale	(667,940)	(667,940)		0003	50	
MFSHB	16	800	E-MINI MSCI EAFE /102191	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/13/2017	2,021.0000	03/12/2018	2,056.6000	Sale	(28,599)	(8,940)		0003	50	
MFSHB	80	4,000	E-MINI MSCI EAFE /102191	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	12/13/2017	2,021.0000	03/12/2018	2,057.4063	Sale	(146,220)	(47,923)		0003	50	
MFSHB	24	1,200	E-MINI MSCI EAFE /103577	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	02/05/2018	2,034.0000	03/12/2018	2,056.6000	Sale	(27,299)	(27,299)		0003	50	
NQHB	20	400	NASDAQ 100 EMINI Futures II /102153	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	12/12/2017	6,416.5000	03/12/2018	7,098.2500	Sale	(272,833)	(275,866)		0003	20	

E21.23

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
NQHB	50	1,000	NASDAQ 100 EMINI Futures II /102194	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/13/2017	6,403.1000	03/12/2018	7,098.2500	Sale	(695,482)	(689,666)		0003	20
ESHB	100	5,000	S&P 500 EMINI Futures II /101878	Portfolio Hedge	ScheduleD	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/05/2017	2,640.4000	03/12/2018	2,783.9000	Sale	(718,163)	(539,832)		0003	50
ESHB	100	5,000	S&P 500 EMINI Futures II /103591	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/05/2018	2,615.0475	03/12/2018	2,783.9000	Sale	(844,965)	(844,965)		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures II /103593	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/06/2018	2,645.2500	03/12/2018	2,783.9000	Sale	(346,976)	(346,976)		0003	50
MFSHB	36	1,800	E-MINI MSCI EAFE /103577	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	02/05/2018	2,034.0000	03/13/2018	2,058.4000	Sale	(44,188)	(44,188)		0003	50
MFSHB	40	2,000	E-MINI MSCI EAFE /103577	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	02/05/2018	2,034.0000	03/13/2018	2,058.9000	Sale	(50,098)	(50,098)		0003	50
MFSHB	100	5,000	E-MINI MSCI EAFE /103592	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	02/06/2018	2,018.1000	03/13/2018	2,058.4000	Sale	(202,244)	(202,244)		0003	50
MFSHB	50	2,500	E-MINI MSCI EAFE /103712	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	02/09/2018	1,952.9880	03/13/2018	2,057.6340	Sale	(261,987)	(261,987)		0003	50
MFSHB	14	700	E-MINI MSCI EAFE /103712	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	9R7GPTS07KV3UQJZ0078	02/09/2018	1,952.9880	03/13/2018	2,058.4000	Sale	(73,893)	(73,893)		0003	50
MESMB	25	1,250	MSCI EMERGING MARKETS /104569	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	9R7GPTS07KV3UQJZ0078	03/12/2018	1,226.9000	03/13/2018	1,220.0000	Sale	8,439	8,439		0003	50
NQHB	25	500	NASDAQ 100 EMINI Futures II /102194	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/13/2017	6,403.1000	03/13/2018	7,152.9643	Sale	(375,107)	(372,200)		0003	20
NQHB	40	800	NASDAQ 100 EMINI Futures II /102196	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/13/2017	6,402.2500	03/13/2018	7,139.5000	Sale	(590,065)	(584,733)		0003	20
NQHB	10	200	NASDAQ 100 EMINI Futures II /102196	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/13/2017	6,402.2500	03/13/2018	7,152.9643	Sale	(150,213)	(148,880)		0003	20
NQHB	50	1,000	NASDAQ 100 EMINI Futures II /102198	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/13/2017	6,402.2500	03/13/2018	7,139.5000	Sale	(737,582)	(730,916)		0003	20
NQHB	10	200	NASDAQ 100 EMINI Futures II /103537	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/02/2018	6,761.5000	03/13/2018	7,139.5000	Sale	(75,670)	(75,670)		0003	20
ESHB	353	17,650	S&P 500 EMINI Futures II /101878	Portfolio Hedge	ScheduleD	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	12/05/2017	2,640.4000	03/13/2018	2,784.1000	Sale	(2,538,645)	(1,909,137)		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures II /103593	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/06/2018	2,645.2500	03/13/2018	2,792.4650	Sale	(368,408)	(368,408)		0003	50
ESHB	100	5,000	S&P 500 EMINI Futures II /103672	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/08/2018	2,633.0000	03/13/2018	2,784.1000	Sale	(756,202)	(756,202)		0003	50
ESHB	50	2,500	S&P 500 EMINI Futures II /103672	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/08/2018	2,633.0000	03/13/2018	2,792.4650	Sale	(399,033)	(399,033)		0003	50
ESHB	75	3,750	S&P 500 EMINI Futures II /103700	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/09/2018	2,575.0000	03/13/2018	2,784.1000	Sale	(784,652)	(784,652)		0003	50
ESHB	25	1,250	S&P 500 EMINI Futures II /103701	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	9R7GPTS07KV3UQJZ0078	02/09/2018	2,553.7675	03/13/2018	2,784.1000	Sale	(288,091)	(288,091)		0003	50

E21.24

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
MF5H8	40	2,000	E-MINI MSCI EAFE /103712	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	02/09/2018	1,952.9880	03/14/2018	2,050.6000	Sale	(195,522)	(195,522)		0003	50	
MF5H8	21	1,050	E-MINI MSCI EAFE /103712	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	02/09/2018	1,952.9880	03/14/2018	2,050.6960	Sale	(102,750)	(102,750)		0003	50	
MF5H8	49	2,450	E-MINI MSCI EAFE /104271	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	02/28/2018	2,055.0000	03/14/2018	2,050.6960	Sale	10,180	10,180		0003	50	
MF5H8	5	250	E-MINI MSCI EAFE /104284	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	03/01/2018	2,025.0000	03/14/2018	2,040.9975	Sale	(4,037)	(4,037)		0003	50	
MF5H8	40	2,000	E-MINI MSCI EAFE /104284	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	03/01/2018	2,025.0000	03/14/2018	2,042.0000	Sale	(34,298)	(34,298)		0003	50	
MF5H8	30	1,500	E-MINI MSCI EAFE /104284	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	03/01/2018	2,025.0000	03/14/2018	2,050.6960	Sale	(38,767)	(38,767)		0003	50	
MF5H8	75	3,750	E-MINI MSCI EAFE /104293	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/20/2018	ICE	03/01/2018	2,005.1893	03/14/2018	2,040.9975	Sale	(134,839)	(134,839)		0003	50	
NGH8	65	1,300	NASDAQ 100 EMINI Futures II /103537	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/02/2018	6,761.5000	03/14/2018	7,058.2500	Sale	(386,231)	(386,231)		0003	20	
NGH8	100	2,000	NASDAQ 100 EMINI Futures II /103679	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/08/2018	6,428.8475	03/14/2018	7,058.2500	Sale	(1,259,507)	(1,259,507)		0003	20	
NGH8	50	1,000	NASDAQ 100 EMINI Futures II /103686	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/09/2018	6,374.3750	03/14/2018	7,058.2500	Sale	(684,226)	(684,226)		0003	20	
ESH8	75	3,750	S&P 500 EMINI Futures II /103701	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/09/2018	2,553.7675	03/14/2018	2,768.5000	Sale	(805,773)	(805,773)		0003	50	
ESH8	75	3,750	S&P 500 EMINI Futures II /103838	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/14/2018	2,633.4167	03/14/2018	2,768.5000	Sale	(507,089)	(507,089)		0003	50	
ESH8	100	5,000	S&P 500 EMINI Futures II /103853	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	02/14/2018	2,701.0000	03/14/2018	2,768.5000	Sale	(338,202)	(338,202)		0003	50	
ESH8	50	2,500	S&P 500 EMINI Futures II /104289	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	03/01/2018	2,684.2200	03/14/2018	2,768.5000	Sale	(211,051)	(211,051)		0003	50	
ESH8	50	2,500	S&P 500 EMINI Futures II /104303	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	03/02/2018	2,661.0000	03/14/2018	2,768.5000	Sale	(269,101)	(269,101)		0003	50	
ESH8	50	2,500	S&P 500 EMINI Futures II /104308	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	03/16/2018	CME	03/02/2018	2,675.0000	03/14/2018	2,768.5000	Sale	(234,101)	(234,101)		0003	50	
MESB8	5	250	MSCI EMERGING MARKETS /104793	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/20/2018	1,210.0000	03/22/2018	1,191.2600	Sale	4,648	4,648		0003	50	
MESB8	25	1,250	MSCI EMERGING MARKETS /104793	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/20/2018	1,210.0000	03/22/2018	1,195.0000	Sale	18,564	18,564		0003	50	
MESB8	5	250	MSCI EMERGING MARKETS /104814	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/21/2018	1,210.0000	03/22/2018	1,191.0000	Sale	4,713	4,713		0003	50	
MESB8	25	1,250	MSCI EMERGING MARKETS /104814	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/21/2018	1,210.0000	03/22/2018	1,191.2600	Sale	23,239	23,239		0003	50	
MESB8	30	1,500	MSCI EMERGING MARKETS /104815	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	ICE	03/21/2018	1,216.0000	03/22/2018	1,191.0000	Sale	37,277	37,277		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
MF5M8	40	2,000	E-MINI MSCI EAFE /104452	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/08/2018	2,022.1375	03/23/2018	1,965.0000	Sale	113,977	113,977		0003	50	
MF5M8	25	1,250	E-MINI MSCI EAFE /104511	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/09/2018	2,033.9088	03/23/2018	1,965.0000	Sale	85,950	85,950		0003	50	
MF5M8	55	2,750	E-MINI MSCI EAFE /104511	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/09/2018	2,033.9088	04/04/2018	1,977.0640	Sale	155,914	155,914		0003	50	
MF5M8	20	1,000	E-MINI MSCI EAFE /104520	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/12/2018	2,038.9063	04/04/2018	1,977.0640	Sale	61,694	61,694		0003	50	
RTYM8	75	3,750	Russell 2000 Index RTY /105115	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	04/03/2018	1,497.2893	04/04/2018	1,519.0440	Sale	(82,136)	(82,136)		0003	50	
ESM8	100	5,000	S&P 500 EMINI Futures II /104375	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/06/2018	2,723.3750	04/05/2018	2,659.4783	Sale	318,782	318,782		0003	50	
ESM8	50	2,500	S&P 500 EMINI Futures II /104411	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/07/2018	2,728.9000	04/05/2018	2,659.4783	Sale	173,203	173,203		0003	50	
ESM8	50	2,500	S&P 500 EMINI Futures II /104411	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/07/2018	2,728.9000	04/05/2018	2,670.6425	Sale	145,293	145,293		0003	50	
ESM8	50	2,500	S&P 500 EMINI Futures II /104446	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/08/2018	2,728.3000	04/05/2018	2,670.6425	Sale	143,793	143,793		0003	50	
NQMB	30	600	NASDAQ 100 EMINI Futures II /104418	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/07/2018	6,933.1500	04/11/2018	6,614.0000	Sale	191,279	191,279		0003	20	
NQMB	20	400	NASDAQ 100 EMINI Futures II /104425	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/08/2018	6,950.1000	04/11/2018	6,614.0000	Sale	134,300	134,300		0003	20	
NQMB	5	100	NASDAQ 100 EMINI Futures II /104428	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/08/2018	6,950.7000	04/11/2018	6,614.0000	Sale	33,635	33,635		0003	20	
ESM8	50	2,500	S&P 500 EMINI Futures II /104446	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/08/2018	2,728.3000	04/12/2018	2,664.5000	Sale	159,149	159,149		0003	50	
ESM8	25	1,250	S&P 500 EMINI Futures II /104453	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/08/2018	2,728.3500	04/12/2018	2,664.5000	Sale	79,637	79,637		0003	50	
NQMB	15	300	NASDAQ 100 EMINI Futures II /104428	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/08/2018	6,950.7000	04/13/2018	6,639.0000	Sale	93,405	93,405		0003	20	
NQMB	20	400	NASDAQ 100 EMINI Futures II /104456	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/08/2018	6,950.7000	04/13/2018	6,639.0000	Sale	124,540	124,540		0003	20	
NQMB	20	400	NASDAQ 100 EMINI Futures II /104468	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/09/2018	7,000.4000	04/13/2018	6,639.0000	Sale	144,420	144,420		0003	20	
ESM8	25	1,250	S&P 500 EMINI Futures II /104453	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/08/2018	2,728.3500	04/17/2018	2,698.2500	Sale	37,450	37,450		0003	50	
ESM8	25	1,250	S&P 500 EMINI Futures II /104466	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/09/2018	2,744.3000	04/17/2018	2,698.2500	Sale	57,387	57,387		0003	50	
NQMB	25	500	NASDAQ 100 EMINI Futures II /104470	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/09/2018	7,000.4000	04/24/2018	6,578.4200	Sale	210,815	210,815		0003	20	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESMB	50	2,500	S&P 500 EMINI Futures II /104466	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/09/2018	2,744.3000	04/24/2018	2,658.0000	Sale	215,399	215,399		0003	50	
ESMB	25	1,250	S&P 500 EMINI Futures II /104466	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/09/2018	2,744.3000	05/14/2018	2,738.0000	Sale	7,700	7,700		0003	50	
ESMB	50	2,500	S&P 500 EMINI Futures II /104478	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/09/2018	2,744.3500	05/14/2018	2,738.0000	Sale	15,524	15,524		0003	50	
ESMB	35	1,750	S&P 500 EMINI Futures II /104517	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/12/2018	2,788.9500	05/14/2018	2,738.0000	Sale	88,917	88,917		0003	50	
ESMB	110	5,500	S&P 500 EMINI Futures II /104517	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/12/2018	2,788.9500	05/17/2018	2,727.0000	Sale	339,953	339,953		0003	50	
NQMB	15	300	NASDAQ 100 EMINI Futures II /104470	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/09/2018	7,000.4000	06/04/2018	7,083.0000	Sale	(24,880)	(24,880)		0003	20	
NQMB	20	400	NASDAQ 100 EMINI Futures II /104498	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/09/2018	7,000.3000	06/04/2018	7,083.0000	Sale	(33,213)	(33,213)		0003	20	
NQMB	5	100	NASDAQ 100 EMINI Futures II /104513	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/12/2018	7,124.6500	06/04/2018	7,083.0000	Sale	4,132	4,132		0003	20	
NQMB	20	400	NASDAQ 100 EMINI Futures II /104515	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/12/2018	7,124.4500	06/04/2018	7,083.0000	Sale	16,447	16,447		0003	20	
ESMB	5	250	S&P 500 EMINI Futures II /104517	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/12/2018	2,788.9500	06/04/2018	2,733.8000	Sale	13,754	13,754		0003	50	
ESMB	45	2,250	S&P 500 EMINI Futures II /104584	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/13/2018	2,788.6000	06/04/2018	2,733.8000	Sale	123,001	123,001		0003	50	
ESMB	5	250	S&P 500 EMINI Futures II /104584	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/13/2018	2,788.6000	06/05/2018	2,745.5000	Sale	10,742	10,742		0003	50	
ESMB	50	2,500	S&P 500 EMINI Futures II /104585	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/13/2018	2,788.6000	06/05/2018	2,745.5000	Sale	107,418	107,418		0003	50	
ESMB	45	2,250	S&P 500 EMINI Futures II /104593	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/13/2018	2,788.4000	06/05/2018	2,745.5000	Sale	96,226	96,226		0003	50	
MFSMB	50	2,500	E-MINI MSCI EAFE /104520	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/12/2018	2,038.9063	06/06/2018	2,012.5640	Sale	65,484	65,484		0003	50	
NQMB	35	700	NASDAQ 100 EMINI Futures II /104513	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/12/2018	7,124.6500	06/06/2018	7,167.5071	Sale	(30,246)	(30,246)		0003	20	
NQMB	10	200	NASDAQ 100 EMINI Futures II /104513	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/12/2018	7,124.6500	06/06/2018	7,179.2500	Sale	(10,986)	(10,986)		0003	20	
NQMB	40	800	NASDAQ 100 EMINI Futures II /104579	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/13/2018	7,165.6000	06/06/2018	7,179.2500	Sale	(11,186)	(11,186)		0003	20	
ESMB	55	2,750	S&P 500 EMINI Futures II /104593	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/13/2018	2,788.4000	06/06/2018	2,755.5000	Sale	90,089	90,089		0003	50	
ESMB	55	2,750	S&P 500 EMINI Futures II /104623	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/14/2018	2,772.8000	06/06/2018	2,751.6000	Sale	57,935	57,935		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESMB	95	4,750	S&P 500 EMINI Futures II /104623	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/14/2018	2,772.8000	06/06/2018	2,755.5000	Sale	81,508	81,508		0003	50	
ESMB	145	7,250	S&P 500 EMINI Futures II /104628	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/14/2018	2,772.5000	06/06/2018	2,751.6000	Sale	150,562	150,562		0003	50	
MFSMB	10	500	E-MINI MSCI EAFE /104520	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/12/2018	2,038.9063	06/07/2018	2,016.3000	Sale	11,229	11,229		0003	50	
MFSMB	40	2,000	E-MINI MSCI EAFE /104526	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/12/2018	2,038.1000	06/07/2018	2,016.3000	Sale	43,302	43,302		0003	50	
MFSMB	15	750	E-MINI MSCI EAFE /104572	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/13/2018	2,040.4000	06/07/2018	2,010.8440	Sale	22,055	22,055		0003	50	
MFSMB	25	1,250	E-MINI MSCI EAFE /104572	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/13/2018	2,040.4000	06/07/2018	2,016.3000	Sale	29,939	29,939		0003	50	
MFSMB	60	3,000	E-MINI MSCI EAFE /104581	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/13/2018	2,039.8000	06/07/2018	2,010.8440	Sale	86,422	86,422		0003	50	
NQMB	10	200	NASDAQ 100 EMINI Futures II /104579	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/13/2018	7,165.6000	06/07/2018	7,215.0000	Sale	(9,946)	(9,946)		0003	20	
NQMB	40	800	NASDAQ 100 EMINI Futures II /104598	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/13/2018	7,164.3540	06/07/2018	7,215.0000	Sale	(40,782)	(40,782)		0003	20	
ESMB	105	5,250	S&P 500 EMINI Futures II /104628	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/14/2018	2,772.5000	06/07/2018	2,772.2000	Sale	878	878		0003	50	
ESMB	145	7,250	S&P 500 EMINI Futures II /104716	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	03/19/2018	2,718.5000	06/07/2018	2,772.2000	Sale	(390,343)	(390,343)		0003	50	
MFSMB	50	2,500	E-MINI MSCI EAFE /104581	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/13/2018	2,039.8000	06/08/2018	2,004.7000	Sale	87,378	87,378		0003	50	
MFSMB	40	2,000	E-MINI MSCI EAFE /104581	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/13/2018	2,039.8000	06/08/2018	2,008.8000	Sale	61,702	61,702		0003	50	
MFSMB	40	2,000	E-MINI MSCI EAFE /104624	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/14/2018	2,031.7000	06/08/2018	2,008.8000	Sale	45,502	45,502		0003	50	
MFSMB	50	2,500	E-MINI MSCI EAFE /104626	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/14/2018	2,031.7960	06/08/2018	2,008.4340	Sale	58,033	58,033		0003	50	
MFSMB	20	1,000	E-MINI MSCI EAFE /104626	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/14/2018	2,031.7960	06/08/2018	2,008.8000	Sale	22,847	22,847		0003	50	
MFSMB	30	1,500	E-MINI MSCI EAFE /104626	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/14/2018	2,031.7960	06/08/2018	2,013.4860	Sale	27,242	27,242		0003	50	
MFSMB	30	1,500	E-MINI MSCI EAFE /104636	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/14/2018	2,022.0975	06/08/2018	2,013.7800	Sale	12,253	12,253		0003	50	
MFSMB	50	2,500	E-MINI MSCI EAFE /104636	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/14/2018	2,022.0975	06/08/2018	2,015.5380	Sale	16,027	16,027		0003	50	
MFSMB	20	1,000	E-MINI MSCI EAFE /104637	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/14/2018	2,023.1000	06/08/2018	2,013.4860	Sale	9,465	9,465		0003	50	

E21.28

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
MFSMB	20	1,000	E-MINI MSCI EAFE /104637	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE 9R7GPTS07KV3UQJZ0078	03/14/2018	2,023.1000	06/08/2018	2,013.7800	Sale	9,171	9,171		0003	50	
NQMB	10	200	NASDAQ 100 EMINI Futures II /104598	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/13/2018	7,164.3540	06/08/2018	7,161.0000	Sale	604	604		0003	20	
NQMB	50	1,000	NASDAQ 100 EMINI Futures II /104617	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/14/2018	7,083.6000	06/08/2018	7,161.0000	Sale	(77,732)	(77,732)		0003	20	
NQMB	40	800	NASDAQ 100 EMINI Futures II /104619	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/14/2018	7,083.6000	06/08/2018	7,161.0000	Sale	(62,186)	(62,186)		0003	20	
NQMB	50	1,000	NASDAQ 100 EMINI Futures II /104631	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/14/2018	7,083.0000	06/08/2018	7,161.0000	Sale	(78,332)	(78,332)		0003	20	
NQMB	20	400	NASDAQ 100 EMINI Futures II /104633	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/14/2018	7,083.0820	06/08/2018	7,161.0000	Sale	(31,304)	(31,304)		0003	20	
ESMB	50	2,500	S&P 500 EMINI Futures II /104564	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/12/2018	2,788.9000	06/08/2018	2,772.2000	Sale	41,418	41,418		0003	50	
ESMB	5	250	S&P 500 EMINI Futures II /104716	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/19/2018	2,718.5000	06/08/2018	2,772.2000	Sale	(13,460)	(13,460)		0003	50	
ESMB	100	5,000	S&P 500 EMINI Futures II /104857	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/22/2018	2,678.0000	06/08/2018	2,772.2000	Sale	(471,702)	(471,702)		0003	50	
ESMB	100	5,000	S&P 500 EMINI Futures II /104872	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/23/2018	2,651.0000	06/08/2018	2,772.2000	Sale	(606,702)	(606,702)		0003	50	
ESMB	100	5,000	S&P 500 EMINI Futures II /104911	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/23/2018	2,587.9800	06/08/2018	2,772.2000	Sale	(921,802)	(921,802)		0003	50	
ESMB	100	5,000	S&P 500 EMINI Futures II /105097	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	04/02/2018	2,562.5000	06/08/2018	2,772.2000	Sale	(1,049,202)	(1,049,202)		0003	50	
ESMB	45	2,250	S&P 500 EMINI Futures II /105101	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	04/02/2018	2,569.0000	06/08/2018	2,772.2000	Sale	(457,516)	(457,516)		0003	50	
MFSMB	25	1,250	E-MINI MSCI EAFE /104669	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE 9R7GPTS07KV3UQJZ0078	03/15/2018	2,023.8660	06/11/2018	2,028.5000	Sale	(5,979)	(5,979)		0003	50	
MFSMB	25	1,250	E-MINI MSCI EAFE /104669	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE 9R7GPTS07KV3UQJZ0078	03/15/2018	2,023.8660	06/11/2018	2,029.8000	Sale	(7,604)	(7,604)		0003	50	
MFSMB	75	3,750	E-MINI MSCI EAFE /104792	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE 9R7GPTS07KV3UQJZ0078	03/20/2018	2,006.2333	06/11/2018	2,028.5000	Sale	(84,058)	(84,058)		0003	50	
MFSMB	50	2,500	E-MINI MSCI EAFE /104858	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE 9R7GPTS07KV3UQJZ0078	03/22/2018	1,977.0000	06/11/2018	2,027.5000	Sale	(126,622)	(126,622)		0003	50	
MFSMB	25	1,250	E-MINI MSCI EAFE /104858	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE 9R7GPTS07KV3UQJZ0078	03/22/2018	1,977.0000	06/11/2018	2,028.5000	Sale	(64,561)	(64,561)		0003	50	
NQMB	55	1,100	NASDAQ 100 EMINI Futures II /104633	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/14/2018	7,083.0820	06/11/2018	7,151.5000	Sale	(75,625)	(75,625)		0003	20	
NQMB	100	2,000	NASDAQ 100 EMINI Futures II /104909	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME 9R7GPTS07KV3UQJZ0078	03/23/2018	6,584.2525	06/11/2018	7,151.5000	Sale	(1,135,197)	(1,135,197)		0003	20	

E21.29

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
NQMB	50	1,000	NASDAQ 100 EMINI Futures II /106848	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	05/31/2018	6,963.5600	06/11/2018	7,151.5000	Sale	(188,291)	(188,291)		0003	20	
ESMB	50	2,500	S&P 500 EMINI Futures II /104564	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/12/2018	2,788.9000	06/11/2018	2,778.8000	Sale	24,918	24,918		0003	50	
ESMB	53	2,650	S&P 500 EMINI Futures II /104588	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/13/2018	2,788.5500	06/11/2018	2,778.8000	Sale	25,486	25,486		0003	50	
ESMB	55	2,750	S&P 500 EMINI Futures II /105101	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	04/02/2018	2,569.0000	06/11/2018	2,778.8000	Sale	(577,336)	(577,336)		0003	50	
ESMB	75	3,750	S&P 500 EMINI Futures II /105135	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	04/04/2018	2,572.7733	06/11/2018	2,778.8000	Sale	(773,127)	(773,127)		0003	50	
ESMB	150	7,500	S&P 500 EMINI Futures II /106590	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	05/29/2018	2,698.8950	06/11/2018	2,778.8000	Sale	(600,341)	(600,341)		0003	50	
ESMB	97	4,850	S&P 500 EMINI Futures II /106591	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	05/29/2018	2,698.2855	06/11/2018	2,778.8000	Sale	(391,176)	(391,176)		0003	50	
MFSMB	25	1,250	E-MINI MSCI EAFE /104858	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	ICE	03/22/2018	1,977.0000	06/12/2018	2,019.6000	Sale	(53,436)	(53,436)		0003	50	
ESMB	47	2,350	S&P 500 EMINI Futures II /104588	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/13/2018	2,788.5500	06/12/2018	2,783.0000	Sale	12,730	12,730		0003	50	
ESMB	100	5,000	S&P 500 EMINI Futures II /104590	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/13/2018	2,788.5500	06/12/2018	2,783.0000	Sale	27,086	27,086		0003	50	
ESMB	153	7,650	S&P 500 EMINI Futures II /104597	Portfolio Hedge	Schedule BA, D	Equity/Index	06/15/2018	CME	03/13/2018	2,788.3500	06/12/2018	2,783.0000	Sale	39,912	39,912		0003	50	
ESMB	100	5,000	S&P 500 EMINI Futures II /106591	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	05/29/2018	2,698.2855	06/12/2018	2,783.0000	Sale	(424,275)	(424,275)		0003	50	
ESMB	100	5,000	S&P 500 EMINI Futures II /106619	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	06/15/2018	CME	05/30/2018	2,727.2500	06/12/2018	2,783.0000	Sale	(279,452)	(279,452)		0003	50	
ESUB	45	2,250	S&P 500 EMINI Futures II /106765	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/04/2018	2,738.0500	06/29/2018	2,725.2500	Sale	28,484	28,484		0003	50	
ESUB	5	250	S&P 500 EMINI Futures II /106765	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/04/2018	2,738.0500	07/18/2018	2,816.2500	Sale	(19,585)	(19,585)		0003	50	
ESUB	50	2,500	S&P 500 EMINI Futures II /106773	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/05/2018	2,749.5500	07/18/2018	2,816.2500	Sale	(167,101)	(167,101)		0003	50	
ESUB	45	2,250	S&P 500 EMINI Futures II /106779	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/05/2018	2,749.5500	07/18/2018	2,816.2500	Sale	(150,391)	(150,391)		0003	50	
NQUB	30	600	NASDAQ 100 EMINI Futures II /106767	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/04/2018	7,107.9500	07/24/2018	7,479.7750	Sale	(223,306)	(223,306)		0003	20	
NQUB	20	400	NASDAQ 100 EMINI Futures II /106776	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/04/2018	7,108.0000	07/24/2018	7,479.7750	Sale	(148,850)	(148,850)		0003	20	
ESUB	30	1,500	S&P 500 EMINI Futures II /108646	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	08/08/2018	2,860.7500	08/08/2018	2,854.0000	Sale	9,903	9,903		0003	50	
MFSUB	75	3,750	E-MINI MSCI EAFE /106952	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/07/2018	2,019.1000	08/10/2018	1,941.3000	Sale	291,192	291,192		0003	50	
ESUB	5	250	S&P 500 EMINI Futures II /106779	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/05/2018	2,749.5500	08/29/2018	2,916.8000	Sale	(41,848)	(41,848)		0003	50	

E21.30

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESUB	95	4,750	S&P 500 EMINI Futures II /106795	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/06/2018	2,755.5500	08/29/2018	2,916.8000	Sale	(766,604)	(766,604)		0003	50	
NQUB	10	200	NASDAQ 100 EMINI Futures II /106776	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/04/2018	7,108.0000	09/07/2018	7,458.2500	Sale	(70,120)	(70,120)		0003	20	
NQUB	20	400	NASDAQ 100 EMINI Futures II /106922	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/06/2018	7,203.1500	09/07/2018	7,458.2500	Sale	(102,180)	(102,180)		0003	20	
ESUB	5	250	S&P 500 EMINI Futures II /106795	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/06/2018	2,755.5500	09/07/2018	2,876.7500	Sale	(30,335)	(30,335)		0003	50	
ESUB	50	2,500	S&P 500 EMINI Futures II /106797	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/06/2018	2,755.5000	09/07/2018	2,876.7500	Sale	(303,476)	(303,476)		0003	50	
MFSUB	75	3,750	E-MINI MSCI EAFE /106959	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/07/2018	2,013.7440	09/11/2018	1,914.1427	Sale	372,947	372,947		0003	50	
ESUB	50	2,500	S&P 500 EMINI Futures II /106799	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/06/2018	2,755.5000	09/11/2018	2,880.3000	Sale	(312,332)	(312,332)		0003	50	
ESUB	50	2,500	S&P 500 EMINI Futures II /106936	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/07/2018	2,776.0500	09/11/2018	2,880.3000	Sale	(260,957)	(260,957)		0003	50	
ESUB	150	7,500	S&P 500 EMINI Futures II /106936	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/07/2018	2,776.0500	09/12/2018	2,889.8000	Sale	(854,121)	(854,121)		0003	50	
ESUB	50	2,500	S&P 500 EMINI Futures II /106943	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/07/2018	2,776.0000	09/13/2018	2,888.4000	Sale	(281,332)	(281,332)		0003	50	
ESUB	150	7,500	S&P 500 EMINI Futures II /106962	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	2,775.8500	09/13/2018	2,888.4000	Sale	(845,121)	(845,121)		0003	50	
ESUB	100	5,000	S&P 500 EMINI Futures II /106972	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	2,775.9000	09/13/2018	2,888.4000	Sale	(563,164)	(563,164)		0003	50	
MFSUB	100	5,000	E-MINI MSCI EAFE /106966	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/08/2018	2,011.7000	09/14/2018	1,943.8333	Sale	338,590	338,590		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /106968	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/08/2018	2,007.5000	09/14/2018	1,943.8333	Sale	158,795	158,795		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /106977	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/08/2018	2,011.4340	09/14/2018	1,941.0340	Sale	175,628	175,628		0003	50	
NQUB	30	600	NASDAQ 100 EMINI Futures II /106922	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/06/2018	7,203.1500	09/14/2018	7,564.5000	Sale	(217,009)	(217,009)		0003	20	
NQUB	50	1,000	NASDAQ 100 EMINI Futures II /106941	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/07/2018	7,238.8500	09/14/2018	7,564.5000	Sale	(325,982)	(325,982)		0003	20	
NQUB	20	400	NASDAQ 100 EMINI Futures II /106970	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	7,184.8000	09/14/2018	7,564.5000	Sale	(152,013)	(152,013)		0003	20	
ESUB	50	2,500	S&P 500 EMINI Futures II /106972	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	2,775.9000	09/14/2018	2,905.3000	Sale	(323,832)	(323,832)		0003	50	
ESUB	100	5,000	S&P 500 EMINI Futures II /107019	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	2,775.9500	09/14/2018	2,905.3000	Sale	(647,414)	(647,414)		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESUB	50	2,500	S&P 500 EMINI Futures II /107041	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	2,776.0000	09/14/2018	2,905.3000	Sale	(323,582)	(323,582)		0003	50	
ESUB	30	1,500	S&P 500 EMINI Futures II /107089	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	2,782.6000	09/14/2018	2,905.3000	Sale	(184,249)	(184,249)		0003	50	
ESUB	50	2,500	S&P 500 EMINI Futures II /107090	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	2,782.6000	09/14/2018	2,905.3000	Sale	(307,082)	(307,082)		0003	50	
ESUB	100	5,000	S&P 500 EMINI Futures II /107110	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	2,782.7000	09/14/2018	2,905.3000	Sale	(613,664)	(613,664)		0003	50	
ESUB	70	3,500	S&P 500 EMINI Futures II /107126	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	2,782.6500	09/14/2018	2,905.3000	Sale	(429,740)	(429,740)		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /107043	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/08/2018	2,016.4860	09/17/2018	1,950.0513	Sale	165,715	165,715		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /107070	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/08/2018	2,016.8800	09/17/2018	1,950.0513	Sale	166,700	166,700		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /107080	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/08/2018	2,018.7380	09/17/2018	1,950.0513	Sale	171,345	171,345		0003	50	
MFSUB	25	1,250	E-MINI MSCI EAFE /107118	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/11/2018	2,032.9000	09/17/2018	1,950.2000	Sale	103,189	103,189		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /107133	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/11/2018	2,031.7000	09/17/2018	1,949.8000	Sale	204,378	204,378		0003	50	
MFSUB	25	1,250	E-MINI MSCI EAFE /107133	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/11/2018	2,031.7000	09/17/2018	1,950.2000	Sale	101,689	101,689		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /107134	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/11/2018	2,031.7000	09/17/2018	1,949.8000	Sale	204,378	204,378		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /107141	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/11/2018	2,030.8000	09/17/2018	1,949.0000	Sale	204,128	204,128		0003	50	
MFSUB	25	1,250	E-MINI MSCI EAFE /107158	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/12/2018	2,022.9000	09/17/2018	1,949.0000	Sale	92,189	92,189		0003	50	
MFSUB	25	1,250	E-MINI MSCI EAFE /107545	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/27/2018	1,956.0400	09/17/2018	1,949.0000	Sale	8,614	8,614		0003	50	
NQUB	30	600	NASDAQ 100 EMINI Futures II /106970	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	7,184.8000	09/17/2018	7,544.7500	Sale	(216,169)	(216,169)		0003	20	
NQUB	50	1,000	NASDAQ 100 EMINI Futures II /106980	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	7,184.9000	09/17/2018	7,544.7500	Sale	(360,182)	(360,182)		0003	20	
NQUB	50	1,000	NASDAQ 100 EMINI Futures II /107078	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	7,185.8000	09/17/2018	7,544.7500	Sale	(359,282)	(359,282)		0003	20	
NQUB	10	200	NASDAQ 100 EMINI Futures II /107079	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	7,185.7500	09/17/2018	7,544.7500	Sale	(71,866)	(71,866)		0003	20	
NQUB	10	200	NASDAQ 100 EMINI Futures II /107083	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/08/2018	7,185.9500	09/17/2018	7,544.7500	Sale	(71,826)	(71,826)		0003	20	

E21.32

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
NQUB	30	600	NASDAQ 100 EMINI Futures II /107106	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	7,176.7000	09/17/2018	7,544.7500	Sale	(221,029)	(221,029)		0003	20	
ESUB	27	1,350	S&P 500 EMINI Futures II /107126	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	2,782.6500	09/17/2018	2,906.3000	Sale	(167,107)	(167,107)		0003	50	
ESUB	100	5,000	S&P 500 EMINI Futures II /107139	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	2,782.6000	09/17/2018	2,906.3000	Sale	(619,164)	(619,164)		0003	50	
ESUB	200	10,000	S&P 500 EMINI Futures II /107150	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/12/2018	2,786.9500	09/17/2018	2,906.3000	Sale	(1,194,828)	(1,194,828)		0003	50	
ESUB	75	3,750	S&P 500 EMINI Futures II /107294	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/19/2018	2,751.0000	09/17/2018	2,906.3000	Sale	(582,902)	(582,902)		0003	50	
ESUB	48	2,400	S&P 500 EMINI Futures II /107564	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/28/2018	2,702.0000	09/17/2018	2,906.3000	Sale	(490,657)	(490,657)		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /107545	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	06/27/2018	1,956.0400	09/18/2018	1,964.2000	Sale	(20,772)	(20,772)		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /108515	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	08/02/2018	1,975.0000	09/18/2018	1,961.5000	Sale	33,378	33,378		0003	50	
MFSUB	50	2,500	E-MINI MSCI EAFE /108515	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	08/02/2018	1,975.0000	09/18/2018	1,962.5000	Sale	30,878	30,878		0003	50	
NQUB	20	400	NASDAQ 100 EMINI Futures II /107106	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	7,176.7000	09/18/2018	7,436.2500	Sale	(103,953)	(103,953)		0003	20	
NQUB	50	1,000	NASDAQ 100 EMINI Futures II /107112	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	7,176.9000	09/18/2018	7,436.2500	Sale	(259,682)	(259,682)		0003	20	
NQUB	80	1,600	NASDAQ 100 EMINI Futures II /107121	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	7,177.3375	09/18/2018	7,436.2500	Sale	(414,791)	(414,791)		0003	20	
NQUB	25	500	NASDAQ 100 EMINI Futures II /107127	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/11/2018	7,177.1000	09/18/2018	7,436.2500	Sale	(129,741)	(129,741)		0003	20	
NQUB	35	700	NASDAQ 100 EMINI Futures II /107513	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/26/2018	7,084.0000	09/18/2018	7,436.2500	Sale	(246,821)	(246,821)		0003	20	
ESUB	50	2,500	S&P 500 EMINI Futures II /107021	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/08/2018	2,776.0000	09/18/2018	2,891.0000	Sale	(287,832)	(287,832)		0003	50	
ESUB	100	5,000	S&P 500 EMINI Futures II /107107	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/11/2018	2,782.6500	09/18/2018	2,891.0000	Sale	(542,414)	(542,414)		0003	50	
ESUB	3	150	S&P 500 EMINI Futures II /107122	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/11/2018	2,782.5500	09/18/2018	2,891.0000	Sale	(16,287)	(16,287)		0003	50	
ESUB	200	10,000	S&P 500 EMINI Futures II /107151	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/12/2018	2,786.9250	09/18/2018	2,891.0000	Sale	(1,042,078)	(1,042,078)		0003	50	
ESUB	100	5,000	S&P 500 EMINI Futures II /107152	Portfolio Hedge	Schedule BA, D	Equity/Index	09/21/2018	CME	06/12/2018	2,786.9000	09/18/2018	2,891.0000	Sale	(521,164)	(521,164)		0003	50	
ESUB	50	2,500	S&P 500 EMINI Futures II /107564	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/28/2018	2,702.0000	09/18/2018	2,903.2500	Sale	(503,495)	(503,495)		0003	50	
ESUB	47	2,350	S&P 500 EMINI Futures II /107617	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/28/2018	2,723.7500	09/18/2018	2,891.0000	Sale	(393,367)	(393,367)		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESU8	28	1,400	S&P 500 EMINI Futures II /107617	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	CME	06/28/2018	2,723.7500	09/18/2018	2,903.2500	Sale	(251,507)	(251,507)		0003	50	
MFSUB	100	5,000	E-MINI MSCI EAFE /108837	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	09/21/2018	ICE	08/17/2018	1,928.6210	09/19/2018	1,964.3000	Sale	(179,139)	(179,139)		0003	50	
ESZ8	50	2,500	S&P 500 EMINI Futures II /109371	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/11/2018	2,885.0500	09/20/2018	2,925.0000	Sale	(100,226)	(100,226)		0003	50	
ESZ8	47	2,350	S&P 500 EMINI Futures II /109375	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/11/2018	2,885.1000	09/20/2018	2,925.0000	Sale	(94,095)	(94,095)		0003	50	
ESZ8	3	150	S&P 500 EMINI Futures II /109375	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/11/2018	2,885.1000	09/21/2018	2,943.0000	Sale	(8,706)	(8,706)		0003	50	
ESZ8	100	5,000	S&P 500 EMINI Futures II /109386	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/12/2018	2,894.6750	09/21/2018	2,943.0000	Sale	(242,327)	(242,327)		0003	50	
ESZ8	22	1,100	S&P 500 EMINI Futures II /109403	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/12/2018	2,894.8000	09/21/2018	2,943.0000	Sale	(53,174)	(53,174)		0003	50	
MFSZ8	25	1,250	E-MINI MSCI EAFE /109788	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	09/21/2018	1,996.4200	09/28/2018	1,974.0000	Sale	27,839	27,839		0003	50	
MFSZ8	25	1,250	E-MINI MSCI EAFE /109807	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	ICE	09/21/2018	1,996.5680	09/28/2018	1,973.0000	Sale	29,274	29,274		0003	50	
ESZ8	46	2,300	S&P 500 EMINI Futures II /110167	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/04/2018	2,906.5000	10/08/2018	2,888.5000	Sale	41,060	41,060		0003	50	
ESZ8	14	700	S&P 500 EMINI Futures II /110167	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/04/2018	2,906.5000	10/10/2018	2,857.0000	Sale	34,546	34,546		0003	50	
ESZ8	8	400	S&P 500 EMINI Futures II /110192	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/04/2018	2,911.2500	10/10/2018	2,857.0000	Sale	21,641	21,641		0003	50	
ESZ8	52	2,600	S&P 500 EMINI Futures II /110192	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/04/2018	2,911.2500	10/11/2018	2,771.0000	Sale	364,265	364,265		0003	50	
ESZ8	13	650	S&P 500 EMINI Futures II /110193	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/04/2018	2,898.5000	10/11/2018	2,771.0000	Sale	82,779	82,779		0003	50	
ESZ8	47	2,350	S&P 500 EMINI Futures II /110193	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/04/2018	2,898.5000	10/11/2018	2,775.1455	Sale	289,535	289,535		0003	50	
ESZ8	15	750	S&P 500 EMINI Futures II /110641	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/19/2018	2,769.0000	10/24/2018	2,673.7500	Sale	71,327	71,327		0003	50	
ESZ8	30	1,500	S&P 500 EMINI Futures II /110654	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/22/2018	2,772.0000	10/24/2018	2,673.7500	Sale	147,153	147,153		0003	50	
ESZ8	72	3,600	S&P 500 EMINI Futures II /110729	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/23/2018	2,712.6690	10/24/2018	2,670.5000	Sale	151,276	151,276		0003	50	
ESZ8	28	1,400	S&P 500 EMINI Futures II /110729	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	10/23/2018	2,712.6690	10/24/2018	2,673.7500	Sale	54,279	54,279		0003	50	
NQZ8	45	900	NASDAQ 100 EMINI Futures II /109479	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	7,593.1900	12/04/2018	7,034.6500	Sale	502,370	502,370		0003	20	
ESZ8	25	1,250	S&P 500 EMINI Futures II /109403	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/12/2018	2,894.8000	12/07/2018	2,691.1000	Sale	254,459	254,459		0003	50	
ESZ8	3	150	S&P 500 EMINI Futures II /109403	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/12/2018	2,894.8000	12/10/2018	2,636.0000	Sale	38,800	38,800		0003	50	
ESZ8	50	2,500	S&P 500 EMINI Futures II /109421	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/13/2018	2,893.4500	12/10/2018	2,636.0000	Sale	643,293	643,293		0003	50	
ESZ8	50	2,500	S&P 500 EMINI Futures II /109422	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/13/2018	2,893.4500	12/10/2018	2,636.0000	Sale	643,293	643,293		0003	50	

E21.34

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
ESZ8	100	5,000	S&P 500 EMINI Futures II /109456	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/13/2018	2,893.3500	12/10/2018	2,636.0000	Sale	1,286,086	1,286,086		0003	50	
ESZ8	50	2,500	S&P 500 EMINI Futures II /109461	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/13/2018	2,893.4000	12/10/2018	2,636.0000	Sale	643,168	643,168		0003	50	
ESZ8	50	2,500	S&P 500 EMINI Futures II /109462	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/13/2018	2,893.4000	12/10/2018	2,636.0000	Sale	643,168	643,168		0003	50	
ESZ8	22	1,100	S&P 500 EMINI Futures II /109470	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	2,910.3500	12/10/2018	2,636.0000	Sale	301,639	301,639		0003	50	
ESZ8	78	3,900	S&P 500 EMINI Futures II /109470	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	2,910.3500	12/11/2018	2,643.1000	Sale	1,041,757	1,041,757		0003	50	
ESZ8	50	2,500	S&P 500 EMINI Futures II /109472	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	2,910.4000	12/11/2018	2,643.1000	Sale	667,918	667,918		0003	50	
ESZ8	97	4,850	S&P 500 EMINI Futures II /109476	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	2,910.3167	12/11/2018	2,643.1000	Sale	1,285,357	1,285,357		0003	50	
NGZ8	10	200	NASDAQ 100 EMINI Futures II /109479	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	7,593.1900	12/12/2018	6,717.0000	Sale	175,173	175,173		0003	20	
ESZ8	53	2,650	S&P 500 EMINI Futures II /109476	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	2,910.3167	12/12/2018	2,641.2000	Sale	712,807	712,807		0003	50	
ESZ8	100	5,000	S&P 500 EMINI Futures II /109478	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	2,910.3750	12/12/2018	2,641.2000	Sale	1,345,211	1,345,211		0003	50	
ESZ8	50	2,500	S&P 500 EMINI Futures II /109487	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	2,910.4000	12/12/2018	2,641.2000	Sale	672,668	672,668		0003	50	
ESZ8	47	2,350	S&P 500 EMINI Futures II /109495	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	2,911.4000	12/12/2018	2,641.2000	Sale	634,658	634,658		0003	50	
NGZ8	10	200	NASDAQ 100 EMINI Futures II /109479	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	7,593.1900	12/13/2018	6,717.0000	Sale	175,172	175,172		0003	20	
NGZ8	35	700	NASDAQ 100 EMINI Futures II /109479	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/14/2018	7,593.1900	12/13/2018	6,799.0000	Sale	555,687	555,687		0003	20	
NGZ8	20	400	NASDAQ 100 EMINI Futures II /109504	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	7,573.3250	12/13/2018	6,769.0000	Sale	321,597	321,597		0003	20	
NGZ8	15	300	NASDAQ 100 EMINI Futures II /109504	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	7,573.3250	12/13/2018	6,799.0000	Sale	232,192	232,192		0003	20	
ESZ8	3	150	S&P 500 EMINI Futures II /109495	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	2,911.4000	12/13/2018	2,652.4000	Sale	38,830	38,830		0003	50	
ESZ8	147	7,350	S&P 500 EMINI Futures II /109502	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	2,911.3333	12/13/2018	2,652.4000	Sale	1,902,184	1,902,184		0003	50	
NGZ8	25	500	NASDAQ 100 EMINI Futures II /109504	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	7,573.3250	12/14/2018	6,752.0000	Sale	410,497	410,497		0003	20	
NGZ8	30	600	NASDAQ 100 EMINI Futures II /109536	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	7,573.4500	12/14/2018	6,752.0000	Sale	492,671	492,671		0003	20	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
NGZ8	25	500	NASDAQ 100 EMINI Futures II /109574	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	7,573.5000	12/14/2018	6,752.0000	Sale	410,584	410,584		0003	20	
RTYZ8	25	1,250	Russell 2000 Index RTY /111909	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	12/06/2018	1,458.3000	12/14/2018	1,432.4000	Sale	32,199	32,199		0003	50	
ESZ8	100	5,000	S&P 500 EMINI Futures II /109502	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	2,911.3333	12/14/2018	2,645.6000	Sale	1,328,003	1,328,003		0003	50	
MFSZ8	150	7,500	E-MINI MSCI EAFE /109483	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/14/2018	1,946.0667	12/17/2018	1,735.4000	Sale	1,578,884	1,578,884		0003	50	
MFSZ8	50	2,500	E-MINI MSCI EAFE /109488	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/14/2018	1,943.4340	12/17/2018	1,735.4000	Sale	519,713	519,713		0003	50	
MFSZ8	50	2,500	E-MINI MSCI EAFE /109500	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/17/2018	1,952.5000	12/17/2018	1,732.9000	Sale	548,628	548,628		0003	50	
MFSZ8	50	2,500	E-MINI MSCI EAFE /109546	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/17/2018	1,952.2000	12/17/2018	1,732.9000	Sale	547,878	547,878		0003	50	
NGZ8	65	1,300	NASDAQ 100 EMINI Futures II /109574	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	7,573.5000	12/17/2018	6,599.5000	Sale	1,265,768	1,265,768		0003	20	
NGZ8	50	1,000	NASDAQ 100 EMINI Futures II /109645	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/18/2018	7,465.1500	12/17/2018	6,599.5000	Sale	865,318	865,318		0003	20	
NGZ8	30	600	NASDAQ 100 EMINI Futures II /109647	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/18/2018	7,465.2000	12/17/2018	6,599.5000	Sale	519,221	519,221		0003	20	
NGZ8	40	800	NASDAQ 100 EMINI Futures II /109648	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/18/2018	7,465.2500	12/17/2018	6,599.5000	Sale	692,334	692,334		0003	20	
NGZ8	30	600	NASDAQ 100 EMINI Futures II /109651	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/18/2018	7,465.2500	12/17/2018	6,599.5000	Sale	519,251	519,251		0003	20	
NGZ8	60	1,200	NASDAQ 100 EMINI Futures II /109652	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/18/2018	7,465.4000	12/17/2018	6,599.5000	Sale	1,038,682	1,038,682		0003	20	
NGZ8	25	500	NASDAQ 100 EMINI Futures II /110730	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/23/2018	6,971.0000	12/17/2018	6,599.5000	Sale	185,575	185,575		0003	20	
RTYZ8	50	2,500	Russell 2000 Index RTY /111909	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	12/06/2018	1,458.3000	12/17/2018	1,412.3000	Sale	114,649	114,649		0003	50	
ESZ8	53	2,650	S&P 500 EMINI Futures II /109502	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	2,911.3333	12/17/2018	2,602.0000	Sale	819,381	819,381		0003	50	
ESZ8	100	5,000	S&P 500 EMINI Futures II /109541	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/17/2018	2,911.4000	12/17/2018	2,602.0000	Sale	1,546,336	1,546,336		0003	50	
ESZ8	100	5,000	S&P 500 EMINI Futures II /109626	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	09/18/2018	2,896.0500	12/17/2018	2,602.0000	Sale	1,469,586	1,469,586		0003	50	
ESZ8	200	10,000	S&P 500 EMINI Futures II /109640	Portfolio Hedge	Schedule BA, D	Equity/Index	12/21/2018	CME	09/18/2018	2,896.1000	12/17/2018	2,602.0000	Sale	2,939,672	2,939,672		0003	50	
ESZ8	100	5,000	S&P 500 EMINI Futures II /109656	Portfolio Hedge	Schedule DB	Equity/Index	12/21/2018	CME	09/18/2018	2,896.1250	12/17/2018	2,602.0000	Sale	1,469,961	1,469,961		0003	50	
ESZ8	47	2,350	S&P 500 EMINI Futures II /109679	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	09/18/2018	2,896.1250	12/17/2018	2,602.0000	Sale	690,882	690,882		0003	50	

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1 Ticker Symbol	2 Number of Contracts	3 Notional Amount	4 Description	5 Description of Item(s) Hedged, Used for Income Generation or Replicated	6 Schedule/ Exhibit Identifier	7 Type(s) of Risk(s) (a)	8 Date of Maturity or Expiration	9 Exchange	10 Trade Date	11 Transaction Price	12 Termination Date	13 Termination Price	14 Indicate Exercise, Expiration, Maturity or Sale	15 Cumulative Variation Margin at Termination	Change in Variation Margin			19 Hedge Effectiveness at Inception and at Termination (b)	20 Value of One (1) Point
															16 Gain (Loss) Recognized in Current Year	17 Gain (Loss) Used to Adjust Basis of Hedged Item	18 Deferred		
MFSZ8	50	2,500	E-MINI MSCI EAFE /109546	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/17/2018	1,952.2000	12/18/2018	1,740.0835	Sale	529,919	529,919		0003	50	
MFSZ8	100	5,000	E-MINI MSCI EAFE /109569	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/17/2018	1,951.5000	12/18/2018	1,740.0835	Sale	1,056,339	1,056,339		0003	50	
MFSZ8	50	2,500	E-MINI MSCI EAFE /109655	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/18/2018	1,966.4000	12/18/2018	1,740.0835	Sale	565,419	565,419		0003	50	
MFSZ8	50	2,500	E-MINI MSCI EAFE /109667	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/18/2018	1,963.7000	12/18/2018	1,738.9000	Sale	561,628	561,628		0003	50	
MFSZ8	50	2,500	E-MINI MSCI EAFE /109669	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/18/2018	1,964.8000	12/18/2018	1,738.9000	Sale	564,378	564,378		0003	50	
MFSZ8	100	5,000	E-MINI MSCI EAFE /109690	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	09/19/2018	1,966.4000	12/18/2018	1,737.0000	Sale	1,146,256	1,146,256		0003	50	
MFSZ8	75	3,750	E-MINI MSCI EAFE /110578	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	10/19/2018	1,855.0000	12/18/2018	1,732.7000	Sale	458,067	458,067		0003	50	
MFSZ8	100	5,000	E-MINI MSCI EAFE /110829	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	10/25/2018	1,782.0000	12/18/2018	1,732.7000	Sale	245,756	245,756		0003	50	
MFSZ8	55	2,750	E-MINI MSCI EAFE /110980	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	10/30/2018	1,779.0000	12/18/2018	1,732.7000	Sale	126,916	126,916		0003	50	
NQZ8	20	400	NASDAQ 100 EMINI Futures II /110730	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/23/2018	6,971.0000	12/18/2018	6,466.2500	Sale	201,760	201,760		0003	20	
NQZ8	5	100	NASDAQ 100 EMINI Futures II /110730	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/23/2018	6,971.0000	12/18/2018	6,522.0000	Sale	44,863	44,863		0003	20	
NQZ8	50	1,000	NASDAQ 100 EMINI Futures II /110850	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/26/2018	6,868.5250	12/18/2018	6,522.0000	Sale	346,155	346,155		0003	20	
NQZ8	55	1,100	NASDAQ 100 EMINI Futures II /110989	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/30/2018	6,801.0000	12/18/2018	6,522.0000	Sale	306,493	306,493		0003	20	
RTYZ8	75	3,750	Russell 2000 Index RTY /111909	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	12/06/2018	1,458.3000	12/18/2018	1,386.4000	Sale	269,098	269,098		0003	50	
ESZ8	53	2,650	S&P 500 EMINI Futures II /109656	Portfolio Hedge	ScheduleDB	Equity/Index	12/21/2018	CME	09/18/2018	2,896.1250	12/18/2018	2,552.5000	Sale	910,254	910,254		0003	50	
ESZ8	75	3,750	S&P 500 EMINI Futures II /110363	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/11/2018	2,769.0000	12/18/2018	2,552.5000	Sale	811,349	811,349		0003	50	
ESZ8	150	7,500	S&P 500 EMINI Futures II /110511	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/18/2018	2,766.5617	12/18/2018	2,552.5000	Sale	1,604,410	1,604,410		0003	50	
ESZ8	125	6,250	S&P 500 EMINI Futures II /110797	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/24/2018	2,688.2560	12/18/2018	2,552.5000	Sale	847,598	847,598		0003	50	
ESZ8	50	2,500	S&P 500 EMINI Futures II /110839	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/25/2018	2,688.7500	12/18/2018	2,552.5000	Sale	340,274	340,274		0003	50	
MFSZ8	45	2,250	E-MINI MSCI EAFE /110980	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	10/30/2018	1,779.0000	12/19/2018	1,742.9000	Sale	80,890	80,890		0003	50	

E21.37

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART B - SECTION 2

Future Contracts Terminated December 31 of Current Year

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Change in Variation Margin			19	20
															16	17	18		
Ticker Symbol	Number of Contracts	Notional Amount	Description	Description of Item(s) Hedged, Used for Income Generation or Replicated	Schedule/ Exhibit Identifier	Type(s) of Risk(s) (a)	Date of Maturity or Expiration	Exchange	Trade Date	Transaction Price	Termination Date	Termination Price	Indicate Exercise, Expiration, Maturity or Sale	Cumulative Variation Margin at Termination	Gain (Loss) Recognized in Current Year	Gain (Loss) Used to Adjust Basis of Hedged Item	Deferred	Hedge Effectiveness at Inception and at Termination (b)	Value of One (1) Point
MFSZ8	55	2,750	E-MINI MSCI EAFE /110988	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	10/30/2018	1,794.0000	12/19/2018	1,742.9000	Sale	140,116	140,116			0003	50
MFSZ8	100	5,000	E-MINI MSCI EAFE /111989	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	ICE	12/07/2018	1,757.5800	12/19/2018	1,742.3000	Sale	75,656	75,656			0003	50
ESZ8	25	1,250	S&P 500 EMINI Futures II /110839	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/25/2018	2,688.7500	12/19/2018	2,535.8000	Sale	191,012	191,012			0003	50
ESZ8	125	6,250	S&P 500 EMINI Futures II /110987	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	10/30/2018	2,673.0000	12/19/2018	2,535.8000	Sale	856,623	856,623			0003	50
ESZ8	100	5,000	S&P 500 EMINI Futures II /111890	VA Secondary Guarantees Clearly Defined Hedging Strategy	Exhibit 5	Equity/Index	12/21/2018	CME	12/06/2018	2,665.6725	12/19/2018	2,535.8000	Sale	648,661	648,661			0003	50
WNHB	1	100,000	US ULTRA BOND /101324	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/16/2017	166.5000	02/20/2018	156.4688	Sale	10,024	11,184			0001	1,000
WNHB	6	600,000	US ULTRA BOND /101342	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/17/2017	165.7188	02/20/2018	156.4688	Sale	55,460	67,104			0001	1,000
WNHB	5	500,000	US ULTRA BOND /101347	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/20/2017	166.1268	02/20/2018	156.4688	Sale	48,256	55,920			0001	1,000
WNHB	329	32,900,000	US ULTRA BOND /101347	Portfolio Hedge	Schedule BA, D	Interest	03/30/2018	CBOT	11/20/2017	166.1268	02/21/2018	155.9063	Sale	3,360,330	3,864,625			0001	1,000
TYHB	1,190	119,000,000	US 10Y NOTE FUTURE II /101410	Portfolio Hedge	Schedule D	Interest	03/30/2018	CBOT	11/21/2017	124.4219	02/22/2018	120.2031	Sale	5,015,279	4,571,540			0001	1,000
TYHB	1,380	138,000,000	US 10Y NOTE FUTURE II /101415	Portfolio Hedge	Schedule D	Interest	03/30/2018	CBOT	11/21/2017	124.4219	02/22/2018	120.2031	Sale	5,816,038	5,301,449			0001	1,000
WNMB	12	1,200,000	US ULTRA BOND /104057	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/20/2018	155.6797	05/18/2018	153.1563	Sale	30,200	30,200			0001	1,000
WNMB	38	3,800,000	US ULTRA BOND /104102	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1016	05/18/2018	153.1563	Sale	73,665	73,665			0001	1,000
WNMB	4	400,000	US ULTRA BOND /104102	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1016	05/21/2018	154.1250	Sale	3,879	3,879			0001	1,000
WNMB	6	600,000	US ULTRA BOND /104102	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1016	05/22/2018	154.2500	Sale	5,069	5,069			0001	1,000
WNMB	281	28,100,000	US ULTRA BOND /104102	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/21/2018	155.1016	05/24/2018	155.2188	Sale	(34,827)	(34,827)			0001	1,000
TYMB	1,190	119,000,000	US 10Y NOTE FUTURE II /104126	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	119.6250	05/25/2018	119.5000	Sale	143,704	143,704			0001	1,000
TYMB	1,380	138,000,000	US 10Y NOTE FUTURE II /104128	Portfolio Hedge	Schedule BA, D	Interest	06/29/2018	CBOT	02/22/2018	119.6250	05/25/2018	119.5000	Sale	166,649	166,649			0001	1,000
WNJB	50	5,000,000	US ULTRA BOND /106362	Portfolio Hedge	Schedule D	Interest	09/28/2018	CBOT	05/18/2018	152.4531	08/22/2018	159.2813	Sale	(341,747)	(341,747)			0001	1,000
WNJB	4	400,000	US ULTRA BOND /106408	Portfolio Hedge	Schedule D	Interest	09/28/2018	CBOT	05/21/2018	153.4219	08/22/2018	159.2813	Sale	(23,465)	(23,465)			0001	1,000
WNJB	6	600,000	US ULTRA BOND /106420	Portfolio Hedge	Schedule D	Interest	09/28/2018	CBOT	05/22/2018	153.5469	08/22/2018	159.2813	Sale	(34,447)	(34,447)			0001	1,000
WNJB	281	28,100,000	US ULTRA BOND /106552	Portfolio Hedge	Schedule D	Interest	09/28/2018	CBOT	05/24/2018	154.5000	08/22/2018	159.2813	Sale	(1,345,439)	(1,345,439)			0001	1,000
TYUB	1,190	119,000,000	US 10Y NOTE FUTURE II /106557	Portfolio Hedge	Schedule D	Interest	09/28/2018	CBOT	05/25/2018	119.1719	08/27/2018	120.5156	Sale	(1,604,108)	(1,604,108)			0001	1,000
TYUB	1,380	138,000,000	US 10Y NOTE FUTURE II /106559	Portfolio Hedge	Schedule D	Interest	09/28/2018	CBOT	05/25/2018	119.1719	08/27/2018	120.5156	Sale	(1,860,226)	(1,860,226)			0001	1,000
WNZ8	4	400,000	US ULTRA BOND /108926	Portfolio Hedge	Schedule D	Interest	12/31/2018	CBOT	08/22/2018	159.5938	11/20/2018	151.5000	Sale	32,348	32,348			0001	1,000
WNZ8	206	20,600,000	US ULTRA BOND /108926	Portfolio Hedge	Schedule D	Interest	12/31/2018	CBOT	08/22/2018	159.5938	11/21/2018	151.7813	Sale	1,607,987	1,607,987			0001	1,000
WNZ8	131	13,100,000	US ULTRA BOND /108926	Portfolio Hedge	Schedule D	Interest	12/31/2018	CBOT	08/22/2018	159.5938	11/23/2018	151.6563	Sale	1,038,930	1,038,930			0001	1,000
TYZ8	1,190	119,000,000	US 10Y NOTE FUTURE II /109041	Portfolio Hedge	Schedule D	Interest	12/31/2018	CBOT	08/27/2018	120.3999	11/27/2018	119.1406	Sale	1,493,513	1,493,513			0001	1,000
TYZ8	1,380	138,000,000	US 10Y NOTE FUTURE II /109042	Portfolio Hedge	Schedule D	Interest	12/31/2018	CBOT	08/27/2018	120.3999	11/27/2018	119.1406	Sale	1,731,973	1,731,973			0001	1,000
1349999999. Subtotal - Short Futures - Hedging Other														11,009,834	16,300,610			XXX	XXX
1389999999. Subtotal - Short Futures														11,009,834	16,300,610			XXX	XXX
1399999999. Subtotal - Hedging Effective																		XXX	XXX
1409999999. Subtotal - Hedging Other																		XXX	XXX
1419999999. Subtotal - Replication														(299,202,095)	(317,225,796)			XXX	XXX
1429999999. Subtotal - Income Generation																		XXX	XXX
1439999999. Subtotal - Other																		XXX	XXX
1449999999 - Totals														(299,202,095)	(317,225,796)			XXX	XXX

(a)	Code	Description of Hedged Risk(s)
-----	------	-------------------------------

E21.38

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

Code	Financial or Economic Impact of the Hedge at the End of the Reporting Period
0001	Interest rate hedges reduced the portfolio's interest rate risk (duration, convexity, volatility, yield curve)
0003	Equity derivatives hedging portfolio's exposure to equity markets

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART D - SECTION 1

Counterparty Exposure for Derivative Instruments Open December 31 of Current Year

1 Description of Exchange, Counterparty or Central Clearinghouse	2 Master Agreement (Y or N)	3 Credit Support Annex (Y or N)	4 Fair Value of Acceptable Collateral	5 Book/Adjusted Carrying Value			6 Fair Value			11 Potential Exposure	12 Off-Balance Sheet Exposure
				5 Contracts With Book/Adjusted Carrying Value >0	6 Contracts With Book/Adjusted Carrying Value <0	7 Exposure Net of Collateral	8 Contracts With Fair Value >0	9 Contracts With Fair Value <0	10 Exposure Net of Collateral		
0199999999 - Aggregate Sum of Exchange Traded Derivatives	XXX	XXX	XXX	95,616,724	(4,556,715)	95,616,724	95,616,724	(4,556,715)	95,616,724		
BANK OF AMERICA, N.A.	Y	Y	257,406,254	247,119,845	(39,803,334)	247,119,845	247,119,845	(41,547,721)	247,119,845	39,099,516	
BANK OF AMERICA, N.A.	Y	Y		35,242,469	(194,754)	35,047,715	35,239,569	(194,754)	35,044,815	7,567,387	7,567,387
BANK OF MONTREAL	Y	Y	60,560,456	61,274,162	(2,551,756)	61,274,162	61,274,162	(2,551,756)	61,274,162	8,010,592	6,172,541
BARCLAYS BANK PLC	Y	Y	105,970,000	657,738,620	(237,007,018)	314,761,602	657,738,620	(237,007,018)	314,761,602	89,920,431	89,920,431
BARCLAYS BANK PLC	Y	Y	39,129,000	42,907,045	(7,686,299)	42,907,045	42,907,045	(7,686,299)	42,907,045	8,713,951	4,805,697
BNP PARIBAS	Y	Y	206,355,000	478,814,670	(284,258,288)	478,814,670	478,814,670	(284,258,288)	478,814,670	123,510,142	111,711,524
BNP Paribas London	Y	Y	97,210,000	98,619,408	(1,375,099)	34,309	98,619,408	(1,473,011)	98,619,408	80,736,203	80,736,203
Canadian Imperial Bank of Commerce	Y	Y	10,475,000	9,664,433	(152,487)		9,664,433	(152,487)	9,664,433	429,359	
CITIBANK N.A.	Y	Y	205,555,835	324,186,718	(103,416,221)	15,214,663	324,186,718	(140,335,794)	324,186,718	177,467,191	177,467,191
CITIBANK N.A.	Y	Y	53,737,031	73,899,599	(24,901,045)		73,899,599	(24,901,045)	73,899,599	32,341,891	27,603,413
CREDIT AGRICOLE CORPORATE AND INVESTMENT BANK	Y	Y	131,669,000	134,895,300	(264,232)	2,962,068	134,895,300	(6,577,239)	134,895,300	12,530,409	12,530,409
CREDIT SUISSE INTERNATIONAL	Y	Y	286,179,864	529,120,724	(233,146,963)	9,793,896	529,120,724	(235,402,427)	529,120,724	115,011,692	
CREDIT SUISSE INTERNATIONAL	Y	Y		5,697,321	(7,755,605)		5,697,321	(7,755,605)	5,697,321	4,683,000	4,683,000
CREDIT SUISSE INTERNATIONAL	Y	Y	13,520,000	20,838,977		7,318,977	20,838,977		20,838,977	7,318,977	
GOLDMAN SACHS BANK USA	N	N	4,850,000	6,017,930		1,167,930	6,017,930		6,017,930	577,000	577,000
GOLDMAN SACHS BANK USA	Y	Y	250,821,000	389,714,427	(153,104,254)		389,714,427	(153,401,330)	389,714,427	109,409,355	95,198,528
GOLDMAN SACHS BANK USA	Y	Y	71,700,000	70,782,247			70,782,247		70,782,247	240,913	
GOLDMAN SACHS INTERNATIONAL	Y	Y	4,300,000	4,409,235	(115,820)		4,409,235	(369,846)	4,409,235	15,000,000	14,993,415
GOLDMAN SACHS MITSUI MARINE DERIVATIVE PRODUCTS, L	Y	Y	63,100,000	61,078,649			61,078,649		61,078,649	3,511,555	1,490,204
HSBC BANK USA, NATIONAL ASSOCIATION	Y	Y	112,579,544	148,204,256	(37,005,394)		148,204,256	(37,005,394)	148,204,256	50,723,267	49,342,585
HSBC BANK USA, NATIONAL ASSOCIATION	Y	Y	2,900,000	2,730,426			2,730,426		2,730,426		
JPMORGAN CHASE BANK, N.A.	Y	Y	229,885,664	418,317,144	(179,499,838)	8,931,642	422,297,445	(182,938,443)	422,297,445	96,762,491	96,762,491
JPMORGAN CHASE BANK, N.A.	Y	Y	70,513,920	96,517,840	(34,890,630)		96,482,718	(34,890,630)	96,482,718	53,627,798	44,741,089
JPMORGAN CHASE BANK, N.A.	N	N	1,439,000	1,783,359		344,359	1,783,359		1,783,359	163,050	163,050
MERRILL LYNCH CAPITAL SERVICES	Y	Y		138,337,447	(178,455,968)		138,337,447	(187,803,595)	138,337,447	45,180,663	5,062,142
MORGAN STANLEY & CO. INTERNATIONAL PLC	Y	Y	19,980,000	19,342,414			19,342,414		19,342,414	58,062,209	40,435,008
MORGAN STANLEY CAPITAL SERVICES	Y	Y	195,018,806	265,831,790	(88,440,186)		267,440,538	(88,440,186)	267,440,538	98,307,600	98,307,600
MORGAN STANLEY CAPITAL SERVICES	Y	Y	165,803,525	173,138,055	(7,334,529)		173,138,055	(7,334,529)	173,138,055	4,807,059	3,437,304
MORGAN STANLEY CAPITAL SERVICES	Y	Y	205,588,565	204,550,216	(331,405)		204,550,216	(331,405)	204,550,216	1,733,092	
MJFG Securities EMEA PLC	Y	Y			(5,127,222)			(5,127,222)		1,105,529	1,105,529
Natixis	Y	Y	16,800,000	18,570,964		1,770,964	18,570,964		18,570,964	2,604,082	2,604,082
NOMURA GLOBAL FINANCIAL PRODUCTS INC.	Y	Y	47,270,000	51,953,789		4,683,789	51,953,789		51,953,789	1,744,381	1,473,622
NOMURA GLOBAL FINANCIAL PRODUCTS INC.	Y	Y	69,140,000	73,165,078	(4,295,847)		73,165,078	(4,295,847)	73,165,078	1,908,215	1,908,215
Nomura Securities	Y	Y			(5,390,727)			(5,390,727)		600,000	600,000
Nomura Securities	N	N	5,340,000	6,562,500		1,222,500	6,562,500		6,562,500	60,374,682	55,966,542
ROYAL BANK OF CANADA	Y	Y	115,430,000	197,786,589	(86,764,729)		197,786,589	(86,764,729)	197,786,589	18,061,024	18,061,024
SOCIETE GENERALE	Y	Y	17,550,000	16,533,919			16,533,919		16,533,919		
THE ROYAL BANK OF SCOTLAND PLC	Y	Y	19,579,877	18,061,024			18,061,024		18,061,024	1,455,048	1,455,048
TORONTO-DOMINION BANK	Y	Y			(3,122)			(3,122)		634,122	631,000
UBS AG	Y	Y	28,401,000	286,100,060	(117,619,580)	140,079,480	286,100,060	(117,619,580)	140,079,480	39,539,092	39,539,092
WELLS FARGO BANK, N.A.	Y	Y	71,477,668	105,485,485	(38,249,130)		105,485,485	(38,249,130)	105,485,485	34,357,780	34,357,780
WELLS FARGO BANK, N.A.	Y	Y	36,975,141	36,975,141			36,975,141		36,975,141	18,052,500	18,052,500
WELLS FARGO BANK, N.A.	N	N	5,062,500	6,281,250		1,218,750	6,281,250		6,281,250	600,000	600,000
WELLS FARGO BANK, N.A.	Y	Y	21,840,000	21,128,659	(1,791,213)		21,128,659	(1,791,213)	21,128,659	2,752,427	249,872
0299999999 - Total NAIC 1 Designation			3,321,113,650	5,559,379,183	(1,880,932,694)	544,552,644	5,566,400,122	(1,947,173,703)	524,714,073	1,408,377,438	1,128,888,232
DEUTSCHE BANK AG	Y	Y		607,295,023	(532,339,097)	74,955,926	607,295,023	(532,339,097)	607,295,023	109,906,564	109,906,564
0399999999 - Total NAIC 2 Designation				607,295,023	(532,339,097)	74,955,926	607,295,023	(532,339,097)	607,295,023	109,906,564	109,906,564
0899999999 - Aggregate Sum of Central Clearinghouses (Excluding Exchange Traded)			322,452,316	2,479,017,702	(2,494,154,611)	19,341,017	2,696,478,166	(2,908,337,703)	3,012,523,724	3,012,523,724	2,655,593,482
0999999999 - Gross Totals			3,643,565,966	8,741,308,632	(4,911,983,117)	734,466,311	8,965,790,035	(5,392,407,219)	695,286,723	4,530,807,726	3,894,388,278
1. Offset per SSAP No. 64											
2. Net after right of offset per SSAP No. 64				8,741,308,632	(4,911,983,117)						

E22

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
SCHEDULE DB - PART D - SECTION 2
 Collateral for Derivative Instruments Open December 31 of Current Year

Collateral Pledged by Reporting Entity

1	2	3	4	5	6	7	8	9
Exchange, Counterparty or Central Clearinghouse	Type of Asset Pledged	CUSIP Identification	Description	Fair Value	Par Value	Book/Adjusted Carrying Value	Maturity Date	Type of Margin (I, V or IV)
CREDIT SUISSE INTERNATIONAL	Cash	E58DKGJUYJLNB83868	Cash Collateral	2,058,283		2,058,283		V
Credit Suisse Securities USA LLC CME	Corporate	1V8Y6QCX6VMJ20EL1146	HOME DEPOT INC	7,327,218	9,070,000	9,159,022	04/01/2046	V
Credit Suisse Securities USA LLC CME	Corporate	1V8Y6QCX6VMJ20EL1146	NOVARTIS CAPITAL CORP	7,058,244	8,175,000	8,822,805	05/06/2044	V
Credit Suisse Securities USA LLC CME	Corporate	1V8Y6QCX6VMJ20EL1146	NOVARTIS CAPITAL CORP	1,433,234	1,660,000	1,791,542	05/06/2044	V
Credit Suisse Securities USA LLC CME	Corporate	1V8Y6QCX6VMJ20EL1146	NOVARTIS CAPITAL CORP	3,021,878	3,500,000	3,777,348	05/06/2044	V
Credit Suisse Securities USA LLC CME	Corporate	1V8Y6QCX6VMJ20EL1146	UNITEDHEALTH GROUP INC	13,509,958	15,500,000	16,887,448	07/15/2045	V
Credit Suisse Securities USA LLC CME	Cash	1V8Y6QCX6VMJ20EL1146	Cash Collateral	14,108,434		14,108,434		V
Deutsche Bank AG	Cash	7LTFWZY1CNSX8D621K86	Cash Collateral	240,523,000		240,523,000		V
Goldman, Sachs & Co CME	Treasury	FOR8UP27PHTHYVLBN30	STRIPS	14,631,098	17,550,000	16,439,436	08/15/2021	V
Merrill Lynch Capital Services Inc.	Treasury	549300J8H1BYG1YAFY05	US TREASURY N/B	27,904,677	29,175,600	28,474,160	11/15/2046	V
Merrill Lynch Capital Services Inc.	Treasury	549300J8H1BYG1YAFY05	US TREASURY N/B	13,227,977	13,385,000	13,497,936	02/15/2047	V
Merrill Lynch Capital Services Inc.	Treasury	549300J8H1BYG1YAFY05	US TREASURY N/B	179,353,153	176,531,400	183,013,421	02/15/2021	V
Merrill Lynch Capital Services Inc.	Treasury	549300J8H1BYG1YAFY05	US TREASURY N/B	7,111,891	7,000,000	7,257,032	02/15/2021	V
Morgan Stanley & Co. LLC CME	Corporate	17331LVCZKQKXST7XV54	AMAZON.COM INC	11,191,323	12,475,000	13,989,153	12/05/2044	V
Morgan Stanley & Co. LLC CME	Corporate	17331LVCZKQKXST7XV54	AMAZON.COM INC	8,722,712	9,778,390	9,778,390	12/05/2044	V
Morgan Stanley & Co. LLC CME	Corporate	17331LVCZKQKXST7XV54	AMAZON.COM INC	8,971,000	10,000,000	11,213,750	12/05/2044	V
Morgan Stanley & Co. LLC CME	Corporate	17331LVCZKQKXST7XV54	AMAZON.COM INC	2,939,214	2,340,000	2,624,018	12/05/2044	V
Morgan Stanley & Co. LLC CME	Corporate	17331LVCZKQKXST7XV54	AMAZON.COM INC	1,314,252	1,465,000	1,642,814	12/05/2044	V
Morgan Stanley & Co. LLC CME	Corporate	17331LVCZKQKXST7XV54	AMAZON.COM INC	4,485,500	5,000,000	5,606,875	12/05/2044	V
Morgan Stanley & Co. LLC CME	Corporate	17331LVCZKQKXST7XV54	APPLE INC	1,295,236	1,500,000	1,619,045	02/23/2046	V
Morgan Stanley & Co. LLC CME	Corporate	17331LVCZKQKXST7XV54	APPLE INC	2,426,409	2,810,000	3,033,011	02/23/2046	V
Morgan Stanley & Co. LLC CME	Corporate	149123-CB-5	CATERPILLAR INC	15,830,838	20,815,000	19,788,548	08/15/2042	V
Morgan Stanley & Co. LLC CME	Corporate	149123-CB-5	CATERPILLAR INC	3,403,459	4,475,000	4,254,324	08/15/2042	V
Morgan Stanley & Co. LLC CME	Corporate	149123-CB-5	CATERPILLAR INC	15,935,794	20,953,000	19,919,742	08/15/2042	V
Morgan Stanley & Co. LLC CME	Corporate	149123-CB-5	CATERPILLAR INC	3,042,198	4,000,000	3,802,748	08/15/2042	V
Morgan Stanley & Co. LLC CME	Corporate	149123-CB-5	CATERPILLAR INC	3,802,748	5,000,000	4,753,434	08/15/2042	V
Morgan Stanley & Co. LLC CME	Corporate	149123-CB-5	CATERPILLAR INC	1,336,285	1,757,000	1,670,357	08/15/2042	V
Morgan Stanley & Co. LLC CME	Corporate	17275R-AF-9	CISCO SYSTEMS INC	11,636,171	12,000,000	14,545,213	01/15/2040	V
Morgan Stanley & Co. LLC CME	Corporate	17275R-AF-9	CISCO SYSTEMS INC	969,681	1,000,000	1,212,101	01/15/2040	V
Morgan Stanley & Co. LLC CME	Corporate	17275R-AF-9	CISCO SYSTEMS INC	9,696,809	10,000,000	12,121,011	01/15/2040	V
Morgan Stanley & Co. LLC CME	Corporate	17275R-AF-9	CISCO SYSTEMS INC	3,878,724	4,000,000	4,848,404	01/15/2040	V
Morgan Stanley & Co. LLC CME	Corporate	17275R-AF-9	CISCO SYSTEMS INC	5,818,085	6,000,000	7,272,607	01/15/2040	V
Morgan Stanley & Co. LLC CME	Corporate	30231G-AW-2	EXXON MOBIL CORPORATION	2,249,920	2,730,000	2,812,401	03/01/2046	V
Morgan Stanley & Co. LLC CME	Corporate	585055-BU-9	MEDTRONIC INC	4,799,795	5,604,000	5,999,744	03/15/2045	V
Morgan Stanley & Co. LLC CME	Treasury	17331LVCZKQKXST7XV54	US TREASURY N/B	9,051	10,000	10,084	02/15/2047	V
Morgan Stanley & Co. LLC CME	Treasury	17331LVCZKQKXST7XV54	US TREASURY N/B	3,024,627	3,000,000	3,110,156	02/15/2021	V
Morgan Stanley & Co. LLC CME	Cash	17331LVCZKQKXST7XV54	Cash Collateral	119,925,513		119,925,513		V
MUFG Securities EMEA PLC	Treasury	U7M81AY481YL1QR75625	US TREASURY N/B	540,033	455,000	562,535	05/15/2041	V
MUFG Securities EMEA PLC	Treasury	U7M81AY481YL1QR75625	US TREASURY N/B	2,424,122	2,504,000	2,525,128	02/15/2047	V
MUFG Securities EMEA PLC	Treasury	U7M81AY481YL1QR75625	US TREASURY N/B	1,938,498	1,908,000	1,978,059	02/15/2021	V
Toronto Dominion Bank	Treasury	PT30B789TSUIDF371261	US TREASURY N/B	2,907,303	3,055,000	3,060,319	11/15/2045	V
Toronto Dominion Bank	Treasury	PT30B789TSUIDF371261	US TREASURY N/B	3,381,353	3,647,000	3,559,319	11/15/2046	V
Toronto Dominion Bank	Treasury	PT30B789TSUIDF371261	US TREASURY N/B	755,874	789,000	795,657	02/15/2047	V
Toronto Dominion Bank	Cash	PT30B789TSUIDF371261	Cash Collateral	430,000		430,000		V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	APPLE INC	7,846,540	9,087,000	9,808,175	02/23/2046	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	BHP BILLITON FIN USA LTD	13,259,880	15,000,000	16,574,850	09/30/2043	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	CISCO SYSTEMS INC	1,008,719	1,000,000	1,260,899	02/15/2039	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	CISCO SYSTEMS INC	8,094,971	8,025,000	10,118,714	02/15/2039	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	CISCO SYSTEMS INC	4,094,391	4,059,000	5,117,989	02/15/2039	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	CISCO SYSTEMS INC	5,638,740	5,590,000	7,048,425	02/15/2039	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	CISCO SYSTEMS INC	5,094,032	5,050,000	6,367,539	02/15/2039	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	HOME DEPOT INC	11,159,366	11,600,000	13,949,208	12/16/2036	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	HOME DEPOT INC	4,040,460	4,200,000	5,050,575	12/16/2036	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	HOME DEPOT INC	7,984,719	8,300,000	9,980,899	12/16/2036	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	HOME DEPOT INC	11,351,769	11,800,000	14,189,711	12/16/2036	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	HOME DEPOT INC	5,868,287	6,100,000	7,335,359	12/16/2036	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	MEDTRONIC INC	23,981,844	28,000,000	29,977,306	02/15/2045	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	MEDTRONIC INC	6,851,956	8,000,000	8,564,944	03/15/2045	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	ORACLE CORP	6,445,290	7,000,000	8,056,613	07/15/2040	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	SHELL INTERNATIONAL FIN	8,131,797	8,000,000	10,164,747	12/15/2038	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	SHELL INTERNATIONAL FIN	4,574,136	4,500,000	5,717,670	12/15/2038	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	TEXAS INSTRUMENTS INC	22,831,459	28,200,000	28,539,324	02/15/2048	V
Wells Fargo Securities LLC CME	Corporate	VVVCKR63DVZLN70PB21	TOTAL CAPITAL INTL SA	1,721,310	2,150,000	2,151,637	02/17/2022	V

E23

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART D - SECTION 2

Collateral for Derivative Instruments Open December 31 of Current Year

Collateral Pledged by Reporting Entity

1	2	3	4	5	6	7	8	9
Exchange, Counterparty or Central Clearinghouse	Type of Asset Pledged	CUSIP Identification	Description	Fair Value	Par Value	Book/Adjusted Carrying Value	Maturity Date	Type of Margin (I, V or IV)
Wells Fargo Securities LLC CME	Corporate	89153V-AB-5	TOTAL CAPITAL INTL SA	2,161,645	2,700,000	2,702,056	02/17/2022	V
Wells Fargo Securities LLC CME	Corporate	89153V-AB-5	TOTAL CAPITAL INTL SA	840,640	1,050,000	1,050,799	02/17/2022	V
Wells Fargo Securities LLC CME	Corporate	91324P-CQ-3	UNITEDHEALTH GROUP INC	1,131,246	1,300,000	1,414,057	07/15/2035	V
Wells Fargo Securities LLC CME	Corporate	91324P-CR-1	UNITEDHEALTH GROUP INC	3,486,441	4,000,000	4,358,051	07/15/2045	V
Wells Fargo Securities LLC CME	Corporate	91324P-CR-1	UNITEDHEALTH GROUP INC	2,179,026	2,500,000	2,723,782	07/15/2045	V
Wells Fargo Securities LLC CME	Corporate	91324P-CR-1	UNITEDHEALTH GROUP INC	2,876,314	3,300,000	3,595,392	07/15/2045	V
Wells Fargo Securities LLC CME	Corporate	983024-AG-5	WYETH LLC	7,209,851	7,000,000	9,012,313	02/01/2034	V
Wells Fargo Securities LLC CME	Corporate	983024-AG-5	WYETH LLC	8,239,829	8,000,000	10,299,787	02/01/2034	V
Wells Fargo Securities LLC CME	Corporate	983024-AN-0	WYETH LLC	1,079,984	1,100,000	1,349,981	04/01/2037	V
Wells Fargo Securities LLC CME	Corporate	983024-AN-0	WYETH LLC	1,114,348	1,135,000	1,392,934	04/01/2037	V
Wells Fargo Securities LLC CME	Corporate	983024-AN-0	WYETH LLC	2,699,961	2,750,000	3,374,951	04/01/2037	V
Wells Fargo Securities LLC CME	Corporate	983024-AN-0	WYETH LLC	736,353	750,000	920,441	04/01/2037	V
Wells Fargo Securities LLC CME	Cash		Cash Collateral	536,057,797		536,057,797		V
Wells Fargo Securities LLC ICE	Corporate	037833-BX-7	APPLE INC	3,453,963	4,000,000	4,317,453	02/23/2046	V
Wells Fargo Securities LLC ICE	Corporate	437076-BH-4	HOME DEPOT INC	1,211,778	1,500,000	1,514,723	04/01/2046	V
Wells Fargo Securities LLC ICE	Corporate	89153V-AB-5	TOTAL CAPITAL INTL SA	1,601,218	2,000,000	2,001,523	02/17/2022	V
Wells Fargo Securities LLC ICE	Corporate	91324P-CR-1	UNITEDHEALTH GROUP INC	1,743,220	2,000,000	2,179,026	07/15/2045	V
Wells Fargo Securities LLC ICE	Corporate	983024-AN-0	WYETH LLC	6,926,627	7,055,000	8,658,284	04/01/2037	V
Wells Fargo Securities LLC ICE	Corporate	983024-AN-0	WYETH LLC	3,284,134	3,345,000	4,105,168	04/01/2037	V
Wells Fargo Securities LLC ICE	Corporate	983024-AN-0	WYETH LLC	1,079,984	1,100,000	1,349,981	04/01/2037	V
Wells Fargo Securities LLC LCH	Corporate	055451-AV-0	BHP BILLITON FIN USA LTD	3,425,469	3,875,000	4,281,836	09/30/2043	V
Wells Fargo Securities LLC LCH	Corporate	055451-AV-0	BHP BILLITON FIN USA LTD	3,535,968	4,000,000	4,419,960	09/30/2043	V
0199999999 - Total				1,544,667,034	679,680,000	1,645,329,206	XXX	XXX

Collateral Pledged to Reporting Entity

1	2	3	4	5	6	7	8	9
Exchange, Counterparty or Central Clearinghouse	Type of Asset Pledged	CUSIP Identification	Description	Fair Value	Par Value	Book/Adjusted Carrying Value	Maturity Date	Type of Margin (I, V or IV)
Bank Of America NA	Mortgage	3128MD-M7-5	FREDDIE MAC	14,440,550	15,350,027	XXX	02/01/2028	V
Bank Of America NA	Mortgage	3128ME-DM-0	FREDDIE MAC	1,250,445	1,315,074	XXX	04/01/2030	V
Bank Of America NA	Mortgage	3128ME-DS-7	FREDDIE MAC	13,783,613	14,478,489	XXX	04/01/2030	V
Bank Of America NA	Mortgage	3128ME-EY-3	FREDDIE MAC	1,838,839	1,933,878	XXX	05/01/2030	V
Bank Of America NA	Mortgage	3128MF-C7-1	FREDDIE MAC	6,932,423	7,290,721	XXX	12/01/2031	V
Bank Of America NA	Mortgage	31300L-Z2-7	FREDDIE MAC	1,065,695	1,090,165	XXX	11/17/2042	V
Bank Of America NA	Mortgage	3136A4-JH-3	FANNIE MAE	4,809,525	4,892,163	XXX	02/01/2032	V
Bank Of America NA	Mortgage	3136A7-K7-6	FANNIE MAE	4,285,642	4,669,182	XXX	04/01/2037	V
Bank Of America NA	Mortgage	3136AC-AA-9	FANNIE MAE	1,625,172	1,918,904	XXX	02/01/2043	V
Bank Of America NA	Mortgage	3136AC-KP-5	FANNIE MAE	1,895,529	2,138,343	XXX	06/01/2039	V
Bank Of America NA	Mortgage	3136AD-QY-8	FANNIE MAE	23,212,690	26,418,871	XXX	04/01/2043	V
Bank Of America NA	Mortgage	3136AD-XV-6	FANNIE MAE	8,950,575	9,794,723	XXX	09/01/2039	V
Bank Of America NA	Mortgage	3136AF-QR-8	FANNIE MAE	25,415,408	28,992,338	XXX	07/01/2043	V
Bank Of America NA	Mortgage	3136AJ-EM-4	FANNIE MAE	791,085	865,244	XXX	11/01/2031	V
Bank Of America NA	Mortgage	3136AM-HN-2	FANNIE MAE	1,326,299	1,579,429	XXX	12/01/2044	V
Bank Of America NA	Mortgage	3136AS-PT-7	FANNIE MAE	2,885,909	3,131,352	XXX	09/01/2027	V
Bank Of America NA	Mortgage	3136AU-III-7	FANNIE MAE	9,916,055	10,988,513	XXX	11/01/2041	V
Bank Of America NA	Mortgage	3137AM-LW-5	FREDDIE MAC	2,756,310	2,957,337	XXX	03/01/2027	V
Bank Of America NA	Mortgage	3137AN-PQ-2	FREDDIE MAC	2,132,969	2,283,708	XXX	02/01/2041	V
Bank Of America NA	Mortgage	3137B8-SZ-8	FREDDIE MAC	321,636	352,206	XXX	06/01/2048	V
Bank Of America NA	Mortgage	3137BD-GS-9	FREDDIE MAC	2,217,381	2,456,352	XXX	03/01/2040	V
Bank Of America NA	Mortgage	3137BD-XX-9	FREDDIE MAC	7,487,654	8,297,877	XXX	06/01/2040	V

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - PART D - SECTION 2

Collateral for Derivative Instruments Open December 31 of Current Year

Collateral Pledged to Reporting Entity

1	2	3	4	5	6	7	8	9
Exchange, Counterparty or Central Clearinghouse	Type of Asset Pledged	CUSIP Identification	Description	Fair Value	Par Value	Book/Adjusted Carrying Value	Maturity Date	Type of Margin (I, V or IV)
Bank Of America NA	Mortgage	B4YDEB6GKMZ0031MB27	FREDDIE MAC	47,478	52,622	XXX	12/01/2040	V
Bank Of America NA	Mortgage	B4YDEB6GKMZ0031MB27	FANNIE MAE	316,674	314,983	XXX	07/01/2028	V
Bank Of America NA	Mortgage	B4YDEB6GKMZ0031MB27	FANNIE MAE	4,400,905	4,531,026	XXX	06/01/2029	V
Bank Of America NA	Mortgage	B4YDEB6GKMZ0031MB27	FANNIE MAE	3,394,595	3,564,113	XXX	03/01/2030	V
Bank Of America NA	Mortgage	B4YDEB6GKMZ0031MB27	FANNIE MAE	3,960,617	4,414,158	XXX	03/01/2041	V
Bank Of America NA	Mortgage	B4YDEB6GKMZ0031MB27	FANNIE MAE	1,185,171	1,263,719	XXX	12/01/2039	V
Bank Of America NA	Mortgage	B4YDEB6GKMZ0031MB27	FANNIE MAE	24,585,468	25,668,562	XXX	07/01/2056	V
Bank Of America NA	Mortgage	B4YDEB6GKMZ0031MB27	FANNIE MAE	2,591,785	2,710,071	XXX	06/01/2031	V
Bank Of America NA	Mortgage	36179R-7J-2	GOVERNMENT NATIONAL MORTGAGE A	4,913,746	5,110,673	XXX	04/01/2046	V
Bank Of America NA	Mortgage	36179R-LP-2	GOVERNMENT NATIONAL MORTGAGE A	35,072,269	36,408,756	XXX	08/01/2045	V
Bank Of America NA	Mortgage	36179R-LP-2	GOVERNMENT NATIONAL MORTGAGE A	33,081,824	33,984,727	XXX	08/01/2045	V
Bank Of America NA	Mortgage	36179R-LP-2	GOVERNMENT NATIONAL MORTGAGE A	2,567,056	2,809,179	XXX	11/01/2038	V
Bank Of America NA	Treasury	912828-L5-7	US TREASURY N/B	5,463	5,700	XXX	09/30/2022	V
Bank Of America NA	Treasury	912828-L6-5	US TREASURY N/B	311,272	323,000	XXX	09/30/2020	V
Bank Of America NA	Treasury	912828-L6-5	US TREASURY N/B	299,708	311,000	XXX	09/30/2020	V
Bank Of America NA	Treasury	912828-M9-8	US TREASURY N/B	316,588	328,000	XXX	11/30/2020	V
Bank Of America NA	Treasury	912828-N4-8	US TREASURY N/B	1,014,230	1,049,900	XXX	12/31/2020	V
Bank Of Montreal	Treasury	912810-QK-7	US TREASURY N/B	1,259,368	1,140,000	XXX	08/15/2040	V
Bank Of Montreal	Treasury	912810-RS-9	US TREASURY N/B	41,096,627	47,800,000	XXX	05/15/2046	V
Bank Of Montreal	Treasury	912828-2P-4	US TREASURY N/B	1,608,506	1,680,000	XXX	07/31/2022	V
Bank Of Montreal	Treasury	912828-C5-7	US TREASURY N/B	129,078	133,000	XXX	03/31/2021	V
Bank Of Montreal	Treasury	912828-J4-3	US TREASURY N/B	1,126,398	1,180,000	XXX	02/28/2022	V
Bank Of Montreal	Treasury	912828-LY-4	US TREASURY N/B	3,158,427	3,190,000	XXX	11/15/2019	V
Bank Of Montreal	Treasury	912828-PC-8	US TREASURY N/B	911,644	935,000	XXX	11/15/2020	V
Bank Of Montreal	Treasury	912828-QN-3	US TREASURY N/B	1,111,778	1,125,000	XXX	05/15/2021	V
Bank Of Montreal	Treasury	912828-RC-6	US TREASURY N/B	1,511,488	1,560,000	XXX	08/15/2021	V
Bank Of Montreal	Treasury	912828-V2-3	US TREASURY N/B	1,225,851	1,280,000	XXX	12/31/2021	V
Bank Of Montreal	Treasury	912828-VV-9	US TREASURY N/B	1,824,551	1,880,000	XXX	08/31/2020	V
Bank Of Montreal	Treasury	912828-W5-5	US TREASURY N/B	1,945,784	2,030,000	XXX	02/28/2022	V
Bank Of Montreal	Treasury	912828-WIE-6	US TREASURY N/B	216,480	220,000	XXX	11/15/2023	V
Bank Of Montreal	Treasury	912828-XW-5	US TREASURY N/B	2,418,324	2,555,000	XXX	06/30/2022	V
Bank Of Montreal	Treasury	912828-Y4-6	US TREASURY N/B	1,016,122	1,035,000	XXX	07/31/2020	V
Barclays Bank Plc	Cash	G5GSEF7VJP5170UK5573	Cash Collateral	105,970,000		XXX		V
Barclays Bank Plc	Cash	G5GSEF7VJP5170UK5573	Cash Collateral	39,129,000		XXX		V
BNP Paribas	Cash	ROMUJFFPUB8MPRO8K5P83	Cash Collateral	206,355,000		XXX		V
BNP Paribas	Cash	ROMUJFFPUB8MPRO8K5P83	Cash Collateral	97,210,000		XXX		V
Canadian Imperial Bank of Commerce	Cash	21G119DL770XHC3ZE78	Cash Collateral	10,475,000		XXX		V
Citibank NA	Cash	E570DZVZ7FF32TWEFA76	Cash Collateral	192,395,437		XXX		V
Citibank NA	Cash	E570DZVZ7FF32TWEFA76	Cash Collateral	13,160,398		XXX		V
Citibank NA	Cash	E570DZVZ7FF32TWEFA76	Cash Collateral	53,737,031		XXX		V
Credit Agricole Corporate and Investment Bank	Cash	1VUJ7VQFKU0QSJ21A208	Cash Collateral	131,669,000		XXX		V
Credit Suisse International	Cash	E58DKGMJYYYJLN8C3868	Cash Collateral	286,179,864		XXX		V
Credit Suisse International	Cash	E58DKGMJYYYJLN8C3868	Cash Collateral	13,520,000		XXX		V
Goldman Sachs Bank USA	Cash	KD3XUN7C6T14HNAVLU02	Cash Collateral	250,821,000		XXX		V
Goldman Sachs Bank USA	Cash	KD3XUN7C6T14HNAVLU02	Cash Collateral	71,700,000		XXX		V
Goldman Sachs International	Cash	W22LR0WP21H2NB6K528	Cash Collateral	4,300,000		XXX		V
Goldman Sachs Mitsui Marine Derivative Products LP	Cash	X1H61U0XUPKX510V18	Cash Collateral	63,100,000		XXX		V
Goldman, Sachs & Co	Cash	FOR8UP27PHTHYVLBN630	Cash Collateral	4,850,000		XXX		V
Goldman, Sachs & Co CIE	Cash	FOR8UP27PHTHYVLBN630	Cash Collateral	291,248,243		XXX		V
HSBC Bank USA	Cash	11E8VN30JCEQV1H4R804	Cash Collateral	112,579,544		XXX		V
HSBC Bank USA	Cash	11E8VN30JCEQV1H4R804	Cash Collateral	2,900,000		XXX		V
J.P. Morgan Securities LLC	Cash	ZBUT11V806EZRVWT807	Cash Collateral	1,439,000		XXX		V
JPMorgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGFUS7PNE97	FREDDIE MAC	1,474,718	1,550,938	XXX	05/01/2030	V

E23.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
SCHEDULE DB - PART D - SECTION 2
 Collateral for Derivative Instruments Open December 31 of Current Year

Collateral Pledged to Reporting Entity

1	2	3	4	5	6	7	8	9
Exchange, Counterparty or Central Clearinghouse	Type of Asset Pledged	CUSIP Identification	Description	Fair Value	Par Value	Book/Adjusted Carrying Value	Maturity Date	Type of Margin (I, V or IV)
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FREDDIE MAC	12,502,117	13,365,837	XXX	03/01/2043	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FREDDIE MAC	4,114,639	4,428,195	XXX	06/01/2046	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FREDDIE MAC	3,209,018	3,340,792	XXX	11/01/2027	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FREDDIE MAC	907,863	947,721	XXX	05/01/2028	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FREDDIE MAC	8,622,309	9,217,989	XXX	07/01/2043	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	7,306,585	8,037,611	XXX	06/01/2045	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FREDDIE MAC	2,942,354	2,950,000	XXX	08/01/2019	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	1,965,659	2,003,008	XXX	09/01/2041	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	6,335,911	6,299,797	XXX	11/01/2043	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	7,515,767	7,694,149	XXX	01/01/2029	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	3,577,091	3,759,192	XXX	04/01/2031	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	5,809,955	6,106,349	XXX	02/01/2032	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	1,940,838	1,929,775	XXX	12/01/2043	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	2,730,400	3,027,621	XXX	04/01/2045	V
JP Morgan Chase Bank, N.A.	Mortgage	7H6GLXDRUGGFU57RNE97	FANNIE MAE	8,419,111	8,769,791	XXX	07/01/2043	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	TREASURY BILL	4,017,203	4,061,000	XXX	01/10/2019	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	13,085,705	11,722,000	XXX	08/15/2040	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	7,608,954	6,816,000	XXX	08/15/2040	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	3,206,870	2,752,000	XXX	11/15/2040	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	682,858	586,000	XXX	11/15/2040	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	1,613,525	1,500,000	XXX	08/15/2043	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	4,631,790	4,254,000	XXX	11/15/2043	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	10,368,720	9,523,000	XXX	11/15/2043	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	7,490,111	6,958,000	XXX	02/15/2044	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	14,100,000	14,100,000	XXX	05/15/2044	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	5,879,303	5,727,000	XXX	05/15/2044	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	6,252,724	6,308,000	XXX	08/15/2044	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	4,579,590	5,210,000	XXX	02/15/2045	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	5,038,986	5,239,000	XXX	05/15/2045	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	1,616,591	1,710,000	XXX	08/15/2045	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	2,411,651	2,551,000	XXX	08/15/2045	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	8,290,206	9,542,000	XXX	05/15/2046	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	15,103,028	15,740,000	XXX	05/15/2047	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	TSY INFL IX N/B	6,120,531	6,400,000	XXX	02/15/2048	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	1,642,641	1,700,000	XXX	08/15/2048	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	14,199,328	14,740,000	XXX	09/30/2022	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	500,769	504,000	XXX	02/28/2019	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	11,055,167	11,470,000	XXX	11/30/2022	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	1,748,083	1,815,000	XXX	01/31/2021	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	22,579,012	23,550,000	XXX	01/31/2021	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	5,194,403	5,500,000	XXX	03/31/2023	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	12,087,849	12,799,000	XXX	03/31/2023	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	1,527,153	1,550,000	XXX	05/15/2019	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	2,752,831	2,800,000	XXX	06/15/2019	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	521,763	538,000	XXX	11/15/2021	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	2,044,823	2,121,000	XXX	11/30/2023	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	3,832,578	3,955,000	XXX	02/29/2020	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	2,956,546	3,000,000	XXX	06/30/2019	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	705,343	733,000	XXX	05/31/2022	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	US TREASURY N/B	3,943,940	4,000,000	XXX	05/31/2019	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	STRIPS	10,765,293	20,159,000	XXX	08/15/2038	V
JP Morgan Chase Bank, N.A.	Treasury	7H6GLXDRUGGFU57RNE97	STRIPS	494,406	933,000	XXX	11/15/2038	V
Morgan Stanley & Co International PLC	Cash	4PQJH3JPF6FNF3BB653	Cash Collateral	19,980,000		XXX		V

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company
SCHEDULE DB - PART D - SECTION 2
 Collateral for Derivative Instruments Open December 31 of Current Year

Collateral Pledged to Reporting Entity

1	2	3	4	5	6	7	8	9
Exchange, Counterparty or Central Clearinghouse	Type of Asset Pledged	CUSIP Identification	Description	Fair Value	Par Value	Book/Adjusted Carrying Value	Maturity Date	Type of Margin (I, V or IV)
Morgan Stanley Capital Services	Cash	17331LVCZKQKX5T7XV54	Cash Collateral	195,018,806		XXX		V
Morgan Stanley Capital Services	Cash	17331LVCZKQKX5T7XV54	Cash Collateral	205,588,565		XXX		V
MORGAN STANLEY CAPITAL SERVICES	Cash	17331LVCZKQKX5T7XV54	Cash Collateral	165,803,525		XXX		V
Natixis	Cash	KX1WK48MPD4Y2NCUJZ63	Cash Collateral	16,800,000		XXX		V
Nomura Global Financial Products Inc.	Cash	0Z3V05H267GRS05BHJ91	Cash Collateral	47,270,000		XXX		V
Nomura Global Financial Products Inc.	Cash	0Z3V05H267GRS05BHJ91	Cash Collateral	69,140,000		XXX		V
NOMURA Securities International Inc	Cash	0XTKY608X53C91LVV871	Cash Collateral	5,340,000		XXX		V
Royal Bank of Canada	Cash	ES71P3U3RH1GCT1XBU11	Cash Collateral	115,430,000		XXX		V
Societe Generale	Cash	02PNE81BXP4ROTDBPU41	Cash Collateral	17,550,000		XXX		V
The Royal Bank of Scotland PLC	Treasury	RR3QW1CIW1PC88A4S074	TSY INFL IX N/B	2,148,705	1,401,000	XXX	02/15/2041	V
The Royal Bank of Scotland PLC	Treasury	RR3QW1CIW1PC88A4S074	US TREASURY N/B	15,047,346	14,944,000	XXX	02/15/2042	V
The Royal Bank of Scotland PLC	Treasury	RR3QW1CIW1PC88A4S074	US TREASURY N/B	2,383,826	2,363,000	XXX	05/15/2028	V
UBS AG	Cash	BFMBT61CT2L1QCEMIK50	Cash Collateral	28,401,000		XXX		V
Wells Fargo Bank NA	Mortgage	KB1H1DSPRFMYMCUFXT09	FREDDIE MAC	3,089,490	3,337,493	XXX	10/01/2045	V
Wells Fargo Bank NA	Mortgage	KB1H1DSPRFMYMCUFXT09	FANNIE MAE	33,373,465	37,016,891	XXX	08/01/2031	V
Wells Fargo Bank NA	Mortgage	KB1H1DSPRFMYMCUFXT09	FANNIE MAE	35,014,714	37,855,079	XXX	02/01/2047	V
Wells Fargo Bank NA	Cash	KB1H1DSPRFMYMCUFXT09	Cash Collateral	21,840,000		XXX		V
WELLS FARGO BANK, N.A.	Cash	KB1H1DSPRFMYMCUFXT09	Cash Collateral	36,975,141		XXX		V
Wells Fargo Securities LLC	Cash	VYVCKR63DVZZN70PB21	Cash Collateral	5,062,500		XXX		V
Wells Fargo Securities LLC ICE	Cash	VYVCKR63DVZZN70PB21	Cash Collateral	6,177,600		XXX		V
Wells Fargo Securities LLC LCH	Cash	VYVCKR63DVZZN70PB21	Cash Collateral	25,026,473		XXX		V
0299999999 - Total				3,643,565,966	756,700,309	XXX	XXX	XXX

Schedule DL - Part 1 - Reinvested Collateral Assets Owned

N O N E

Schedule DL - Part 2 - Reinvested Collateral Assets Owned

N O N E

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE E - PART 1 - CASH

1	2	3	4	5	6	7
Depository	Code	Rate of Interest	Amount of Interest Received During Year	Amount of Interest Accrued December 31 of Current Year	Balance	*
Bank of America, NA Hartford, CT	0.....				20,031,915	XXX
Bank of America, NA Hartford, CT					(324,476,277)	XXX
Citibank, NA New York, NY		1.650	839,237		73,939,363	XXX
Citibank, NA Australia Sydney, Australia					25,765,825	XXX
Citibank, NA-London London, UK					62,421,295	XXX
Federal Home Loan Bank of Boston Boston, MA		0.920	10,613		580,458	XXX
JPMorgan Chase Bank, NA New York, NY					69,265,739	XXX
New York Community Bank New York, NY	0.....				956,248	XXX
State Street Bank & Trust Company Boston, MA		0.120	60,978		122,563,899	XXX
The Bank of New York Mellon Pittsburgh, PA					3,603,469	XXX
The MassMutual Trust Company, FSB Enfield, CT		1.130	5,654		500,000	XXX
UMB Bank, N.A. Kansas City, MO					33,246,732	XXX
Wells Fargo Bank, NA San Francisco, CA					66,550,048	XXX
Wells Fargo Bank, NA San Francisco, CA	0.....				19,694,881	XXX
0199998 Deposits in ... 8 depositories which do not exceed the allowable limit in any one depository (See instructions) - open depositories	XXX	XXX	281,890		377,755	XXX
0199999. Totals - Open Depositories	XXX	XXX	1,198,372		175,021,350	XXX
0299998 Deposits in ... depositories which do not exceed the allowable limit in any one depository (See instructions) - suspended depositories	XXX	XXX				XXX
0299999. Totals - Suspended Depositories	XXX	XXX				XXX
0399999. Total Cash on Deposit	XXX	XXX	1,198,372		175,021,350	XXX
0499999. Cash in Company's Office	XXX	XXX	XXX	XXX	115,000	XXX
0599999 Total - Cash	XXX	XXX	1,198,372		175,136,350	XXX

TOTALS OF DEPOSITORY BALANCES ON THE LAST DAY OF EACH MONTH DURING THE CURRENT YEAR

1. January.....	168,302,176	4. April.....	184,472,264	7. July.....	149,134,116	10. October.....	290,574,673
2. February.....	171,801,805	5. May.....	963,057,627	8. August.....	111,087,313	11. November.....	80,459,082
3. March.....	94,676,812	6. June.....	43,625,619	9. September.....	200,575,053	12. December.....	175,136,350

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE E - PART 2 - CASH EQUIVALENTS

Show Investments Owned December 31 of Current Year

1	2	3	4	5	6	7	8	9
CUSIP	Description	Code	Date Acquired	Rate of Interest	Maturity Date	Book/Adjusted Carrying Value	Amount of Interest Due and Accrued	Amount Received During Year
0599999	Total - U.S. Government Bonds							
1099999	Total - All Other Government Bonds							
1799999	Total - U.S. States, Territories and Possessions Bonds							
2499999	Total - U.S. Political Subdivisions Bonds							
	FHLBN 01/02/19		10/31/2018	0.000	01/02/2019	1,589,902		6,079
2599999	Subtotal - Bonds - U.S. Special Revenues - Issuer Obligations					1,589,902		6,079
3199999	Total - U.S. Special Revenues Bonds					1,589,902		6,079
	ABB TREASURY CENTER (USA) INC. COMMERCIAL PAPER		12/31/2018	0.000	01/07/2019	16,393,166		1,138
	AMEREN CORP. COMMERCIAL PAPER		12/31/2018	0.000	01/08/2019	1,079,380		88
	AMERICAN ELECTRIC POWER CO. INC. COMMERCIAL PAPER		12/21/2018	0.000	01/16/2019	9,987,405		9,216
	AMERICAN ELECTRIC POWER CO. INC. COMMERCIAL PAPER		12/20/2018	0.000	01/23/2019	25,751,863		26,181
	AMERICAN ELECTRIC POWER CO. INC. COMMERCIAL PAPER		12/31/2018	0.000	01/28/2019	7,982,479		647
	AMERICAN HONDA FINANCE CORP. COMMERCIAL PAPER		12/19/2018	0.000	02/22/2019	18,181,397		17,070
	AMPHENOL CORP. COMMERCIAL PAPER		12/31/2018	0.000	01/02/2019	39,997,000		3,000
	APPLE INC. COMMERCIAL PAPER		12/26/2018	0.000	02/07/2019	16,956,651		7,009
	AUTOZONE INC. COMMERCIAL PAPER		12/21/2018	0.000	01/11/2019	69,943,450		62,100
	AVANGRID, INC. COMMERCIAL PAPER		12/13/2018	0.000	01/10/2019	1,498,873		2,373
	AVANGRID, INC. COMMERCIAL PAPER		12/31/2018	0.000	01/24/2019	3,493,515		281
	AVANGRID, INC. COMMERCIAL PAPER		12/21/2018	0.000	02/05/2019	73,783,991		60,157
	BERKSHIRE HATHAWAY ENERGY CO. COMMERCIAL PAPER		12/27/2018	0.000	01/17/2019	12,963,528		4,111
	BOSTON SCIENTIFIC CORP. COMMERCIAL PAPER		12/31/2018	0.000	01/02/2019	12,998,971		1,029
	BOSTON SCIENTIFIC CORP. COMMERCIAL PAPER		12/13/2018	0.000	01/10/2019	34,973,269		56,297
	BOSTON SCIENTIFIC CORP. COMMERCIAL PAPER		12/21/2018	0.000	01/22/2019	52,904,067		50,112
	CBS CORP. COMMERCIAL PAPER		12/27/2018	0.000	01/25/2019	22,355,929		9,160
	CBS CORP. COMMERCIAL PAPER		12/20/2018	0.000	02/20/2019	18,421,552		18,729
	CME GROUP INC. COMMERCIAL PAPER		12/18/2018	0.000	01/08/2019	24,987,592		24,779
	CVS HEALTH CORPORATION COMMERCIAL PAPER		12/31/2018	0.000	01/02/2019	79,984,111		5,888
	CAMPBELL SOUP COMPANY COMMERCIAL PAPER		12/11/2018	0.000	02/27/2019	24,869,930		45,319
	CAMPBELL SOUP COMPANY COMMERCIAL PAPER		12/26/2018	0.000	03/06/2019	8,450,862		4,578
	CLOROX COMPANY, THE COMMERCIAL PAPER		12/18/2018	0.000	01/16/2019	2,147,282		2,530
	COLGATE-PALMOLIVE CO. COMMERCIAL PAPER		12/31/2018	0.000	01/11/2019	4,996,805		319
	COX ENTERPRISES INC. COMMERCIAL PAPER		12/31/2018	0.000	01/02/2019	70,294,660		5,339
	COX ENTERPRISES INC. COMMERCIAL PAPER		12/26/2018	0.000	01/09/2019	39,973,765		19,654
	DTE ENERGY COMPANY COMMERCIAL PAPER		12/26/2018	0.000	01/18/2019	18,583,680		8,920
	DANAHER CORPORATION COMMERCIAL PAPER		12/31/2018	0.000	01/02/2019	4,999,664		336
	JOHN DEERE CAPITAL CORPORATION COMMERCIAL PAPER		12/13/2018	0.000	01/25/2019	11,980,054		15,744
	DENTSPLY SIRONA INC. COMMERCIAL PAPER		12/28/2018	0.000	01/02/2019	37,797,277		10,887
	DENTSPLY SIRONA INC. COMMERCIAL PAPER		12/21/2018	0.000	01/11/2019	29,975,561		26,836
	DOLLAR GENERAL CORP. COMMERCIAL PAPER		12/28/2018	0.000	01/03/2019	8,298,699		2,600
	DOVER CORP. COMMERCIAL PAPER		12/26/2018	0.000	01/02/2019	12,698,941		6,349
	DOVER CORP. COMMERCIAL PAPER		12/28/2018	0.000	01/03/2019	17,597,066		5,866
	DOVER CORP. COMMERCIAL PAPER		12/27/2018	0.000	01/04/2019	9,797,590		4,014
	DUKE ENERGY CORP. COMMERCIAL PAPER		12/21/2018	0.000	03/21/2019	14,702,152		13,522
	E. I. DU PONT DE NEMOURS AND COMPANY COMMERCIAL PAPER		12/26/2018	0.000	02/07/2019	23,925,469		12,042
	E. I. DU PONT DE NEMOURS AND COMPANY COMMERCIAL PAPER		12/13/2018	0.000	03/08/2019	4,972,548		7,847
	E. I. DU PONT DE NEMOURS AND COMPANY COMMERCIAL PAPER		12/17/2018	0.000	03/14/2019	16,100,080		20,662
	EPAC USA FINANCE LLC COMMERCIAL PAPER		12/27/2018	0.000	01/10/2019	8,743,654		3,522
	EATON CORPORATION COMMERCIAL PAPER		12/31/2018	0.000	01/10/2019	11,491,949		894
	EMERSON ELECTRIC CO. COMMERCIAL PAPER		12/14/2018	0.000	01/15/2019	24,975,956		30,845
	ENTERGY CORP COMMERCIAL PAPER		12/28/2018	0.000	01/02/2019	80,394,081		5,918
	EVERSOURCE ENERGY COMMERCIAL PAPER		12/31/2018	0.000	01/08/2019	17,490,642		1,336
	FMC TECHNOLOGIES INC. COMMERCIAL PAPER		12/12/2018	0.000	03/13/2019	21,863,097		36,347
	FEDEX CORP. COMMERCIAL PAPER		12/12/2018	0.000	01/07/2019	17,691,135		29,485
	FMC CORP. COMMERCIAL PAPER		12/31/2018	0.000	01/02/2019	19,998,375		1,625
	FORTIVE CORPORATION COMMERCIAL PAPER		12/18/2018	0.000	01/14/2019	1,114,790		1,301
	HENKEL OF AMERICA INC. COMMERCIAL PAPER		12/26/2018	0.000	01/16/2019	24,974,274		17,440
	INTEL CORP. COMMERCIAL PAPER		12/27/2018	0.000	01/10/2019	24,984,995		8,328
	KEURIG DR PEPPER INC. COMMERCIAL PAPER		12/24/2018	0.000	01/14/2019	3,496,206		2,331
	KEURIG DR PEPPER INC. COMMERCIAL PAPER		12/12/2018	0.000	01/15/2019	27,768,272		45,201
	KEURIG DR PEPPER INC. COMMERCIAL PAPER		12/21/2018	0.000	01/28/2019	9,977,104		9,298
	KROGER CO. COMMERCIAL PAPER		12/31/2018	0.000	01/02/2019	49,996,319		3,680
	L'OREAL USA INC. COMMERCIAL PAPER		12/14/2018	0.000	01/08/2019	5,377,434		6,587
	L'OREAL USA INC. COMMERCIAL PAPER		12/21/2018	0.000	01/18/2019	19,976,371		15,260
	LYONDELLBASELL INVESTMENT LLC COMMERCIAL PAPER		12/27/2018	0.000	01/17/2019	19,974,212		8,045

E27

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE E - PART 2 - CASH EQUIVALENTS

Show Investments Owned December 31 of Current Year

1	2	3	4	5	6	7	8	9
CUSIP	Description	Code	Date Acquired	Rate of Interest	Maturity Date	Book/Adjusted Carrying Value	Amount of Interest Due and Accrued	Amount Received During Year
	MARRIOTT INTERNATIONAL INC. COMMERCIAL P		10/16/2018	0.000	01/09/2019	4,996,983		28,858
	MARRIOTT INTERNATIONAL INC. COMMERCIAL P		12/20/2018	0.000	02/21/2019	20,909,178		19,486
	MCCORMICK & COMPANY, INCORPORATED (MD) C		12/24/2018	0.000	01/02/2019	34,347,374		20,990
	MCKESSON CORP. COMMERCIAL PAPER		12/26/2018	0.000	01/24/2019	83,709,332		61,671
	MERCK & CO., INC. COMMERCIAL PAPER		12/13/2018	0.000	03/07/2019	26,726,212		35,969
	MOHAWK INDUSTRIES INC. COMMERCIAL PAPER		12/20/2018	0.000	01/23/2019	33,837,788		33,838
	MOHAWK INDUSTRIES INC. COMMERCIAL PAPER		12/21/2018	0.000	01/25/2019	10,347,383		9,422
	MONDELEZ INTERNATIONAL, INC COMMERCIAL P		12/31/2018	0.000	01/02/2019	11,999,117		883
	NASDAQ, INC. COMMERCIAL PAPER		12/19/2018	0.000	01/24/2019	24,952,194		25,687
	NASDAQ, INC. COMMERCIAL PAPER		12/24/2018	0.000	01/30/2019	5,985,010		2,577
	NASDAQ, INC. COMMERCIAL PAPER		12/21/2018	0.000	02/15/2019	14,941,475		6,475
	NASDAQ, INC. COMMERCIAL PAPER		12/20/2018	0.000	02/21/2019	1,991,208		2,058
	NASDAQ, INC. COMMERCIAL PAPER		12/20/2018	0.000	02/22/2019	1,294,173		1,337
	NASDAQ, INC. COMMERCIAL PAPER		12/20/2018	0.000	02/25/2019	4,975,569		4,416
	NATIONAL RURAL UTILITIES COOPERATIVE FIN		12/13/2018	0.000	02/12/2019	24,922,600		34,857
	NEXTERA ENERGY CAPITAL HOLDINGS, INC. CO		12/26/2018	0.000	01/30/2019	36,910,539		18,455
	NEXTERA ENERGY CAPITAL HOLDINGS, INC. CO		12/18/2018	0.000	01/31/2019	7,281,424		8,637
	NEXTERA ENERGY CAPITAL HOLDINGS, INC. CO		12/27/2018	0.000	02/05/2019	19,941,642		8,309
	NEXTERA ENERGY CAPITAL HOLDINGS, INC. CO		12/20/2018	0.000	02/26/2019	1,542,759		1,543
	NEXTERA ENERGY CAPITAL HOLDINGS, INC. CO		12/18/2018	0.000	02/27/2019	7,140,879		8,331
	NORTHERN ILLINOIS GAS COMPANY COMMERCIAL		12/26/2018	0.000	01/24/2019	24,952,859		12,268
	PACCAR FINANCIAL CORP. COMMERCIAL PAPER		12/14/2018	0.000	01/22/2019	12,581,897		15,476
	PACCAR FINANCIAL CORP. COMMERCIAL PAPER		12/19/2018	0.000	01/24/2019	5,541,163		4,982
	PACCAR FINANCIAL CORP. COMMERCIAL PAPER		12/26/2018	0.000	01/28/2019	6,986,817		2,923
	PARKER-HANIFIN CORP. COMMERCIAL PAPER		12/12/2018	0.000	02/26/2019	12,939,237		20,487
	PARKER-HANIFIN CORP. COMMERCIAL PAPER		12/17/2018	0.000	03/05/2019	4,973,717		6,217
	PARKER-HANIFIN CORP. COMMERCIAL PAPER		12/21/2018	0.000	03/12/2019	13,917,713		12,843
	PUBLIC SERVICE COMPANY OF COLORADO COMM		12/27/2018	0.000	01/03/2019	24,995,971		10,068
	PUBLIC SERVICE COMPANY OF COLORADO COMM		12/17/2018	0.000	01/07/2019	23,688,214		29,413
	PUBLIC SERVICE ELECTRIC & GAS CO. COMMER		12/18/2018	0.000	01/11/2019	6,294,568		7,588
	PUBLIC SERVICE ENTERPRISE GROUP INC. COM		12/06/2018	0.000	02/27/2019	39,801,318		89,973
	RYDER SYSTEM INC. COMMERCIAL PAPER		12/27/2018	0.000	01/15/2019	5,993,231		2,414
	RYDER SYSTEM INC. COMMERCIAL PAPER		12/21/2018	0.000	01/17/2019	12,992,940		11,703
	SIEMENS CAPITAL COMPANY LLC COMMERCIAL P		12/18/2018	0.000	01/28/2019	14,872,259		14,343
	SIEMENS CAPITAL COMPANY LLC COMMERCIAL P		12/17/2018	0.000	03/15/2019	9,201,179		9,968
	SOUTHERN COMPANY GAS CAPITAL CORPORATION		12/20/2018	0.000	01/18/2019	3,994,138		4,127
	SPECTRA ENERGY PARTNERS LP COMMERCIAL PA		12/20/2018	0.000	01/08/2019	5,496,735		5,588
	SPECTRA ENERGY PARTNERS LP COMMERCIAL PA		12/21/2018	0.000	01/15/2019	28,965,566		31,056
	STANLEY BLACK & DECKER, INC. COMMERCIAL		12/28/2018	0.000	01/03/2019	34,995,001		9,993
	SYSCO CORP. COMMERCIAL PAPER		12/28/2018	0.000	01/02/2019	9,899,299		2,805
	TRANSCANADA PIPELINE USA LTD. COMMERCIAL		12/17/2018	0.000	03/15/2019	15,897,024		19,598
	TRANSCANADA PIPELINE USA LTD. COMMERCIAL		12/20/2018	0.000	03/19/2019	6,455,464		6,886
	TYSON FOODS INC. COMMERCIAL PAPER		12/21/2018	0.000	01/11/2019	9,991,937		8,854
	UNILEVER CAPITAL CORP. COMMERCIAL PAPER		12/24/2018	0.000	02/05/2019	20,948,317		11,778
	UNITED TECHNOLOGIES CORP. COMMERCIAL PAP		12/28/2018	0.000	01/23/2019	35,434,027		11,969
	UNITED TECHNOLOGIES CORP. COMMERCIAL PAP		12/31/2018	0.000	01/25/2019	20,159,058		1,702
	VF CORP. COMMERCIAL PAPER		12/31/2018	0.000	01/02/2019	74,994,121		46,566
	VF CORP. COMMERCIAL PAPER		12/27/2018	0.000	01/03/2019	10,998,288		4,277
	VF CORP. COMMERCIAL PAPER		12/27/2018	0.000	01/04/2019	29,992,747		12,080
	VF CORP. COMMERCIAL PAPER		12/26/2018	0.000	01/09/2019	32,978,356		16,214
	VII CREDIT, INC. COMMERCIAL PAPER		12/13/2018	0.000	01/07/2019	1,345,326		2,130
	VII CREDIT, INC. COMMERCIAL PAPER		12/21/2018	0.000	01/08/2019	3,997,626		2,710
	VII CREDIT, INC. COMMERCIAL PAPER		12/21/2018	0.000	01/28/2019	17,459,931		16,272
	VII CREDIT, INC. COMMERCIAL PAPER		12/28/2018	0.000	02/07/2019	7,974,914		2,703
	VII CREDIT, INC. COMMERCIAL PAPER		12/13/2018	0.000	02/19/2019	896,196		1,466
	VII CREDIT, INC. COMMERCIAL PAPER		12/13/2018	0.000	02/22/2019	447,982		733
	VIRGINIA ELECTRIC & POWER CO. COMMERCIAL		12/27/2018	0.000	01/17/2019	9,987,106		4,023
	WESTROCK COMPANY COMMERCIAL PAPER		12/31/2018	0.000	01/08/2019	9,752,307		813
	WESTROCK COMPANY COMMERCIAL PAPER		12/20/2018	0.000	01/16/2019	41,248,668		40,974
	WESTROCK COMPANY COMMERCIAL PAPER		12/21/2018	0.000	01/17/2019	44,964,314		40,943
	WAL-MART STORES, INC. COMMERCIAL PAPER		12/27/2018	0.000	01/14/2019	19,982,155		6,855
	WASTE MANAGEMENT, INC. COMMERCIAL PAPER		12/31/2018	0.000	01/04/2019	25,893,740		2,086
	WASTE MANAGEMENT, INC. COMMERCIAL PAPER		12/26/2018	0.000	01/17/2019	39,947,534		16,367
	WESTAR ENERGY, INC. COMMERCIAL PAPER		12/20/2018	0.000	01/02/2019	14,988,791		14,489
	WESTAR ENERGY, INC. COMMERCIAL PAPER		12/21/2018	0.000	01/07/2019	42,481,979		39,691
	WESTAR ENERGY, INC. COMMERCIAL PAPER		12/26/2018	0.000	01/08/2019	33,979,826		17,273

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE E - PART 2 - CASH EQUIVALENTS

Show Investments Owned December 31 of Current Year

1 CUSIP	2 Description	3 Code	4 Date Acquired	5 Rate of Interest	6 Maturity Date	7 Book/Adjusted Carrying Value	8 Amount of Interest Due and Accrued	9 Amount Received During Year
	WISCONSIN ELECTRIC POWER COMPANY COMMERC		12/27/2018	0.000	01/04/2019	4,998,758		2,069
	XCEL ENERGY INC. COMMERCIAL PAPER		12/26/2018	0.000	01/09/2019	34,680,466		17,629
	BANK OF NOVA SCOTIA COMMERCIAL PAPER		12/21/2018	0.000	02/04/2019	12,070,836		9,405
	CDP FINANCIAL INC COMMERCIAL PAPER		12/12/2018	0.000	01/10/2019	24,984,416		34,562
	CANADIAN NATURAL RESOURCES LTD. COMMERC		12/28/2018	0.000	01/23/2019	29,947,500		
	MAGNA INTERNATIONAL INC. COMMERCIAL PAPE		12/31/2018	0.000	01/02/2019	41,996,850		3,150
	MAGNA INTERNATIONAL INC. COMMERCIAL PAPE		12/28/2018	0.000	01/10/2019	12,391,317		3,855
	MAGNA INTERNATIONAL INC. COMMERCIAL PAPE		12/20/2018	0.000	01/11/2019	29,974,808		30,175
	MAGNA INTERNATIONAL INC. COMMERCIAL PAPE		12/21/2018	0.000	01/15/2019	34,959,129		32,046
	ROGERS COMMUNICATIONS INC. COMMERCIAL PA		12/20/2018	0.000	01/02/2019	2,799,766		2,800
	ROGERS COMMUNICATIONS INC. COMMERCIAL PA		12/20/2018	0.000	01/17/2019	18,375,032		18,681
	SUNCOR ENERGY INC. COMMERCIAL PAPER		12/26/2018	0.000	02/04/2019	997,165		499
	TELUS CORPORATION COMMERCIAL PAPER		12/31/2018	0.000	02/04/2019	12,565,350		
	AUSTRALIA AND NEW ZEALAND BANKING GROUP		12/26/2018	0.000	01/22/2019	9,985,411		4,161
	AUSTRALIA AND NEW ZEALAND BANKING GROUP		12/17/2018	0.000	02/07/2019	6,881,897		7,312
	BASF (SE) COMMERCIAL PAPER		12/11/2018	0.000	01/11/2019	14,989,568		21,860
	BPC SA COMMERCIAL PAPER		12/13/2018	0.000	03/05/2019	24,879,513		36,110
	DNB BANK ASA COMMERCIAL PAPER		12/19/2018	0.000	02/01/2019	19,956,388		18,232
	DNB BANK ASA COMMERCIAL PAPER		12/17/2018	0.000	02/19/2019	6,974,055		7,904
	EXPERIAN FINANCE PLC COMMERCIAL PAPER		12/13/2018	0.000	01/31/2019	14,763,312		23,141
	EXPERIAN FINANCE PLC COMMERCIAL PAPER		12/21/2018	0.000	02/14/2019	1,245,183		1,198
	EXPERIAN FINANCE PLC COMMERCIAL PAPER		12/20/2018	0.000	03/19/2019	34,767,691		35,927
	HYUNDAI CAPITAL AMERICA COMMERCIAL PAPER		11/01/2018	0.000	01/30/2019	14,966,008		69,841
	HYUNDAI CAPITAL AMERICA COMMERCIAL PAPER		11/16/2018	0.000	02/14/2019	22,915,909		87,259
	MACQUARIE BANK LIMITED COMMERCIAL PAPER		12/12/2018	0.000	03/01/2019	24,883,866		39,123
	NRW BANK COMMERCIAL PAPER		12/17/2018	0.000	02/14/2019	24,919,245		27,411
	NATIONAL GRID PLC COMMERCIAL PAPER		10/31/2018	0.000	01/25/2019	3,443,645		16,309
	RECKITT BENCKISER TREASURY SERVICES PLC		12/21/2018	0.000	01/03/2019	64,989,479		60,218
	RECKITT BENCKISER TREASURY SERVICES PLC		12/21/2018	0.000	03/06/2019	1,491,730		642
	ROYAL CARIBBEAN CRUISES LTD. COMMERCIAL		12/27/2018	0.000	02/25/2019	88,057,594		136,302
	SUMITOMO MITSUI BANKING CORPORATION COMM		12/18/2018	0.000	02/08/2019	3,191,141		3,251
	SUMITOMO MITSUI BANKING CORPORATION COMM		12/26/2018	0.000	03/05/2019	5,572,547		2,601
	SWEDBANK AB COMMERCIAL PAPER		12/20/2018	0.000	03/20/2019	21,728,228		18,614
	TORONTO-DOMINION BANK (THE) COMMERCIAL P		12/21/2018	0.000	02/11/2019	24,774,938		20,941
	TYCO INTERNATIONAL HOLDING S. A R.L. COM		12/28/2018	0.000	01/04/2019	29,992,873		9,498
	TYCO INTERNATIONAL HOLDING S. A R.L. COM		12/21/2018	0.000	01/07/2019	27,485,549		26,455
	TYCO INTERNATIONAL HOLDING S. A R.L. COM		12/21/2018	0.000	03/21/2019	17,865,598		13,498
	3299999. Subtotal - Bonds - Industrial and Miscellaneous (Unaffiliated) - Issuer Obligations					3,323,606,296		2,630,337
	3899999. Total - Industrial and Miscellaneous (Unaffiliated) Bonds					3,323,606,296		2,630,337
	4899999. Total - Hybrid Securities							
	5599999. Total - Parent, Subsidiaries and Affiliates Bonds							
	6099999. Subtotal - SVO Identified Funds							
	6599999. Subtotal - Bank Loans							
	7799999. Total - Issuer Obligations					3,325,196,198		2,636,416
	7899999. Total - Residential Mortgage-Backed Securities							
	7999999. Total - Commercial Mortgage-Backed Securities							
	8099999. Total - Other Loan-Backed and Structured Securities							
	8199999. Total - SVO Identified Funds							
	8299999. Total - Bank Loans							
	8399999. Total Bonds					3,325,196,198		2,636,416
09248U-71-8	BLACKROCK LIQUIDITY FUND-EXEMPT MONEY MA		12/31/2018	0.000		166,000,000		
	8599999. Subtotal - Exempt Money Market Mutual Funds - as Identified by the SVO					166,000,000		
09248U-61-9	BLACKROCK LIQUIDITY FUND-BLKR-LIQ TMP-IN		12/18/2017	0.000		49,991,112	435,617	
26186J-20-6	DREYFUS CASH MANAGEMENT-DREYFUS-CS MG-IN		12/18/2017	0.000		50,005,000	526,045	
38141W-36-4	GOLDMAN SACHS FINANCIAL -OPEN-END FUND		12/18/2017	0.000		50,005,000	540,440	
825252-64-6	STIT-STIC PRIME PORTFOLI-STIT-STIC-INS		12/18/2017	0.000		50,000,000	478,035	
949921-12-6	Wells Fargo Government M-WF GOV MMF SEL		12/17/2018	0.000		3,935,635	891	
	8699999. Subtotal - All Other Money Market Mutual Funds					203,936,747	1,981,028	
	8899999 - Total Cash Equivalents					3,695,132,945	1,981,028	2,636,416

E27.2

ANNUAL STATEMENT FOR THE YEAR 2018 OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE E - PART 3 - SPECIAL DEPOSITS

States, Etc.	1 Type of Deposit	2 Purpose of Deposit	Deposits For the Benefit of All Policyholders		All Other Special Deposits	
			3 Book/Adjusted Carrying Value	4 Fair Value	5 Book/Adjusted Carrying Value	6 Fair Value
1. Alabama	AL					
2. Alaska	AK					
3. Arizona	AZ					
4. Arkansas	AR	B LIFE INSURANCE	200,776	195,063		
5. California	CA					
6. Colorado	CO					
7. Connecticut	CT	B LIFE INSURANCE	1,619,545	1,776,125		
8. Delaware	DE					
9. District of Columbia	DC					
10. Florida	FL					
11. Georgia	GA	B LIFE INSURANCE	55,213	53,642		
12. Hawaii	HI					
13. Idaho	ID					
14. Illinois	IL					
15. Indiana	IN					
16. Iowa	IA					
17. Kansas	KS	B LIFE INSURANCE	451,745	438,891		
18. Kentucky	KY					
19. Louisiana	LA					
20. Maine	ME					
21. Maryland	MD					
22. Massachusetts	MA	B LIFE INSURANCE	2,011,925	2,018,008		
23. Michigan	MI					
24. Minnesota	MN					
25. Mississippi	MS					
26. Missouri	MO					
27. Montana	MT					
28. Nebraska	NE					
29. Nevada	NV					
30. New Hampshire	NH					
31. New Jersey	NJ					
32. New Mexico	NM	B LIFE INSURANCE	209,700	204,816		
33. New York	NY					
34. North Carolina	NC	B LIFE INSURANCE	541,356	610,649		
35. North Dakota	ND					
36. Ohio	OH					
37. Oklahoma	OK					
38. Oregon	OR					
39. Pennsylvania	PA					
40. Rhode Island	RI					
41. South Carolina	SC	B LIFE INSURANCE	2,539,616	2,878,027		
42. South Dakota	SD					
43. Tennessee	TN					
44. Texas	TX					
45. Utah	UT					
46. Vermont	VT					
47. Virginia	VA					
48. Washington	WA					
49. West Virginia	WV					
50. Wisconsin	WI					
51. Wyoming	WY					
52. American Samoa	AS					
53. Guam	GU					
54. Puerto Rico	PR	B LIFE INSURANCE	1,154,538	1,156,976		
55. U.S. Virgin Islands	VI					
56. Northern Mariana Islands	MP					
57. Canada	CAN					
58. Aggregate Alien and Other	OT	XXX	XXX			
59. Subtotal	XXX	XXX	8,784,414	9,332,197		
DETAILS OF WRITE-INS						
5801.						
5802.						
5803.						
5898. Summary of remaining write-ins for Line 58 from overflow page	XXX	XXX				
5899. Totals (Lines 5801 thru 5803 plus 5898)(Line 58 above)	XXX	XXX				

ALPHABETICAL INDEX

ANNUAL STATEMENT BLANK

Analysis of Increase in Reserves During The Year	7
Analysis of Operations By Lines of Business	6
Asset Valuation Reserve Default Component	30
Asset Valuation Reserve Equity	32
Asset Valuation Reserve Replications (Synthetic) Assets	35
Asset Valuation Reserve	29
Assets	2
Cash Flow	5
Exhibit 1 - Part 1 - Premiums and Annuity Considerations for Life and Accident and Health Contracts	9
Exhibit 1 - Part 2 - Dividends and Coupons Applied, Reinsurance Commissions and Expense	10
Exhibit 2 - General Expenses	11
Exhibit 3 - Taxes, Licenses and Fees (Excluding Federal Income Taxes)	11
Exhibit 4 - Dividends or Refunds	11
Exhibit 5 - Aggregate Reserve for Life Contracts	12
Exhibit 5 - Interrogatories	13
Exhibit 5A - Changes in Bases of Valuation During The Year	13
Exhibit 6 - Aggregate Reserves for Accident and Health Contracts	14
Exhibit 7 - Deposit-Type Contracts	15
Exhibit 8 - Claims for Life and Accident and Health Contracts - Part 1	16
Exhibit 8 - Claims for Life and Accident and Health Contracts - Part 2	17
Exhibit of Capital Gains (Losses)	8
Exhibit of Life Insurance	25
Exhibit of Net Investment Income	8
Exhibit of Nonadmitted Assets	18
Exhibit of Number of Policies, Contracts, Certificates, Income Payable and Account Values	27
Five-Year Historical Data	22
Form for Calculating the Interest Maintenance Reserve (IMR)	28
General Interrogatories	20
Jurat Page	1
Liabilities, Surplus and Other Funds	3
Life Insurance (State Page)	24
Notes To Financial Statements	19
Overflow Page For Write-ins	55
Schedule A - Part 1	E01
Schedule A - Part 2	E02
Schedule A - Part 3	E03
Schedule A - Verification Between Years	SI02
Schedule B - Part 1	E04
Schedule B - Part 2	E05
Schedule B - Part 3	E06
Schedule B - Verification Between Years	SI02
Schedule BA - Part 1	E07
Schedule BA - Part 2	E08
Schedule BA - Part 3	E09
Schedule BA - Verification Between Years	SI03
Schedule D - Part 1	E10
Schedule D - Part 1A - Section 1	SI05
Schedule D - Part 1A - Section 2	SI08
Schedule D - Part 2 - Section 1	E11
Schedule D - Part 2 - Section 2	E12
Schedule D - Part 3	E13
Schedule D - Part 4	E14
Schedule D - Part 5	E15
Schedule D - Part 6 - Section 1	E16
Schedule D - Part 6 - Section 2	E16
Schedule D - Summary By Country	SI04
Schedule D - Verification Between Years	SI03
Schedule DA - Part 1	E17
Schedule DA - Verification Between Years	SI10

ANNUAL STATEMENT BLANK (Continued)

Schedule DB - Part A - Section 1	E18
Schedule DB - Part A - Section 2	E19
Schedule DB - Part A - Verification Between Years	SI11
Schedule DB - Part B - Section 1	E20
Schedule DB - Part B - Section 2	E21
Schedule DB - Part B - Verification Between Years	SI11
Schedule DB - Part C - Section 1	SI12
Schedule DB - Part C - Section 2	SI13
Schedule DB - Part D - Section 1	E22
Schedule DB - Part D - Section 2	E23
Schedule DB - Verification	SI14
Schedule DL - Part 1	E24
Schedule DL - Part 2	E25
Schedule E - Part 1 - Cash	E26
Schedule E - Part 2 - Cash Equivalents	E27
Schedule E - Part 2 - Verification Between Years	SI15
Schedule E - Part 3 - Special Deposits	E28
Schedule F	36
Schedule H - Accident and Health Exhibit - Part 1	37
Schedule H - Part 2, Part 3 and Part 4	38
Schedule H - Part 5 - Health Claims	39
Schedule S - Part 1 - Section 1	40
Schedule S - Part 1 - Section 2	41
Schedule S - Part 2	42
Schedule S - Part 3 - Section 1	43
Schedule S - Part 3 - Section 2	44
Schedule S - Part 4	45
Schedule S - Part 5	46
Schedule S - Part 6	47
Schedule S - Part 7	48
Schedule T - Part 2 Interstate Compact	50
Schedule T - Premiums and Annuity Considerations	49
Schedule Y - Information Concerning Activities of Insurer Members of a Holding Company Group	51
Schedule Y - Part 1A - Detail of Insurance Holding Company System	52
Schedule Y - Part 2 - Summary of Insurer's Transactions With Any Affiliates	53
Summary Investment Schedule	SI01
Summary of Operations	4
Supplemental Exhibits and Schedules Interrogatories	54