



LIFE AND ACCIDENT AND HEALTH COMPANIES - ASSOCIATION EDITION - SEPARATE ACCOUNTS

ANNUAL STATEMENT

FOR THE YEAR ENDED DECEMBER 31, 2016

OF THE CONDITION AND AFFAIRS OF THE SEPARATE ACCOUNTS OF THE

Massachusetts Mutual Life Insurance Company

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

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

Country of Domicile United States of America

Type of Separate Accounts Insulated [] Non-Insulated []

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

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

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

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

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

Internet Website Address www.massmutual.com

Statutory Statement Contact Tammy A. Peatman, 413-744-6327
(Name) (Area Code) (Telephone Number)
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(E-mail Address) (FAX Number)

OFFICERS

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

OTHER

Elizabeth Ward Chicares #, Executive Vice President, Chief Financial Officer and Chief Actuary Michael Robert Fanning, Executive Vice President Melvin Timothy Corbett, Executive Vice President and Chief Investment Officer
Robert Joseph Casale, Executive Vice President and Chief Information Officer Mark Douglas Roellig, Executive Vice President and General Counsel Elaine Anne Sarsynski, Executive Vice President
Adnan Omar Ahmed, Executive Vice President and Chief Human Resources Officer

DIRECTORS OR TRUSTEES

Roger William Crandall - Chairman Karen Hall Bechtel # Mark Thomas Bertolini
Kathleen Ann Corbet - Lead Director James Henry DeGraffenreidt, Jr. Patricia Diaz Dennis
Robert Alan Essner Isabella Davidov Goren Raymond Walter LeBoeuf
Jeffrey Marc Leiden Cathy Elizabeth Minehan Marc Francis Racicot
Laura Jeanne Sen William Taylor Spitz Howard Todd Stitzer

State of Massachusetts SS:
County of Hampden

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

Roger William Crandall
President and Chief Executive Officer

Pia Denise Flanagan
Secretary

Todd Garrett Picken
Treasurer

Subscribed and sworn to before me this _____ day of _____

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

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

ASSETS

	Current Year			Prior Year
	1 General Account Basis	2 Fair Value Basis	3 Total (Cols. 1 + 2)	4 Total
1. Bonds (Schedule D).....		18,644,968,287	18,644,968,287	16,893,048,746
2. Stocks (Schedule D):				
2.1 Preferred stocks				
2.2 Common stocks		39,951,372,362	39,951,372,362	39,711,572,950
3. Mortgage loans on real estate (Schedule B).....		2,414,650	2,414,650	2,815,347
4. Real estate (Schedule A):				
4.1 Properties held for the production of income (less \$ encumbrances)				
4.2 Properties held for sale (less \$ encumbrances)				
5. Contract loans				
6. Cash (\$12,773,118 Schedule E - Part 1), and cash equivalents (\$1,729,967,219 , Schedule E - Part 2)		1,742,740,337	1,742,740,337	2,013,128,405
7. Short-term investments (Schedule DA)		659,253,531	659,253,531	389,343,710
8. Derivatives (Schedule DB)		34,311,020	34,311,020	26,983,508
9. Other invested assets (Schedule BA)		729,810,899	729,810,899	718,944,571
10. Securities lending reinvested collateral assets (Schedule DL)				
11. Aggregate write-ins for invested assets				
12. Subtotals, cash and invested assets (Lines 1 to 11)		61,764,871,086	61,764,871,086	59,755,837,237
13. Investment income due and accrued		115,801,348	115,801,348	115,769,425
14. Receivables for securities		323,271,278	323,271,278	514,039,072
15. Net adjustment in assets and liabilities due to foreign exchange rates		2,719	2,719	(88,879)
16. Aggregate write-ins for other than invested assets.....		1,009	1,009	1,041
17. Total (Lines 12 to 16)		62,203,947,440	62,203,947,440	60,385,557,896
DETAILS OF WRITE-INS				
1101.				
1102.				
1103.				
1198. Summary of remaining write-ins for Line 11 from overflow page				
1199. Totals (Lines 1101 thru 1103 plus 1198)(Line 11 above)				
1601. Foreign income tax recoverable		1,009	1,009	1,041
1602.				
1603.				
1698. Summary of remaining write-ins for Line 16 from overflow page				
1699. Totals (Lines 1601 thru 1603 plus 1698)(Line 16 above)		1,009	1,009	1,041

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

LIABILITIES AND SURPLUS

	Current Year			Prior Year
	1 General Account Basis	2 Fair Value Basis	3 Total (Cols. 1 + 2)	4 Total
1. Aggregate reserve for life, annuity and accident and health contracts (Exhibit 3, Line 9999999, Col. 2)		58,214,266,315	58,214,266,315	57,554,925,507
2. Liability for deposit-type contracts (Exhibit 4, Line 9, Col. 1)		3,209,569,052	3,209,569,052	1,824,261,892
3. Interest Maintenance Reserve				
4. Charges for investment management, administration and contract guarantees due or accrued		8,079,214	8,079,214	39,624,764
5. Investment expenses due or accrued (Exhibit 1, Line 24)		292,490	292,490	789,214
6. Investment taxes, licenses and fees due or accrued, excluding federal income taxes (Exhibit 2, Line 8)				
7. Federal and foreign income taxes due or accrued (excluding deferred taxes)				
8. Reserve for future federal income taxes				
9. Unearned investment income				
10. Other transfers to general account due or accrued (net) (including \$176,924,714 accrued expense allowances recognized in reserves).....		180,507,791	180,507,791	206,268,736
11. Remittances and items not allocated		39,088,824	39,088,824	181,515,026
12. Derivatives		13,564,303	13,564,303	5,681,571
13. Payable for securities		528,954,189	528,954,189	555,766,973
14. Payable for securities lending				
15. Net adjustment in assets and liabilities due to foreign exchange rates				
16. Aggregate write-ins for liabilities		485,869	485,869	7,610,592
17. Total liabilities (including \$188,587,005 due or accrued net transfers to or (from) the general account)		62,194,808,047	62,194,808,047	60,376,444,275
18. Contributed surplus		(137,379)	(137,379)	30,580
19. Aggregate write-ins for special surplus funds				
20. Unassigned funds		9,276,772	9,276,772	9,083,041
21. Surplus (Lines 18 through 20)		9,139,393	9,139,393	9,113,621
22. Totals		62,203,947,440	62,203,947,440	60,385,557,896
DETAILS OF WRITE-INS				
1601. Annuitant mortality fluctuation fund		450,988	450,988	392,051
1602. Derivatives accrued interest on swaps		128,378	128,378	(71,079)
1603. Claims in course of settlement		(93,497)	(93,497)	16,620
1698. Summary of remaining write-ins for Line 16 from overflow page				7,273,000
1699. Totals (Lines 1601 thru 1603 plus 1698)(Line 16 above)		485,869	485,869	7,610,592
1901.				
1902.				
1903.				
1998. Summary of remaining write-ins for Line 19 from overflow page				
1999. Totals (Lines 1901 thru 1903 plus 1998)(Line 19 above)				

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SUMMARY OF OPERATIONS

	1 Current Year	2 Prior Year
1. Transfers to Separate Accounts:		
1.1 Net premiums and annuity considerations for life and accident and health contracts	6,182,868,446	6,806,862,055
1.2 Considerations for supplementary contracts with life contingencies		
1.3 Aggregate write-ins for other transfers to Separate Accounts		
1.4 Totals (Lines 1.1 to 1.3)	6,182,868,446	6,806,862,055
2. Transfers on account of deposit-type contracts (including \$ 2,146,704,503 deposits less \$ 963,671,585 withdrawals)	1,183,032,918	1,359,915,453
3. Net investment income and capital gains and losses	3,442,457,945	(77,348,996)
4. Aggregate write-ins for other income	1,882	277
5. Totals (Lines 1.4 to 4)	10,808,361,191	8,089,428,789
DEDUCT:		
6. Transfers from the Separate Account on account of contract benefits:		
6.1 Death benefits	11,499,189	28,064,489
6.2 Matured endowments		
6.3 Annuity benefits	146,515,291	132,301,123
6.4 Payments on supplementary contracts with life contingencies		
6.5 Accident and health benefits		
6.6 Surrender benefits and withdrawals for life contracts	7,719,883,392	7,007,409,189
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits		
7. Transfers on account of policy loans	14,864,525	16,316,346
8. Net transfer of reserves from or (to) Separate Accounts	537,952,941	404,395,358
9. Other transfers from the Separate Accounts:		
9.1 Federal and foreign income taxes incurred		
9.2 Change in expense allowances recognized in reserves	(22,968,835)	(28,177,859)
9.3 Aggregate write-ins for other transfers from Separate Accounts	226,327	32,995
10. Subtotals (Lines 6.1 to 9.3)	8,407,972,830	7,560,341,641
11. Fees associated with charges for investment management, administration and contract guarantees	355,788,425	361,713,387
12. Increase in aggregate reserve for life and accident and health contracts	659,340,808	(1,160,481,388)
13. Increase in liability for deposit-type contracts	1,385,307,160	1,327,738,678
14. Increase in reserve for future federal income taxes		
15. Aggregate write-ins for reserves and funds	(51,180)	129,635
16. Totals (Lines 10 to 15)	10,808,358,043	8,089,441,953
17. Net gain from operations (including \$ (3) unrealized capital gains) (Line 5 minus Line 16)	3,148	(13,164)
SURPLUS ACCOUNT		
18. Surplus, December 31, prior year	9,113,621	9,959,803
19. Net gain from operations (Line 17)	3,148	(13,164)
20. Surplus contributed or (withdrawn) during year	(137,379)	30,580
21. Change in reserve on account of change in valuation basis, (increase) or decrease		
22. Transfer from Separate Accounts of the change in expense allowances recognized in Line 21		
23. Aggregate write-ins for gains and losses in surplus	160,003	(863,598)
24. Surplus, December 31, current year (Page 3, Line 21)	9,139,393	9,113,621
DETAILS OF WRITE-INS		
01.301.		
01.302.		
01.303.		
01.398. Summary of remaining write-ins for Line 1.3 from overflow page		
01.399. Totals (Lines 01.301 thru 01.303 plus 01.398)(Line 1.3 above)		
0401. Miscellaneous gain	1,882	277
0402.		
0403.		
0498. Summary of remaining write-ins for Line 4 from overflow page		
0499. Totals (Lines 0401 thru 0403 plus 0498)(Line 4 above)	1,882	277
06.701.		
06.702.		
06.703.		
06.798. Summary of remaining write-ins for Line 6.7 from overflow page		
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798)(Line 6.7 above)		
09.301. Miscellaneous loss	226,327	32,995
09.302.		
09.303.		
09.398. Summary of remaining write-ins for Line 9.3 from overflow page		
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398)(Line 9.3 above)	226,327	32,995
1501. Claims in course of settlement	(110,117)	117,798
1502. Change in annuitant mortality fluctuation fund	58,937	11,837
1503.		
1598. Summary of remaining write-ins for Line 15 from overflow page		
1599. Totals (Lines 1501 thru 1503 plus 1598)(Line 15 above)	(51,180)	129,635
2301. Capital preservation supplemental reserve	160,003	(863,598)
2302.		
2303.		
2398. Summary of remaining write-ins for Line 23 from overflow page		
2399. Totals (Lines 2301 thru 2303 plus 2398)(Line 23 above)	160,003	(863,598)

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

ANALYSIS OF OPERATIONS BY LINES OF BUSINESS

	1 Total	Ordinary			Group		Accident and Health		9 Aggregate of All Other Lines of Business
		2 Life Insurance	3 Individual Annuities	4 Supplementary Contracts	5 Life Insurance	6 Annuities	7 Group	8 Other	
1. Transfers to Separate Accounts:									
1.1 Net premiums and annuity considerations for life and accident and health contracts	6,182,868,446	55,959,855	521,107,389		5,758,788	5,600,042,414			
1.2 Considerations for supplementary contracts with life contingencies									
1.3 Aggregate write-ins for other transfers to Separate Accounts									
1.4 Totals (Lines 1.1 to 1.3)	6,182,868,446	55,959,855	521,107,389		5,758,788	5,600,042,414			
2. Transfers on account of deposit-type contracts (including \$ 2,146,704,503 deposits less \$ 963,671,585 withdrawals)	1,183,032,918		(8,716)			1,183,041,634			
3. Net investment income and capital gains and losses	3,442,457,945	56,016,187	769,657,602		45,140,266	2,571,643,890			
4. Aggregate write-ins for other income	1,882	1,882							
5. Totals (Lines 1.4 to 4)	10,808,361,191	111,977,924	1,290,756,275		50,899,054	9,354,727,938			
DEDUCT:									
6. Transfers from the Separate Account on account of contract benefits:									
6.1 Death benefits	11,499,189	4,611,382			6,887,807				
6.2 Matured endowments									
6.3 Annuity benefits	146,515,291		146,504,298			10,993			
6.4 Payments on supplementary contracts with life contingencies									
6.5 Accident and health benefits									
6.6 Surrender benefits and withdrawals for life contracts	7,719,883,392	41,945,398	824,218,083		24,223,924	6,829,495,987			
6.7 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits									
7. Transfers on account of policy loans	14,864,525	14,772,378	(64,787)		126,395	30,539			
8. Net transfer of reserves from or (to) Separate Accounts	537,952,941	372,173	7,521,819		36,133	530,022,816			
9. Other transfers from the Separate Accounts:									
9.1 Federal and foreign income taxes incurred									
9.2 Change in expense allowances recognized in reserves	(22,968,835)	(652,805)	(22,316,030)						
9.3 Aggregate write-ins for other transfers from Separate Accounts	226,327		341			225,986			
10. Subtotals (Lines 6.1 to 9.3)	8,407,972,830	61,048,526	955,863,724		31,274,259	7,359,786,321			
11. Fees associated with charges for investment management, administration and contract guarantees	355,788,425	44,103,650	199,060,988		22,488,623	90,135,164			
12. Increase in aggregate reserve for life and accident and health contracts	659,340,808	6,935,865	135,749,423		(2,863,828)	519,519,348			
13. Increase in liability for deposit-type contracts	1,385,307,160		23,203			1,385,283,957			
14. Increase in reserve for future federal income taxes									
15. Aggregate write-ins for reserves and funds	(51,180)	(110,117)	58,937						
16. Totals (Lines 10 to 15)	10,808,358,043	111,977,924	1,290,756,275		50,899,054	9,354,724,790			
17. Net gain from operations (including \$ (3) unrealized capital gains) (Line 5 minus Line 16)	3,148					3,148			
DETAILS OF WRITE-INS									
01.301.									
01.302.									
01.303.									
01.398. Summary of remaining write-ins for Line 1.3 from overflow page									
01.399. Totals (Lines 01.301 thru 01.303 plus 01.398) (Line 1.3 above)									
0401. Miscellaneous gain	1,882	1,882							
0402.									
0403.									
0498. Summary of remaining write-ins for Line 4 from overflow page									
0499. Totals (Lines 0401 thru 0403 plus 0498) (Line 4 above)	1,882	1,882							
06.701.									
06.702.									
06.703.									
06.798. Summary of remaining write-ins for Line 6.7 from overflow page									
06.799. Totals (Lines 06.701 thru 06.703 plus 06.798) (Line 6.7 above)									
09.301. Miscellaneous loss	226,327		341			225,986			
09.302.									
09.303.									
09.398. Summary of remaining write-ins for Line 9.3 from overflow page									
09.399. Totals (Lines 09.301 thru 09.303 plus 09.398) (Line 9.3 above)	226,327		341			225,986			
1501. Claims in course of settlement	(110,117)	(110,117)							
1502. Change in annuitant mortality fluctuation fund	58,937		58,937						
1503.									
1598. Summary of remaining write-ins for Line 15 from overflow page									
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15 above)	(51,180)	(110,117)	58,937						

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

ANALYSIS OF INCREASE IN RESERVES DURING THE YEAR

	1 Total	Ordinary			Group	
		2 Life Insurance	3 Individual Annuities	4 Supplementary Contracts	5 Life Insurance	6 Annuities
1. Reserve Dec. 31 of prior year	57,554,925,507	991,241,804	11,040,840,637		1,668,723,569	43,854,119,497
2. Tabular net premiums and considerations for annuities and supplementary contracts with life contingencies	6,182,868,446	55,959,855	521,107,389		5,758,788	5,600,042,414
3. Increase or (decrease) from investment results after provision for federal income taxes	3,240,180,555	56,016,204	769,625,684		45,140,266	2,369,398,401
4. Tabular less actual reserve released						
5. Increase in reserve on account of change in valuation basis						
6. Other increases (net)	1,882	1,882				
7. Totals (Lines 1 to 6)	66,977,976,390	1,103,219,745	12,331,573,710		1,719,622,623	51,823,560,312
8. Net transfer of reserves from or (to) Separate Accounts	537,952,941	372,173	7,521,819		36,133	530,022,816
9. Tabular cost						
10. Reserves released by death	11,499,189	4,611,382			6,887,807	
11. Reserves released by other terminations (net)	7,719,883,392	41,945,398	824,218,083		24,223,924	6,829,495,987
12. Transfers on account of annuity and supplementary contract payments involving life contingencies	146,515,291		146,504,298			10,993
13. Charges for investment management, administration and contract guarantees	355,788,425	44,103,650	199,060,988		22,488,623	90,135,164
14. Aggregate write-ins for other decreases in reserves	(7,929,163)	14,009,456	(22,321,539)		126,395	256,525
15. Total deductions (Lines 8 to 14)	8,763,710,075	105,042,059	1,154,983,649		53,762,882	7,449,921,485
16. Reserve December 31 of current year	58,214,266,315	998,177,686	11,176,590,061		1,665,859,741	44,373,638,827
DETAILS OF WRITE-INS						
1401. Change in surrender charge offset	(22,968,835)	(652,805)	(22,316,030)			
1402. Claims in course of settlement	(110,117)	(110,117)				
1403. Change in annuitant mortality fluctuation fund	58,937		58,937			
1498. Summary of remaining write-ins for Line 14 from overflow page	15,090,852	14,772,378	(64,446)		126,395	256,525
1499. Totals (Lines 1401 thru 1403 plus 1498) (Line 14 above)	(7,929,163)	14,009,456	(22,321,539)		126,395	256,525

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT OF NET INVESTMENT INCOME

	1 Collected During Year	2 Earned During Year
1. U.S. Government bonds	(a) 81,669,157	79,394,852
1.1 Bonds exempt from U.S. tax	(a)	
1.2 Other bonds (unaffiliated)	(a) 492,207,988	497,387,261
1.3 Bonds of affiliates	(a)	
2.1 Preferred stocks (unaffiliated)	(b)	
2.11 Preferred stocks of affiliates	(b)	
2.2 Common stocks (unaffiliated)	2,242,915,946	2,238,907,848
2.21 Common stocks of affiliates		
3. Mortgage loans	(c) 149,013	146,968
4. Real estate	(d) (403,801)	1,226
5. Contract loans		
6. Cash, cash equivalents and short-term investments	(e) 6,625,284	7,215,750
7. Derivative instruments	(f) (380,084)	(437,934)
8. Other invested assets		
9. Aggregate write-ins for investment income	(419,476)	(419,476)
10. Total gross investment income	2,822,364,027	2,822,196,495
11. Investment expenses		(g) 3,260,631
12. Investment taxes, licenses and fees, excluding federal income taxes		(g) (438,900)
13. Interest expense		(h)
14. Depreciation on real estate and other invested assets		(i)
15. Aggregate write-ins for deductions from investment income		
16. Total deductions (Lines 11 through 15)		2,821,731
17. Net investment income (Line 10 minus Line 16)		2,819,374,764
DETAILS OF WRITE-INS		
0901. Miscellaneous loss	(419,476)	(419,476)
0902.		
0903.		
0998. Summary of remaining write-ins for Line 9 from overflow page		
0999. Totals (Lines 0901 thru 0903 plus 0998) (Line 9, above)	(419,476)	(419,476)
1501.		
1502.		
1503.		
1598. Summary of remaining write-ins for Line 15 from overflow page		
1599. Totals (Lines 1501 thru 1503 plus 1598) (Line 15, above)		

- (a) Includes \$ accrual of discount less \$ amortization of premium and less \$71,412,115 paid for accrued interest on purchases.
- (b) Includes \$ accrual of discount less \$ amortization of premium and less \$ paid for accrued dividends on purchases.
- (c) Includes \$ accrual of discount less \$ amortization of premium and less \$ paid for accrued interest on purchases.
- (d) Includes \$ for company's occupancy of its own buildings; and excludes \$ interest on encumbrances.
- (e) Includes \$81,282 accrual of discount less \$9,538 amortization of premium and less \$105,976 paid for accrued interest on purchases.
- (f) Includes \$ accrual of discount less \$ amortization of premium.
- (g) Includes \$ investment expenses and \$ investment taxes, licenses and fees, excluding federal income taxes, attributable to segregated and Separate Accounts.
- (h) Includes \$ interest on surplus notes and \$ interest on capital notes.
- (i) Includes \$ depreciation on real estate and \$ depreciation on other invested assets.

EXHIBIT OF CAPITAL GAINS (LOSSES)

	1	2	3	4	5
	Realized Gain (Loss) On Sales or Maturity	Other Realized Adjustments	Total Realized Capital Gain (Loss) (Columns 1 + 2)	Change in Unrealized Capital Gain (Loss)	Change in Unrealized Foreign Exchange Capital Gain (Loss)
1. U.S. Government bonds	57,096,940		57,096,940	(62,100,281)	
1.1 Bonds exempt from U.S. tax					
1.2 Other bonds (unaffiliated)	(280,391,254)	(99,438)	(280,490,692)	245,420,286	677,822
1.3 Bonds of affiliates					
2.1 Preferred stocks (unaffiliated)					
2.11 Preferred stocks of affiliates					
2.2 Common stocks (unaffiliated)	511,091,981	(124,715)	510,967,266	117,048,082	148,750
2.21 Common stocks of affiliates					
3. Mortgage loans	(1,031)		(1,031)	(23,842)	
4. Real estate	102,752		102,752		
5. Contract loans					
6. Cash, cash equivalents and short-term investments	13,944,963	(1,005,620)	12,939,343		1,373,438
7. Derivative instruments	(1,382,298)		(1,382,298)	1,913,472	(891,066)
8. Other invested assets	16,468,491		16,468,491	4,997,672	
9. Aggregate write-ins for capital gains (losses)		(1,273,523)	(1,273,523)		91,600
10. Total capital gains (losses)	316,930,544	(2,503,296)	314,427,248	307,255,389	1,400,544
DETAILS OF WRITE-INS					
0901. Capital gain(loss) on foreign currency		(1,273,523)	(1,273,523)		91,600
0902.					
0903.					
0998. Summary of remaining write-ins for Line 9 from overflow page					
0999. Totals (Lines 0901 thru 0903 plus 0998) (Line 9, above)		(1,273,523)	(1,273,523)		91,600

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 1 - INVESTMENT EXPENSES

	1 Amount
1. Rent	
2. Salaries and wages	
3. Contributions for benefit plans for employees (a)	
4. Payments to employees under non-funded benefit plans	
5. Other employee welfare	
6. Legal fees and expenses	
7. Fees of public accountants and consulting actuaries	
8. Traveling expenses	
9. Postage, express, telegraph and telephone	
10. Printing and stationery	
11. Cost or depreciation of furniture and equipment	
12. Rental of equipment	
13. Books and periodicals	
14. Bureau and association fees	
15. Insurance, except on real estate	
16. Miscellaneous losses	
17. Collection and bank service charges	1,888,379
18. Sundry general expenses	
19. Real estate expenses	48,050
20. Investment expenses not included elsewhere	1,324,202
21. Aggregate write-ins for other investment expenses	
22. Investment expenses incurred	3,260,631
Reconciliation with Exhibit 5	
23. Investment expenses unpaid December 31, prior year	789,214
24. Investment expenses unpaid December 31, current year	292,490
25. Investment expenses paid during year (Lines 22 + 23 - 24) (to Exhibit 5, Line 12)	3,757,355
DETAILS OF WRITE-INS	
2101.	
2102.	
2103.	
2198. Summary of remaining write-ins for Line 21 from overflow page	
2199. Totals (Lines 2101 thru 2103 plus 2198) (Line 21 above)	

(a) Includes \$ on account of prior service.

**EXHIBIT 2 - INVESTMENT TAXES, LICENSES AND FEES
(EXCLUDING FEDERAL INCOME TAXES)**

	1 Amount
1. Real estate taxes	(438,900)
2. State insurance department fees	
3. Other state taxes, including \$ for employee benefits	
4. U.S. Social Security taxes	
5. All other taxes	
6. Taxes, licenses and fees incurred	(438,900)
Reconciliation with Exhibit 5	
7. Taxes, licenses and fees unpaid December 31, prior year	
8. Taxes, licenses and fees unpaid December 31, current year	
9. Taxes, licenses and fees paid during year (Lines 6 + 7 - 8) (to Exhibit 5, Line 13)	(438,900)

EXHIBIT 3 - AGGREGATE RESERVE FOR LIFE, ANNUITY AND ACCIDENT AND HEALTH CONTRACTS

1 Description of Valuation Basis	2 Total	3 Ordinary	4 Group
0100001. 58 CSO 4.00% Mod CRVM	2,148,198	2,148,198	
0100002. 80 CSO 5.50% CRVM	26,695,489	26,695,489	
0100003. 80 CSO 5.00% CRVM	265,085	265,085	
0100004. 80 CSO 4.50% CRVM	605,626,688	605,626,688	
0100005. 80 CSO 4.00% CRVM	103,933,452	103,933,452	
0100006. 2001 CSO 4.00% CRVM	12,135,885	12,135,885	
0100007. 2001 CSO 3.50% CRVM	5,218,472	5,218,472	
0100008. 80 CSO Account Value	1,873,589,889	215,586,667	1,658,003,222
0100009. 2001 CSO Account Value	34,424,269	26,567,750	7,856,519
0199999. Life Insurance: Totals	2,664,037,427	998,177,686	1,665,859,741
0200001. Deferred Annuity 4.75% to 10.00% CARVM	11,104,328,488	11,104,328,488	
0200002. Annuity Reserve	42,568,978,775	72,261,573	42,496,717,202
0200003. Annuity Reserve 1951 to 1970 5.50% GA MBI	28,380		28,380
0200004. Group Home Office and Field Plans	1,876,893,245		1,876,893,245
0299999. Annuities: Totals	55,550,228,888	11,176,590,061	44,373,638,827
9999999. Totals (to Page 3, Line 1)	58,214,266,315	12,174,767,747	46,039,498,568

EXHIBIT 3 - INTERROGATORIES

- 1.1 Has the reporting entity ever issued both participating and non-participating variable life insurance contracts?..... Yes [X] No []
- 2.1 Does the reporting entity at present issue both participating and non-participating variable life insurance contracts?..... Yes [X] No []
- 2.2 If not, state which kind is issued
- 3.1 Is any surrender value promised in excess of the reserve as legally computed? Yes [] No [X] N/A []
- 3.2 If so, the amount of such excess must be included in surrender values in excess of reserves otherwise required and carried in this schedule. Has this been done? Yes [] No [] N/A [X]
 Attach a statement of methods employed in the valuation of variable life insurance contracts issued at, or subsequently subject to, an extra premium or in the valuation of contracts otherwise issued on lives classified as substandard for the plan of contract issued or on special class lives (including paid-up variable life insurance).

EXHIBIT 3A - CHANGES IN BASIS OF VALUATION DURING THE YEAR

(Including supplementary contracts set up on a basis other than that used to determine benefits)

1 Description of Valuation Class	Valuation Basis		4 Increase in Actuarial Reserve Due to Change
	2 Changed from	3 Changed To	
9999999 - Totals (Page 6, Line 5, Analysis of Increase in Reserve)			

NONE

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 4 - DEPOSIT TYPE CONTRACTS

	1	2	3	4	5	6
	Total	Guaranteed Interest Contracts	Annuities Certain	Supplemental Contracts	Dividend Accumulations or Refunds	Premium and Other Deposit Funds
1. Balance at the beginning of the year	1,824,261,892	250,107,861				1,574,154,031
2. Deposits received during the year	2,146,704,503					2,146,704,503
3. Investment earnings credited to account	202,274,242	2,107,139				200,167,103
4. Other net change in reserves						
5. Fees and other charges assessed						
6. Surrender charges						
7. Net surrender or withdrawal payments	963,671,585	252,215,000				711,456,585
8. Other net transfer to or (from) general account						
9. Balance at the end of current year (Lines 1+2+3+4-5-6-7-8)	3,209,569,052					3,209,569,052

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

EXHIBIT 5 - RECONCILIATION OF CASH AND INVESTED ASSETS

DEVELOPMENT OF INCREASE IN CASH		1 Amount
1. Transfers to Separate Accounts on account of:		
1.1 Net premiums and considerations for annuities and supplementary contracts with life contingencies		6,182,868,446
1.2 Aggregate write-ins for other transfers to Separate Accounts		160,003
2. Deposits on deposit-type contract funds and other liabilities without life or disability contingencies		2,146,704,503
3. Investment income collected		2,822,364,027
4. Consideration on disposal of short-term bonds net of purchases		(264,896,076)
5. Consideration on disposal of investments (excluding short-term bonds)		33,931,371,799
6. Aggregate write-ins for other increases in funds from operations		
7. Total (Lines 1 to 6)		44,818,572,702
8. Cost of investments acquired (excluding short-term bonds)		35,317,245,526
9. Transfers from Separate Accounts on account of contract benefits:		
9.1 Death benefits		13,045,943
9.2 Matured endowments		
9.3 Annuity benefits		146,515,291
9.4 Supplementary contract benefits with life contingencies		
9.5 Accident and health benefits		
9.6 Surrender benefits and withdrawals for life contracts		7,719,883,392
9.7 Policy loans (net)		14,864,525
9.8 Transfers of reserves (net)		537,952,941
9.9 Aggregate write-ins for other transfers from Separate Accounts on account of contract benefits		
10. Other transfers from Separate Accounts:		
10.1 Federal income taxes		
10.2 Aggregate write-ins for other transfers from Separate Accounts		147,673,245
11. Withdrawals on deposit-type contract funds and other liabilities without life or disability contingencies		963,671,585
12. Investment expenses (Exhibit 1, Line 25)		3,757,355
12.1 Fees associated with investment management, administration and contract guarantees		387,333,975
13. Investment taxes, licenses and fees, excluding federal income taxes (Exhibit 2, Line 9)		(438,900)
14. Total (Lines 8 to 13)		45,251,504,878
15. Funds from operations (Line 7 minus Line 14)		(432,932,176)
16. Surplus contributed or (withdrawn) during year		(137,379)
17. Aggregate write-ins for other changes in funds		
18. Total funds (includes \$ 2,636,576,333 net transfers from general account) (Lines 15 to 17)		(433,069,555)
19. Increase in payable for investments acquired, net of receivable for investments sold		163,955,010
20. Decrease in policy loans		
21. Aggregate write-ins for other reconciling items		(1,273,523)
22. Increase in cash (Line 18 to 21)		(270,388,068)
RECONCILIATION BETWEEN YEARS		
23. Cash and invested assets, December 31st of prior year		59,755,837,237
24. Increase in cash (Line 22)		(270,388,068)
25. Cost of invested assets acquired		38,474,079,833
26. Adjusted cost of assets disposed of		36,503,293,992
27. Increase in policy loans		
28. Accrual of discount less amortization of premium		71,745
29. Depreciation on real estate and other invested assets		
30. Increase in net unrealized gains		308,564,331
31. Aggregate write-ins for other reconciling items		
32. Cash and invested assets, December 31st of current year		61,764,871,086
DETAILS OF WRITE-INS		
01.201. Capital preservation supplemental reserve		160,003
01.202.		
01.203.		
01.298. Summary of remaining write-ins for Line 1.2 from overflow page		
01.299. Totals (Lines 01.201 thru 01.203 plus 01.298) (Line 1.2 above)		160,003
0601.		
0602.		
0603.		
0698. Summary of remaining write-ins for Line 6 from overflow page		
0699. Totals (Lines 0601 thru 0603 plus 0698) (Line 6 above)		
09.901.		
09.902.		
09.903.		
09.998. Summary of remaining write-ins for Line 9.9 from overflow page		
09.999. Totals (Lines 09.901 thru 09.903 plus 09.998) (Line 9.9 above)		
10.201. Change in remittances and items not allocated		142,426,202
10.202. Repurchase agreements		7,273,000
10.203. Change in other transfers to general account due or accrued		1,245,356
10.298. Summary of remaining write-ins for Line 10.2 from overflow page		(3,271,313)
10.299. Totals (Lines 10.201 thru 10.203 plus 10.298) (Line 10.2 above)		147,673,245
1701.		
1702.		
1703.		
1798. Summary of remaining write-ins for Line 17 from overflow page		
1799. Totals (Lines 1701 thru 1703 plus 1798) (Line 17 above)		
2101. Foreign currency loss		(1,273,523)
2102.		
2103.		
2198. Summary of remaining write-ins for Line 21 from overflow page		
2199. Totals (Lines 2101 thru 2103 plus 2198) (Line 21 above)		(1,273,523)
3101.		
3102.		
3103.		
3198. Summary of remaining write-ins for Line 31 from overflow page		
3199. Totals (Lines 3101 thru 3103 plus 3198) (Line 31 above)		

EXHIBIT 6 - GUARANTEED INSURANCE AND ANNUITY PRODUCTS

	1 Amount	2 Percent of Total
1. Aggregate reserve for life, annuity and accident and health contracts (Included in Exhibit 3):		
1.1 Life insurance		
1.2 Annuities		
1.3 Supplementary contracts with life contingencies		
1.4 Accident and health		
1.5 Miscellaneous reserves		
1.6 Total		
2. Liability for deposit-type contracts (included in Exhibit 4):		
2.1 Guaranteed interest contracts		
2.2 Annuities certain		
2.3 Supplemental contracts		
2.4 Dividend accumulations or refunds		
2.5 Premium and other deposit funds		
2.6 Total		
3. Other liabilities (included in Page 3, Lines 4, 10, 13 & 14)		
4. Total liabilities associated with guarantees (Lines 1.6 + 2.6 + 3)		
5. Total liabilities not associated with guarantees	62,194,808,047	100.0
6. Total Separate Accounts liabilities (Lines 4 + 5 = Page 3, Line 17)	62,194,808,047	100.0%

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

Product Mix

1.01 Identify the product types in the separate account, quantify the assets associated with those products, indicate if there are any guarantees associated with those products, quantify seed money and quantify other fees and expenses due to the general account:

Note: A distinct product identifier shall be used for each product and shall be used consistently throughout the interrogatory.

1 Product Identifier	2 Separate Account Assets	3 Guarantees Associated with the Product Yes/No	4 Seed Money	5 Fees and Expenses Due to the General Account	6 Additional Required Surplus Amounts
Non-guaranteed Retirement Services SIAs	29,316,394,468	NO	3,120		
Separate Account Guaranteed Interest Contract	18,240,300,517	YES	2,689		
Individual Variable Annuity	11,294,075,306	YES			
Stable Value Bank-owned Life Insurance	1,534,148,039	YES			
Individual Variable Universal Life	1,003,308,805	YES	8		
Capital Preservation	610,241,344	YES			
Corporate-owned Life Insurance	82,787,837	YES			
Group Variable Universal Life	60,430,200	YES			
Individual Immediate Variable Annuity	57,020,943	YES			
Supplemental Account	4,417,551	NO			4,417,551
Cornerstone Hotel Income Equity Fund	822,430	NO			
Included in the Separate Account Assets total are 17 contracts totaling \$210,807,325 that are non-insulated, exclusive of seed money and unsettled fees and expenses. Total MassMutual separate account assets are \$62,203,947,440 at 12/31/16. These 17 non-insulated contracts represent 0.34% of MassMutuals separate account balance at 12/31/16. Given the immateriality of the balances, we are disclosing the existence of these 17 non-insulated contracts, but are not preparing a separate green book blank.					
Totals	62,203,947,440	XXX	5,817		4,417,551

Note: Additional Required Surplus Amounts is defined as additional or permanent surplus that is required to be retained in the separate account in accordance with state law or regulation. These amounts should not include reinvested separate account investment proceeds that have not been allocated to separate account contract holders.

- 1.02 Did the reporting entity remit seed money, other fees and expenses or additional required surplus amounts to the general account during the current year? Yes [X] No []
- 1.03 If yes, provide information on the total gross amount of seed money, other fees and expenses or additional required surplus amounts remitted to the general account during the current year (these amounts should not be reflected in the seed money totals in 1.01):
- 1.031 Seed Money.....\$ 137,679
- 1.032 Other Fees and Expenses.....\$
- 1.033 Additional Required Surplus Amounts ..\$
- 1.04 Did the reporting entity receive seed money from the general account in the current year? Yes [X] No []
- 1.05 If yes, provide information on the total gross amount of seed money received in the current year: (If amounts were both received and remitted in the current year, include the gross amounts in both 1.031 and 1.051.)
- 1.051 Seed Money Received.....\$ 300
- 1.06 Does the reporting entity consider any of the seed money reflected in separate accounts to be insulated from the general account? Yes [] No [X] N/A []
- 1.07 If yes, provide information on the amount of seed money the reporting entity considers insulated from the general account:
- 1.071 Insulated Seed Money.....\$
- 1.08 Does the reporting entity have a policy for repatriating seed money or remitting fees and expenses due and additional required surplus amounts to the general account:
- 1.081 Seed Money..... Yes [X] No []
- 1.082 Other Fees and Expenses..... Yes [X] No []
- 1.083 Additional Required Surplus Amounts Yes [X] No []

1.09 Provide detail on the time duration for which seed money, other fees and expenses due to the general account and additional required surplus amounts have been held in the separate account:

	1 Seed Money	2 Fees and Expenses Due to the General Account	3 Additional Required Surplus Amounts
1.091 Under 1 Year	299		
1.092 1 Year - 3 Years	2,151		
1.093 Over 3 Years - 5 Years	658		
1.094 Over 5 Years	2,709		4,417,551
1.095 Total	5,817		4,417,551

- 1.10 For seed money, other fees and expenses, and additional required surplus amounts held in the separate account, does the reporting entity invest these funds in accordance with investment directives of the general account:
- 1.101 Seed Money..... Yes [] No [X] N/A []
- 1.102 Other Fees and Expenses..... Yes [] No [X] N/A []
- 1.103 Additional Required Surplus Amounts Yes [] No [X] N/A []

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

- 1.11 If no, does the reporting entity have stated policy and procedure for the investment of seed money, other fees and expenses, and additional required surplus amounts that are retained with the separate account?
- 1.111 Seed Money..... Yes [X] No [] N/A []
 1.112 Other Fees and Expenses..... Yes [X] No [] N/A []
 1.113 Additional Required Surplus Amounts Yes [X] No [] N/A []

Separate Account Products with General Account Guarantees

- 2.1 Does the reporting entity have products with guarantees provided by the general account? Yes [X] No []
- 2.2 If yes, what is the current total maximum guarantee the general account would provide to the separate account?\$734,800,980
- 2.3 Has the separate account collected amounts from the general account within the past five years related to separate account guarantees? Yes [X] No []
- 2.4 If yes, provide detail on these guarantees paid by the general account:

	1 Year	2 Amount
2.401 As of December 31, 2016		\$ 4,619,165
2.402 As of December 31, 2015		\$ 2,543,318
2.403 As of December 31, 2014		\$ 2,099,135
2.404 As of December 31, 2013		\$ 2,287,116
2.405 As of December 31, 2012		\$ 5,202,041

- 2.5 To compensate the general account for the risk taken, for any separate account products with general account guarantees, does the separate account remit risk charges to the general account related to separate account guarantees? Yes [X] No []
- 2.6 If yes, identify the separate account products with risk charges that are remitted to the general account and whether the risk charge for that product is reviewed and opined upon:

1 Product Identifier with Risk Charges	2 Risk Charge Reviewed and Opined Upon	3 Name and Title of Individual who Provided Opinion on Risk Charges
Capital Preservation	Yes	Douglas W Taylor, FSA, MAAA, Vice President and Appointed Actuary
Separate Account Guaranteed Interest Contract	Yes	Douglas W Taylor, FSA, MAAA, Vice President and Appointed Actuary
Individual Immediate Variable Annuity	No; the risk charges associated with this product are reviewed for reasonableness and accuracy by the appropriate actuary, but no formal opinion on these product risk charges is required by the NAIC.	
Individual Variable Annuity	No; the risk charges associated with this product are reviewed for reasonableness and accuracy by the appropriate actuary, but no formal opinion on these product risk charges is required by the NAIC.	

- 2.7 Provide detail on the risk charges paid to the general account related to separate account guarantees for the past five years:

	1 Year	2 Amount
2.701 As of December 31, 2016		\$ 88,772,303
2.702 As of December 31, 2015		\$ 89,035,421
2.703 As of December 31, 2014		\$ 84,791,816
2.704 As of December 31, 2013		\$ 69,485,096
2.705 As of December 31, 2012		\$ 59,634,146

Investment Directive of Separate Account Activity

- 3.1 Does the reporting entity have products classified within the separate account for which the investment directive is not determined by the contract holder? (Situations in which the investments directive mirrors the general account would not be considered determined by the contract holder; however, having the contract holder select an investment direction from multiple options would meet this criteria.) Yes [X] No []
- 3.2 If yes, if these investments would have been included in the general account, would the reporting entity have exceeded the investment limitations imposed on the general account? Yes [] No [X] N/A []
- 3.3 Provide detail on the separate account investment portfolio and state investment limitations. (This includes the combined separate account and general investments, excluding separate account assets with investment direction determined by the contract holder):

1 Investment Type	2 State Investment Limitation	3 Combined Investment (Separate and General Account)

Allocation of Investment Proceeds of Separate Account Activity

- 4.1 Does the reporting entity have separate account assets in which less than 100% of investment proceeds (net of contract fees and assessments) are attributed to a contract holder? (This should identify any situations where there is a ceiling on investment performance results.) Yes [X] No []

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

GENERAL INTERROGATORIES

4.2 If yes, provide detail on the net investment proceeds that were attributed to the contract holder, transferred to the general account and reinvested within the separate account:

1 Product Identifier	2 Net Investment Proceeds	3 Attributed to Contract Holder	4 Transferred to General Account	5 Reinvested Within the Separate Account
Non-guaranteed Retirement Services SIAs	2,092,476,826	2,092,473,801	40,879	(37,854)
Separate Account Guaranteed Interest Contract	377,017,474	377,017,413		61
Capital Preservation	8,986,348	8,986,348		
Supplemental Account	202,885	202,885		

4.3 For items reinvested within the Separate Account, does the reporting entity invest these assets in accordance with investment directives of the general account? Yes [] No [X] N/A []

4.4 If no, does the reporting entity have a stated policy and procedure for the reinvestment of investment proceeds within the separate account? Yes [X] No [] N/A []

4.5 Did the reinvestment of investment proceeds within the separate account result with the company having a combined investment portfolio that exceeded the state investment limitations imposed on the general account? Yes [] No [X] N/A []

Measurement of Separate Account Assets

5.1 Does the reporting entity report all separate account assets at fair value? Yes [X] No []

5.2 For items not reported at fair value, does the reporting entity report separate account assets at amortized cost, and/or under different measurement methods?
 5.21 Amortized Cost Yes [] No [X]
 5.22 Other Measurement Methods..... Yes [] No [X]

5.3 If other measurement methods are used, provide explanation on these measurement methods.

5.4 Identify the assets measured at fair value, amortized cost or another measurement method and the percentage of separate account assets measured under each measurement method:

Description	1 Amount	2 Percentage
5.41 Fair Value	\$ 62,203,947,440	100.0 %
5.42 Amortized Cost	\$	%
5.43 Other Measurement Methods	\$	%

5.5 For the assets not measured at fair value, provide a comparison of the reported value to current fair value and identify the unrealized gain or loss that would have been recorded if the assets had been reported at fair value:

1 Assets Held at Amortized Cost	2 Fair Value	3 Unrecorded Unrealized Gain/Loss
5.51... \$	\$	\$

1 Assets Held at Other Measurement Method	2 Fair Value	3 Unrecorded Unrealized Gain/Loss
5.52... \$	\$	\$

Securities Lending Transactions Within Separate Accounts

6.1 Does the reporting entity engage in securities lending transactions with separate account assets? Yes [] No [X]

6.2 If yes, does the reporting entity have written policies and procedures for such transactions? Yes [] No [] N/A [X]

6.3 Does the reporting entity obtain approval, or otherwise provide notification to contract holders, regarding securities lending transactions that occur with separate account assets? Yes [] No [] N/A [X]

6.4 Are all securities lending transactions reported on balance sheet? Yes [] No [] N/A [X]

6.5 Provide a description of the reporting entity's securities lending transaction program, specifically identifying any variations from the securities lending transaction program administered by the general account.

6.6 Provide detail on the current status of separate account transactions by separate account product:

6.61 Amount of any loaned securities within the separate account and the percentage of separate account assets lent
 6.611 Amount\$
 6.612 Percentage..... %
 6.62 Identify whether securities lent are reported at book value or market value
 6.621 Book Value\$
 6.622 Market Value.....\$

GENERAL INTERROGATORIES

6.63 Detail on collateral received:

6.631 Aggregate Amount Collateral Received

6.6311 Open\$
 6.6312 30 Days or Less.....\$
 6.6313 31 to 60 Days.....\$
 6.6314 61 to 90 Days.....\$
 6.6315 Greater than 90 Days.....\$
 6.6316 Total Collateral Received.....\$

6.632 The aggregate fair value of all securities acquired from the sale, trade or use of the accepted collateral (reinvested collateral)\$

6.633 Narrative discussion about sources and uses of collateral:

6.634 Collateral for transactions that extend beyond one year from the reporting date\$

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

6.71 Total fair value of reinvested collateral assets reported on Schedule DL, Parts 1 and 2 (Sum of Schedule DL, Parts 1 and 2, Column 5)\$
 6.72 Total book adjusted/carrying value of reinvested collateral assets reported on Schedule DL, Parts 1 and 2 (Sum of Schedule DL, Parts 1 and 2, Column 6)\$
 6.73 Total payable for securities lending reported on the liability page (Page 3, Line 14, Column 3)\$

FHLB Funding Agreements

7.1 Does the reporting entity report Federal Home Loan Bank (FHLB) funding agreements within the separate account? Yes [] No [X]

7.2 Provide detail on the elements that support the classification of FHLB funding agreements within the separate account

7.3 Provide detail regarding the FHLB funding agreements classified within the separate account:

1 Amount of FHLB Stock Purchased or Owned	2 Amount of Collateral Pledged to the FHLB	3 Total Borrowing or Funding Capacity Currently Available	4 Total Reserves Related to FHLB Agreements
\$	\$	\$	\$

7.4 For funding agreements within the separate account, provide a general description on the nature of the agreement, type of funding (lines of credit, borrowed money, etc) and intended use of funding.

Reporting Differences Between GAAP and SAP Financial Statements (This disclosure is applicable to all reporting entities regardless if they file GAAP financial statements)

8.1 Does the reporting entity file GAAP financial statements? Yes [] No [X]

8.2 In accordance with the different separate account reporting requirements between GAAP (SOP 03-1) and statutory accounting, does the reporting entity have products that are classified within the separate account that were, or would have been if GAAP financial statements had been completed, required to be reported within the general account under GAAP financials? Pursuant to SOP 03-1, all of the following conditions must be met to receive separate account reporting classification under GAAP: Yes [X] No [] N/A []

- a. Legal Recognition - The separate account is legally recognized. That is, the separate account is established, approved, and regulated under special rules such as state insurance laws, federal securities laws, or similar foreign laws.
- b. Legally Insulated - The separate account assets supporting the contract liabilities are legally insulated from the general account liabilities of the insurance enterprise (that is, the contract holder is not subject to insurer default risk to the extent of the assets held in the separate account).
- c. Investment Directive - The insurer must, as a result of contractual, statutory, or regulatory requirements, invest the contract holder's funds within the separate account as directed by the contract holder in designated investment alternatives or in accordance with specific investment objectives or policies.
- d. Investment Performance - All investment performance, net of contract fees and assessments, must as a result of contractual, statutory, or regulatory requirements be passed through to the individual contract holder. Contracts may specify conditions under which there may be a minimum guarantee, but not a ceiling, as a ceiling would prohibit all investment performance from being passed through to the contract holder

GENERAL INTERROGATORIES

8.3 Identify all separate account products and identify whether each product was classified within a separate account for GAAP reporting purposes. (For non-GAAP filers, this disclosure should reflect whether the GAAP classification would have been the same if GAAP financials had been completed.) For products that were (or would have been) reported differently, identify which SOP 03-1 condition prevented separate account GAAP classification for that particular product.

1	2
Product Identifier	Same as GAAP / Condition that Requires GAAP General Account Reporting
Capital Preservation	GAAP GIA classification due to investment performance
Separate Account Guaranteed Interest Contract	GAAP GIA classification due to investment performance
Stable Value Bank-owned Life Insurance	GAAP GIA classification due to investment performance
Supplemental Account	GAAP GIA classification due to investment performance
Cornerstone Hotel Income Equity Fund	Same as GAAP
Corporate-owned Life Insurance	Same as GAAP
Group Variable Universal Life	Same as GAAP
Individual Immediate Variable Annuity	Same as GAAP
Individual Variable Annuity	Same as GAAP
Individual Variable Universal Life	Same as GAAP
Non-guaranteed Retirement Services SIAs	Same as GAAP

Interest Maintenance Reserve

NONE

Interest Maintenance Reserve - Amortization

NONE

Asset Valuation Reserve - Default Component

NONE

Asset Valuation Reserve - Equity Component

NONE

Asset Valuation Reserve Replications (Synthetic) Assets

NONE

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

OVERFLOW PAGE FOR WRITE-INS

Additional Write-ins for Liabilities Line 16

	Current Year			Prior Year
	1 General Account Basis	2 Fair Value Basis	3 Total (Cols. 1 + 2)	4 Total
1604. Repurchase agreements				7,273,000
1697. Summary of remaining write-ins for Line 16 from overflow page				7,273,000

Additional Write-ins for Analysis of Increase in Reserves Line 14

	1 Total	Ordinary			Group	
		2 Life Insurance	3 Individual Annuities	4 Supplementary Contracts	5 Life Insurance	6 Annuities
1404. Miscellaneous loss	226,327		341			225,986
1405. Change in policy loans	14,864,525	14,772,378	(64,787)		126,395	30,539
1497. Summary of remaining write-ins for Line 14 from overflow page	15,090,852	14,772,378	(64,446)		126,395	256,525

Additional Write-ins for Exhibit 5 Line 10.2

	1 Amount
10.204. Miscellaneous income / loss	224,440
10.205. Change in derivative premium	(3,495,721)
10.206. Foreign income tax recoverable	(32)
10.297. Summary of remaining write-ins for Line 10.2 from overflow page	(3,271,313)

SCHEDULE A - VERIFICATION BETWEEN YEARS

Real Estate

1.	Book/adjusted carrying value, December 31 of prior year	
2.	Cost of acquired:	
	2.1 Actual cost at time of acquisition (Part 2, Column 6)	
	2.2 Additional investment made after acquisition (Part 2, Column 9)	
3.	Current year change in encumbrances:	
	3.1 Totals, Part 1, Column 13	
	3.2 Totals, Part 3, Column 11	
4.	Total gain (loss) on disposals, Part 3, Column 18	102,752
5.	Deduct amounts received on disposals, Part 3, Column 15	102,752
6.	Total foreign exchange change in book/adjusted carrying value:	
	6.1 Totals, Part 1, Column 15	
	6.2 Totals, Part 3, Column 13	
7.	Deduct current year's other than temporary impairment recognized:	
	7.1 Totals, Part 1, Column 12	
	7.2 Totals, Part 3, Column 10	
8.	Deduct current year's depreciation:	
	8.1 Totals, Part 1, Column 11	
	8.2 Totals, Part 3, Column 9	
9.	Book/adjusted carrying value at the end of current period (Lines 1+2+3+4-5+6-7-8)	
10.	Deduct total nonadmitted amounts	
11.	Statement value at end of current period (Line 9 minus Line 10)	

SCHEDULE B - VERIFICATION BETWEEN YEARS

Mortgage Loans

1.	Book value/recorded investment excluding accrued interest, December 31 of prior year	2,815,347
2.	Cost of acquired:	
	2.1 Actual cost at time of acquisition (Part 2, Column 7)	
	2.2 Additional investment made after acquisition (Part 2, Column 8)	
3.	Capitalized deferred interest and other:	
	3.1 Totals, Part 1, Column 12	
	3.2 Totals, Part 3, Column 11	
4.	Accrual of discount	
5.	Unrealized valuation increase (decrease):	
	5.1 Totals, Part 1, Column 9	(23,842)
	5.2 Totals, Part 3, Column 8	(23,842)
6.	Total gain (loss) on disposals, Part 3, Column 18	(1,031)
7.	Deduct amounts received on disposals, Part 3, Column 15	375,825
8.	Deduct amortization of premium and mortgage interest points and commitment fees	
9.	Total foreign exchange change in book value/recorded investment excluding accrued interest:	
	9.1 Totals, Part 1, Column 13	
	9.2 Totals, Part 3, Column 13	
10.	Deduct current year's other than temporary impairment recognized:	
	10.1 Totals, Part 1, Column 11	
	10.2 Totals, Part 3, Column 10	
11.	Book value/recorded investment excluding accrued interest at end of current period (Lines 1+2+3+4+5+6-7-8+9-10)	2,414,650
12.	Total valuation allowance	
13.	Subtotal (Line 11 plus 12)	2,414,650
14.	Deduct total nonadmitted amounts	
15.	Statement value of mortgages owned at end of current period (Line 13 minus Line 14)	2,414,650

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE BA - VERIFICATION BETWEEN YEARS

Other Long-Term Invested Assets

1. Book/adjusted carrying value, December 31 of prior year	718,944,571
2. Cost of acquired:	
2.1 Actual cost at time of acquisition (Part 2, Column 8)	90,871,110
2.2 Additional investment made after acquisition (Part 2, Column 9)	76,339,949
3. Capitalized deferred interest and other:	
3.1 Totals, Part 1, Column 16	
3.2 Totals, Part 3, Column 12	
4. Accrual of discount	
5. Unrealized valuation increase (decrease):	
5.1 Totals, Part 1, Column 13	25,474,310
5.2 Totals, Part 3, Column 9	(20,476,638)
6. Total gain (loss) on disposals, Part 3, Column 19	16,468,491
7. Deduct amounts received on disposals, Part 3, Column 16	177,810,894
8. Deduct amortization of premium and depreciation	
9. Total foreign exchange change in book/adjusted carrying value:	
9.1 Totals, Part 1, Column 17	
9.2 Totals, Part 3, Column 14	
10. Deduct current year's other than temporary impairment recognized:	
10.1 Totals, Part 1, Column 15	
10.2 Totals, Part 3, Column 11	
11. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5+6-7-8+9-10)	729,810,899
12. Deduct total nonadmitted amounts	
13. Statement value at end of current period (Line 11 minus Line 12)	729,810,899

SCHEDULE D - VERIFICATION BETWEEN YEARS

Bonds and Stocks

1. Book/adjusted carrying value, December 31 of prior year	56,604,621,696
2. Cost of bonds and stocks acquired, Part 3, Column 7	35,156,033,111
3. Accrual of discount	
4. Unrealized valuation increase (decrease):	
4.1. Part 1, Column 12	(91,337,868)
4.2. Part 2, Section 1, Column 15	
4.3. Part 2, Section 2, Column 13	469,087,467
4.4. Part 4, Column 11	(77,381,512)
5. Total gain (loss) on disposals, Part 4, Column 19	287,573,514
6. Deduction consideration for bonds and stocks disposed of, Part 4, Column 7	33,753,082,331
7. Deduct amortization of premium	
8. Total foreign exchange change in book/adjusted carrying value:	
8.1. Part 1, Column 15	(35,345)
8.2. Part 2, Section 1, Column 19	
8.3. Part 2, Section 2, Column 16	2,133
8.4. Part 4, Column 15	859,784
9. Deduct current year's other than temporary impairment recognized:	
9.1. Part 1, Column 14	
9.2. Part 2, Section 1, Column 17	
9.3. Part 2, Section 2, Column 14	
9.4. Part 4, Column 13	
10. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9)	58,596,340,649
11. Deduct total nonadmitted amounts	
12. Statement value at end of current period (Line 10 minus Line 11)	58,596,340,649

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE D - SUMMARY BY COUNTRY

Long-Term Bonds and Stocks OWNED December 31 of Current Year

Description		1 Book/Adjusted Carrying Value	2 Fair Value	3 Actual Cost	4 Par Value of Bonds
BONDS					
Governments (Including all obligations guaranteed by governments)	1. United States	4,023,699,210	4,023,699,210	4,100,302,716	4,057,268,772
	2. Canada	3,006,988	3,006,988	2,950,836	2,395,000
	3. Other Countries	102,322,155	102,322,155	106,465,732	100,075,000
	4. Totals	4,129,028,353	4,129,028,353	4,209,719,284	4,159,738,772
U.S. States, Territories and Possessions (Direct and guaranteed)	5. Totals	54,515,688	54,515,688	52,458,652	44,060,000
U.S. Political Subdivisions of States, Territories and Possessions (Direct and guaranteed)	6. Totals	12,835,344	12,835,344	12,079,574	11,280,000
U.S. Special Revenue and Special Assessment Obligations and all Non-Guaranteed Obligations of Agencies and Authorities of Governments and their Political Subdivisions	7. Totals	2,694,344,261	2,694,344,261	2,723,781,352	2,595,809,500
Industrial and Miscellaneous, SVO Identified Funds and Hybrid Securities (unaffiliated)	8. United States	10,157,819,596	10,157,819,596	10,213,978,104	10,000,278,864
	9. Canada	102,626,305	102,626,305	101,753,541	103,153,000
	10. Other Countries	1,493,798,740	1,493,798,740	1,505,518,436	1,477,508,155
	11. Totals	11,754,244,641	11,754,244,641	11,821,250,081	11,580,940,019
Parent, Subsidiaries and Affiliates	12. Totals				
	13. Total Bonds	18,644,968,287	18,644,968,287	18,819,288,943	18,391,828,291
PREFERRED STOCKS					
Industrial and Miscellaneous (unaffiliated)	14. United States				
	15. Canada				
	16. Other Countries				
	17. Totals				
Parent, Subsidiaries and Affiliates	18. Totals				
	19. Total Preferred Stocks				
COMMON STOCKS					
Industrial and Miscellaneous (unaffiliated)	20. United States	39,937,337,365	39,937,337,365	39,771,386,814	
	21. Canada	5,280,249	5,280,249	5,047,419	
	22. Other Countries	8,754,748	8,754,748	8,187,401	
	23. Totals	39,951,372,362	39,951,372,362	39,784,621,634	
Parent, Subsidiaries and Affiliates	24. Totals				
	25. Total Common Stocks	39,951,372,362	39,951,372,362	39,784,621,634	
	26. Total Stocks	39,951,372,362	39,951,372,362	39,784,621,634	
	27. Total Bonds and Stocks	58,596,340,649	58,596,340,649	58,603,910,577	

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DA - VERIFICATION BETWEEN YEARS

Short-Term Investments

	1	2	3	4	5
	Total	Bonds	Mortgage Loans	Other Short-term Investment Assets (a)	Investments in Parent, Subsidiaries and Affiliates
1. Book/adjusted carrying value, December 31 of prior year	389,343,710	389,343,710			
2. Cost of short-term investments acquired	3,156,834,307	3,156,834,307			
3. Accrual of discount	44,881	44,881			
4. Unrealized valuation increase (decrease)					
5. Total gain (loss) on disposals	3,640,307	3,640,307			
6. Deduct consideration received on disposals	2,891,973,574	2,891,973,574			
7. Deduct amortization of premium	9,538	9,538			
8. Total foreign exchange change in book/adjusted carrying value	1,373,438	1,373,438			
9. Deduct current year's other than temporary impairment recognized					
10. Book adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9)	659,253,531	659,253,531			
11. Deduct total nonadmitted amounts					
12. Statement value at end of current period (Line 10 minus Line 11)	659,253,531	659,253,531			

(a) Indicate the category of such assets, for example, joint ventures, transportation equipment:

SCHEDULE DB - PART A - VERIFICATION BETWEEN YEARS

Options, Caps, Floors, Collars, Swaps and Forwards

1. Book/adjusted carrying value, December 31, prior year (Line 9, prior year)	21,301,937
2. Cost paid/(consideration received) on additions:	
2.1 Current year paid/(consideration received) at time of acquisition, still open, Section 1, Column 12	(3,702,042)
2.2 Current year paid/(consideration received) at time of acquisition, terminated, Section 2, Column 14	2,668,450 (1,033,592)
3. Unrealized valuation increase/(decrease):	
3.1 Section 1, Column 17	3,767,723
3.2 Section 2, Column 19	63,844 3,831,567
4. Total gain (loss) on termination recognized, Section 2, Column 22	25,402,116
5. Considerations received/(paid) on terminations, Section 2, Column 15	27,864,244
6. Amortization:	
6.1 Section 1, Column 19	
6.2 Section 2, Column 21	
7. Adjustment to the book/adjusted carrying value of hedged item:	
7.1 Section 1, Column 20	
7.2 Section 2, Column 23	
8. Total foreign exchange change in book/adjusted carrying value:	
8.1 Section 1, Column 18	7,560
8.2 Section 2, Column 20	(898,626) (891,066)
9. Book/adjusted carrying value at end of current period (Lines 1+2+3+4-5+6+7+8)	20,746,718
10. Deduct nonadmitted assets	
11. Statement value at end of current period (Line 9 minus Line 10)	20,746,718

SCHEDULE DB - PART B - VERIFICATION

Futures Contracts

1. Book/Adjusted carrying value, December 31 of prior year (Line 6, prior year).....	
2. Cumulative cash change (Section 1, Broker Name/Net Cash Deposits Footnote - Cumulative Cash Change Column)	
3.1 Add:	
Change in variation margin on open contracts - Highly effective hedges	
3.11 Section 1, Column 15, current year minus	
3.12 Section 1, Column 15, prior year	
Change in variation margin on open contracts - All other	
3.13 Section 1, Column 18, current year minus	(4,600,331)
3.14 Section 1, Column 18, prior year	(2,682,236) (1,918,095) (1,918,095)
3.2 Add:	
Change in adjustment to basis of hedged item	
3.21 Section 1, Column 17, current year to date minus	
3.22 Section 1, Column 17, prior year	
Change in amount recognized	
3.23 Section 1, Column 19, current year to date minus	(4,600,331)
3.24 Section 1, Column 19, prior year	(2,682,236) (1,918,095) (1,918,095)
3.3 Subtotal (Line 3.1 minus Line 3.2)	
4.1 Cumulative variation margin on terminated contracts during the year (Section 2, Column 15)	(26,784,414)
4.2 Less:	
4.21 Amount used to adjust basis of hedged item (Section 2, Column 17) ..	
4.22 Amount recognized (Section 2, Column 16)	(26,784,414) (26,784,414)
4.3 Subtotal (Line 4.1 minus Line 4.2)	
5. Dispositions gains (losses) on contracts terminated in prior year:	
5.1 Total gain (loss) recognized for terminations in prior year	
5.2 Total gain (loss) adjusted into the hedged item(s) for terminations in prior year	
6. Book/Adjusted carrying value at end of current period (Lines 1+2+3.3-4.3-5.1-5.2)	
7. Deduct total nonadmitted amounts	
8. Statement value at end of current period (Line 6 minus Line 7)	

Schedule DB - Part C - Section 1 - Replication (Synthetic Asset) Transactions (RSATs) Open

N O N E

Schedule DB-Part C-Section 2-Reconciliation of Replication (Synthetic Asset) Transactions Open

N O N E

ANNUAL STATEMENT FOR THE YEAR 2016 OF THE SEPARATE ACCOUNTS OF THE Massachusetts Mutual Life Insurance Company

SCHEDULE DB - VERIFICATION

Verification of Book/Adjusted Carrying Value, Fair Value and Potential Exposure of all Open Derivative Contracts

	Book/Adjusted Carrying Value Check
1. Part A, Section 1, Column 14.....	20,746,717
2. Part B, Section 1, Column 15 plus Part B, Section 1 Footnote - Total Ending Cash Balance
3. Total (Line 1 plus Line 2)	20,746,717
4. Part D, Section 1, Column 5	34,311,020
5. Part D, Section 1, Column 6	(13,564,303)
6. Total (Line 3 minus Line 4 minus Line 5)
	Fair Value Check
7. Part A, Section 1, Column 16	20,746,717
8. Part B, Section 1, Column 13
9. Total (Line 7 plus Line 8)	20,746,717
10. Part D, Section 1, Column 8	34,311,020
11. Part D, Section 1, Column 9	(13,564,303)
12. Total (Line 9 minus Line 10 minus Line 11)
	Potential Exposure Check
13. Part A, Section 1, Column 21	101,712,581
14. Part B, Section 1, Column 20	25,730,925
15. Part D, Section 1, Column 11	127,443,506
16. Total (Line 13 plus Line 14 minus Line 15)

SCHEDULE E - VERIFICATION BETWEEN YEARS

(Cash Equivalents)

	1	2	3
	Total	Bonds	Other (a)
1. Book/adjusted carrying value, December 31 of prior year	2,001,105,284	2,001,105,284	
2. Cost of cash equivalents acquired	86,823,079,214	86,823,079,214	
3. Accrual of discount	36,400	36,400	
4. Unrealized valuation increase (decrease)			
5. Total gain (loss) on disposals	9,299,036	9,299,036	
6. Deduct consideration received on disposals	87,103,552,715	87,103,552,715	
7. Deduct amortization of premium			
8. Total foreign exchange change in book/adjusted carrying value			
9. Deduct current year's other than temporary impairment recognized			
10. Book/adjusted carrying value at end of current period (Lines 1+2+3+4+5-6-7+8-9)	1,729,967,219	1,729,967,219	
11. Deduct total nonadmitted amounts			
12. Statement value at end of current period (Line 10 minus Line 11)	1,729,967,219	1,729,967,219	

(a) Indicate the category of such assets, for example, joint ventures, transportation equipment: