INTEREST RATE RISK AND MARKET RISK

LR027

The following instructions for the Interest Rate Risk and Market Risk will remain effective independent of the status of the sunset provision, Section 8, of AG 48 in a particular state or jurisdiction. This instruction will be considered for change once the amendment referenced in AG 48, Section 8, regarding credit for reinsurance, is adopted by the NAIC.

Basis of Factors

The interest rate risk is the risk of losses due to changes in interest rate levels. The factors chosen represent the surplus necessary to provide for a lack of synchronization of asset and liability cash flows.

The impact of interest rate changes will be greatest on those products where the guarantees are most in favor of the policyholder and where the policyholder is most likely to be responsive to changes in interest rates. Therefore, risk categories vary by withdrawal provision. Factors for each risk category were developed based on the assumption of well matched asset and liability durations. A loading of 50 percent was then added on to represent the extra risk of less well-matched portfolios. Companies must submit an unqualified actuarial opinion based on asset adequacy testing to be eligible for a credit of one-third of the RBC otherwise needed. The interrogatory on Line (1.1) should be answered Yes if the opinion is unqualified. It should also be answered Yes if the opinion is qualified but the only reason for qualification of the opinion is because of the direction provided in Actuarial Guideline XLVIII.

Consideration is needed for products with credited rates tied to an index, as the risk of synchronization of asset and liability cash flows is tied not only to changes in interest rates but also to changes in the underlying index. In particular, equity-indexed products have recently grown in popularity with many new product variations evolving. The same C-3 factors are to be applied for equity-indexed products as for their non-indexed counterparts; i.e., based on guaranteed values ignoring those related to the index.

In addition, some companies may choose to or be required to calculate part of the RBC on Certain Annuities and Single Premium Life Insurance under a method using cash flow testing techniques. Refer to LR049 Exemption Test: Cash Flow Testing for C-3 RBC for determination of exemption from this cash flow testing requirement.

Reserves on Certain Annuities and Single Premium Life Insurance that were Cash Flow Tested for Asset Adequacy – Factor-Based RBC
See Appendix 1 of the instructions for more details.

The risk categories are:

(a) Low-Risk Category

The basic risk-based capital developed for annuities and life insurance in the low-risk category was based on an assumed asset/liability duration mismatch of 0.125 (i.e., a well matched portfolio). This durational gap was combined with a possible 4 percent one-year swing in interest rates (the maximum historical interest rate swing 95 percent of the time) to produce a pre-tax factor of 0.0077. In addition to the 50 percent loading discussed above, the risk-based capital pre-tax factor is 0.0115.

(b) Medium and High-Risk Category

The factors for the medium and high-risk categories were determined by measuring the value of the additional risk from the more discretionary withdrawal provisions based on assumptions of policyholder behavior and 1,000 random interest rate scenarios. Supplementary contracts not involving life contingencies and dividend accumulations are included in the medium-risk category due to the historical tendency of these policyholders to be relatively insensitive to interest rate changes.

Additional Component for Callable/Pre-Payable Assets

Identify the amount of callable/pre-payable assets (including IOs and similar investments) supporting reserves classified in this section. The C-3 requirement after taxes is 50 percent of the excess, if any, of book/adjusted carrying value above current call price. The calculation is done on an asset-by-asset basis. NOTE: If a company is required to calculate part of the RBC based on cash flow testing for C-3 RBC, the factor based requirements for callable/pre-payable assets used in that testing is zero**.**

All Other Reserves

This captures all reserves not included in Reserves on Certain Annuities and Single Premium Life Insurance that were Cash Flow Tested or products included under the "Recommended Approach for Setting Risk-Based Capital Requirements for Variable Annuities and Similar Products."

The risk categories are:

(a) Low-Risk Category

The basic risk-based capital developed for annuities and life insurance in the low-risk category was based on an assumed asset/liability duration mismatch of 0.125 (i.e., a well-matched portfolio). This durational gap was combined with a possible 4 percent one-year swing in interest rates (the maximum historical interest rate swing 95 percent of the time) to produce a pre-tax factor of 0.0077. In addition to the 50 percent loading discussed above, the risk-based capital pre-tax factor is 0.0115.

(b) Medium and High-Risk Category

The factors for the medium and high-risk categories were determined by measuring the value of the additional risk from the more discretionary withdrawal provisions based on assumptions of policyholder behavior and 1,000 random interest rate scenarios. Supplementary contracts not involving life contingencies and dividend accumulations are included in the medium-risk category due to the historical tendency of these policyholders to be relatively insensitive to interest rate changes.

Additional Component for Callable/Pre-Payable Assets

Identify the amount of callable/pre-payable assets (including IOs and similar investments) not reported elsewhere in this schedule. This excludes callable/pre-payable assets supporting Reserves on Certain Annuities and Single Premium Life Insurance that were Cash Flow Tested or supporting the Interest Rate Risk Component for products included under the "Recommended Approach for Setting Risk-Based Capital Requirements for Variable Annuities and Similar Products." This includes callable/pre-payable assets supporting other reserves and capital and surplus. The C-3 requirement after taxes is 50 percent of the excess, if any, of book/adjusted carrying value above current call price. The calculation is done on an asset-by-asset basis and reported in aggregate.

Cash Flow Testing for C-3 RBC

A company may be required or choose to perform cash flow testing to determine its RBC requirement. Because of the widespread use of increasingly well-disciplined scenario testing for actuarial opinions based upon an asset adequacy analysis involving cash flow testing, it was determined that a practical method of measuring the degree of asset/liability mismatch existed. It involves further cash flow testing. See Appendix 1 – Cash Flow Testing for C-3 RBC for details.

Specific Instructions for Application of the Formula

Lines (2) through (16)

These lines deal with Certain Annuities and Single Premium Life Insurance for which reserves were cash flow tested for asset adequacy. The fixed portion of equity-based variable products should not be included. Guaranteed indexed separate accounts following a Class I investment strategy are reported as low-risk Line 2 and those following a Class II investment strategy are excluded. Company source records entered in Column (3) of Lines (13), (15) and (16) should be adjusted to a pre-tax basis.

Line (17)

Should equal the sum of Lines (6) + (11) + (14) + (15). Line (16) is not included in the Line (17) total. Instead, it is included in the Line (32) total.

Lines (18) through (31)

These lines cover:

(a) The remaining company business that was not cash flow tested for asset adequacy (see Appendix 1 for details) excluding products included under the "Recommended Approach for Setting Risk-Based Capital Requirements for Variable Annuities and Similar Products" and

(b) Business in companies that did not cash flow test for asset adequacy.

The calculation for risk-based capital should not include unitized separate accounts without guarantees even though they may be included in Item 32 of the Notes to Financial Statements. Separate accounts with guarantees should be included, except for those separate accounts that guarantee an index and follow a Class II investment strategy and certain other guaranteed separate accounts as defined below. Synthetic GICs net of certain credits should be included in this section. The provisions for these credits to C-3 requirements is provided in the Separate Accounts section of the risk-based capital instructions. Experience-rated pension contracts defined below should be excluded from "annuity reserves with fair value adjustment" and "annuity reserves not withdrawable." All amounts should be reported net of reinsurance, net of policy loans and adjusted for assumed and ceded modified coinsurance.

Experience-rated group and individual pension business that meets all of the following four conditions is excluded from C–3 factor-based risk:

(a) General account funded;
(b) Reserve interest rate is carried at no greater than 4 percent and/or fund long-term interest guarantee (in excess of a year) does not exceed 4 percent;
(c) Experience rating mechanism is immediate participation, retroactive credits, or other technique other than participating dividends; and
(d) Either is not subject to discretionary withdrawal or is subject to fair value adjustment, but only if the contractually defined lump sum fair value adjustment reflects portfolio experience as well as current interest rates and is expected to pass both credit risk and rate risk to the policyholder at withdrawal. (A lump sum settlement based only on changes in prevailing rates does not meet this test. Book value cash out options meet this test as long as the present value of payments using U.S. Treasury spot rates is less than or equal to the lump sum fair value on the valuation date and the policyholder does not have an option to change the payment period once payments begin.)

For companies not exempt from cash flow testing for C-3 RBC, such testing is to include those experience-rated products exempted from the formula factors, but for which cash flow testing is done as a part of the asset adequacy testing.

Non-indexed separate account business with guarantees that satisfy both conditions (b) and (d) above is excluded from C–3 factor-based risk.

Guaranteed indexed separate account business following a Class I investment strategy is reported on Line (18). Note that in the AAA Report "Proposed New Risk-Based Capital Method for Separate Accounts That Guarantee an Index**"** (adopted by the NAIC Life Risk-Based Capital Working Group in New York, NY, June 2003), there is a stress test applicable to Class I investment strategies for a company that is not subject to scenario testing requirements.

Company source records entered in Column (3) of Lines (30) and (31) should be adjusted to a pre-tax basis.

Line (33)

Enter in Column (3) the pre-tax interest rate risk results of cash flow testing per the Appendix 1a methodology. Line (33) should be completed by all companies who do cash flow testing of Certain Annuities and Single Premium Life Insurance for asset adequacy (see Appendix 1) except those with less than $100 million in admitted assets at year-end, unless the answer to Line (14) or Line (22) of LR049 Exemption Test: Cash Flow Testing for C-3 RBC is "Yes" or if the company chooses to do C-3 RBC cash flow testing on a continuing basis. Once a company chooses to use the C-3 RBC cash flow testing method to calculate RBC it must continue to do so unless regulatory approval from the domiciliary jurisdiction is received to go back to the factor-based method. The interest rate risk component for Variable Annuities and Similar Products should be entered into Line (35).

Line (34)

If Line (33) is equal to zero, then Line (34) should equal Line (32). Otherwise, Line (34) should equal Line (32) plus Line (33) less Line (16) less Line (17) subject to a minimum of 0.5 times Line (32).

Line (35)

Enter the interest rate risk component for Variable Annuities and Similar Products. The interest rate risk component should be entered on a pre-tax basis.

Line (36)

Total interest rate risk. Equals Line (34) plus Line (35).

Line (37)

Overview

The amount reported on Line (37) is calculated using a ~~nine-step process. As in Step 3 of the Single Scenario C-3 Measurement Considerations section of Appendix 1a – CashFlow Testing for C-3 RBC Methodology, existing AVR-related assets should not be included in the initial assets used in the C-3 modeling unless AVR has been excluded from TAC due to its use in the asset adequacy analysis supporting reserves. AVR-related assets may be included with C-3 testing to the extent that the AVR has been used in the cash flow testing and is therefore excluded from TAC, and that portion of the AVR-related assets relates to the business being tested. These assets are available for future credit loss deviations over and above expected credit losses. These deviations are covered by C-1 risk capital. Similarly, future AVR contributions should not be modeled. However, the expected credit losses should be in the C-3 modeling. (Deviations from expected are covered by both the AVR and C-1 risk capital and should not be modeled).~~five-step process:

~~IMR assets should be used for C-3 modeling. If negative cash flows are handled by selling assets, then appropriate modeling of contributions to and amortization of the IMR need to be reflected in the modeling.~~

(1) The first step is determined by applying the methodology described below to calculate the Total Asset Requirement.

(2) Subtract the reported statutory reserves for the business subject to the Report from the amount calculated in step (1). Floor this amount at $0.

(3) Divide the result from step (2) by (1 – Federal Income Tax Rate) to arrive at a pre-tax amount.

(4) Split the result from step (3) into an interest rate risk portion and a market risk portion.

(5) Apply the smoothing and transition rules (if applicable) to the market risk portion of the amount in step (4).

The interest rate portion of the risk should be included in Line (35) and the market risk portion, after applying smoothing and transition rules (if applicable), in Line (37).

The lines on the alternative calculations page will not be required for **2016**.

Calculation of the Total Asset Requirement

~~in~~The Total Asset Requirement is calculated as follows:

A. Apply the methodology described in Actuarial Guideline XLIII and calculate the numerical average of the 5 percent largest values of the Scenario Greatest Present Values, as defined by Section III)B)3) of Actuarial Guideline XLIII. This amount is referred to as "CTE (95)". In conducting this calculation, the process and methods used to calculate the Scenario Greatest Present Values should be the same as required in Actuarial Guideline XLIII and should ignore the effect of Federal Income Tax. As a result, for each individual scenario, the numerical value of the Scenario Greatest Present Value used in this calculation should be identical to that for the same scenario in the Aggregate Reserve calculation under Actuarial Guideline XLIII.

At the option of the actuary, CTE (95) may be calculated on an after-tax basis whereby the effect of Federal Income Tax is reflected in the projection of Accumulated Deficiencies, as defined in Section III)B)5) of Actuarial Guideline XLIII, when calculating the Scenario Greatest Present Value for each scenario. To reflect the effect of Federal Income Tax, the company should find a reasonable and consistent basis for approximating the evolution of tax reserves in the projection, taking into account restrictions around the size of the tax reserves (e.g., that tax reserve must equal or exceed the cash surrender value for a given contract). The Accumulated Deficiency at the end of each projection year should also be discounted at a rate that reflects the projected taxable income in that year. In addition, the actuary should apply the Tax Adjustment as described below to the calculated CTE (95) value.

A company that has elected to calculate CTE (95) in this manner may not switch back to using a calculation that ignores the effect of Federal Income Tax without approval from the Domiciliary Commissioner. The company should also disclose the methodology adopted, and the rationale for its adoption, in the actuarial memorandum described below.

A company may also choose to develop the Total Asset Requirement by using the Alternative Method defined in Appendix 8 of the report "Recommended Approach for Setting Risk-Based Capital Requirements for Variable Annuities and Similar Products Presented by the American Academy of Actuaries' Life Capital Adequacy Subcommittee to the National Association of Insurance Commissioners' Capital Adequacy Task Force (June 2005~~)" to calculate the total asset requirement. Although Appendix 2 in the Report notes path dependent models under a different set of initialization parameters might produce scenarios that do not satisfy all the calibration points shown in Table 1, to be in compliance with the requirements in this first step, the actual scenarios used for diversified U.S. equity funds must meet the calibration criteria. The scenarios need not strictly satisfy all calibration points in Table 1 of Appendix 2, but the actuary should be satisfied that any differences do not materially reduce the resulting capital requirements. See the Preamble to the *Accounting Practices and Procedures Manual* for an explanation of materiality. Include the Tax Adjustment as described~~)", provided that the company satisfies all of the requirements for eligibility for using the Alternative Method as outlined in the report.

~~(2) The second step is to reduce the amount calculated in (1) above by the interest rate portion of the risk (i.e., only the separate account market risk is included in this step).~~

~~(3) The third step is to calculate the Standard Scenario Amount.~~

~~(4) Take the greater of the amounts from steps (2) and (3).~~

~~(5) Apply the smoothing and transition rules (if applicable) to the amount in step (4).~~

~~(6) Add the general account interest rate portion of the risk to the amount in step (5).~~

~~(7) Subtract the reported statutory reserves for the business subject to the Report from the amount calculated in step (6). Floor this amount at $0.~~

~~(8) Divide the result from step (7) by 0.65 to arrive at a pre-tax amount.~~

~~(9) Split the result from step (8) into an interest rate risk portion and a market risk portion. Note that the interest rate portion may not equal the interest rate portion of the risk used in steps (2) and (6) above even after adjusting these to a pre-tax basis. The interest rate portion of the risk should be included in Line (35) and the market risk portion in Line (37).~~

~~The lines on the alternative calculations page will not be required for **2016.**~~

~~Calculation of the Total Asset Requirement~~

~~The method of calculating the Total Asset Requirement is explained in detail in the AAA's June 2005 report, referenced above. In summary, it is as follows:~~

~~A. Aggregate the results of running stochastic scenarios using prudent best estimate assumptions (the more reliable the underlying data is, the smaller the need for margins for conservatism) and calibrated fund performance distribution functions. If utilizing prepackaged scenarios as outlined in the American Academy of Actuaries' report, *Construction and Use of Pre-Packaged Scenarios to Support the Determination of Regulatory Risk-Based Capital Requirements for Variable Annuities and Similar Products*, Jan. 13, 2006, the Enhanced C-3 Phase I Interest Rate Generator should be used in generating any interest rate scenarios or regenerating pre-packaged fund scenarios for funds that include the impact of bond yields. Details concerning the Enhanced C-3 Phase I Interest Rate Generator can be found on the American Academy of Actuaries webpage at the following address http://www.actuary.org/pdf/life/c3supp_jan06.pdf. The Enhanced C-3 Phase 1 Interest Rate Generator with its ability to use the yield curve as of the run date and to regenerate pre-packaged fund returns using interest rate scenarios based on the current yield curve replaces the usage of the March 2005 pre-packaged scenarios.~~

~~B. Calculate required capital for each scenario by calculating accumulated statutory surplus, including the effect of federal income taxes at a rate of 35 percent, for each calendar year-end and its present value. The negative of the lowest of these present values is the asset requirement for that scenario. These values are recorded for each scenario and the scenarios are then sorted on this measure. For this purpose, statutory surplus is modeled as if the statutory reserve were equal to the working reserve.~~

~~C. The Total Asset Requirement is set at the 90 Conditional Tail Expectation by taking the average of the worst 10 percent of all the scenarios' asset requirements (capital plus starting reserve). Risk based capital is calculated as the excess of the Total Asset Requirement above the statutory reserves. For products with no guaranteed living benefit, or just a guaranteed death benefit, an alternative method is allowed, as described in the AAA report.~~

B. Calculate the Total Asset Requirement by adding to the statutory reserves – as determined via Actuarial Guideline XLIII – an amount determined by the following formula, where the second term – i.e., the difference between statutory reserves and tax reserves multiplied by the Federal Income Tax Rate – may not exceed the portion of the company's non-admitted deferred tax assets attributable to the same portfolio of contracts to which Actuarial Guideline XLIII is applied in calculating statutory reserves:

$$25\% \times \big((\text{CTE (95)} + \text{Additional Standard Projection Amount} - \text{Statutory Reserve}) \times (1 - \text{Federal Income Tax Rate}) - (\text{Statutory Reserve} - \text{Tax Reserve}) \times \text{Federal Income Tax Rate}\big)$$

The Additional Standard Projection Amount is calculated using the methodology outlined in Appendix 3 of Actuarial Guideline XLIII.

If the company elects to calculate CTE (95) on an after-tax basis whereby the effect of Federal Income Tax is reflected in the projection of Accumulated Deficiencies, the Total Asset Requirement is determined by adding to the statutory reserves an amount determined by the following formula:

$$25\% \times (\text{CTE (95)} + \text{Additional Standard Projection Amount} \times (1 - \text{Federal Income Tax Rate}) - \text{Statutory Reserve})$$

C. At the option of the actuary, CTE (95) may be calculated using economic scenarios generated from the company's proprietary scenario generator, but only if such scenarios used to calculate CTE (95) are identical to those used to calculate the statutory reserve and satisfy all of the requirements outlined in Sections A5.2), A5.3), and A5.4) of Actuarial Guideline XLIII. In addition, the actuary must be able to demonstrate in an actuarial memorandum that the scenarios thus generated do not result in a Total Asset Requirement less than that which would be obtained by (i) using the prescribed scenario generators outlined in Sections A5.2) and A5.3) of Actuarial Guideline XLIII and (ii) assuming that the implied volatility level – at all in-the-moneyness levels – at a given time step in a given scenario is equal to the realized volatility of the underlying asset scenario over the same time period.

D. Risk-based capital is calculated as the excess of the Total Asset Requirement above the statutory reserves. Except for the effect of the Standard Scenario and the Smoothing and Transition Rules (see below), this RBC is to be combined with the C-1cs component for covariance purposes.

E. A provision for the interest rate risk of the guaranteed fixed fund option, if any, is to be calculated and combined with the current C-3 component of the formula.

F. The way grouping (of funds and of contracts), sampling, number of scenarios, and simplification methods are handled is the responsibility of the actuary. However, all these methods are subject to Actuarial Standards of Practice, supporting documentation and justification, and should be identical to those used in calculating the company's statutory reserves following Actuarial Guideline XLIII.

G. Certification of the work done to set the RBC level will be required to be submitted with the RBC filing. Refer to Appendices 10 and 11 of the AAA LCAS C-3 Phase II RBC Report (June 2005) for further details of the certification requirements. The certification should specify that the actuary is not opining on the adequacy of the company's surplus or its future financial condition. The actuary will also note any material change in the model or assumptions from that used previously and the impact of such changes (excluding changes due to a change in these NAIC instructions). Changes will require regulatory disclosure and may be subject to regulatory review and approval. Additionally, if hedging is reflected in the stochastic modeling, additional certifications are required from an actuary and financial officer of the company.

The certification(s) should be submitted by hard copy with any state requiring an RBC hard copy.

H. An actuarial memorandum should be constructed documenting the methodology and assumptions upon which the required capital is determined. The memorandum should also include sensitivity tests that the actuary feels appropriate, given the composition of their block of business (i.e., identifying the key assumptions that, if changed, produce the largest changes in the RBC amount). This memorandum will be confidential and available to regulators upon request.

If the company elects to calculate CTE (95) on an after-tax basis whereby the effect of Federal Income Tax is reflected in the projection of Accumulated Deficiencies, the company should still disclose in the memorandum the Total Asset Requirement and C-3 risk-based capital that would be obtained if the company elects to calculate CTE ([98]) while ignoring the effect of Federal Income Tax.

Application of the Tax Adjustment

Tax Adjustment: Under the U.S. IRC**,** the tax reserve is defined. It can never exceed the statutory reserve nor be less than the cash surrender value. If a company elects to calculate CTE (95) on an after-tax basis and if the company's actual tax reserves ~~assumed in the projection are set equal to Working Reserves and if~~ exceed the projected tax reserves ~~actually exceed Working Reserves~~ at the beginning of the projection, a tax adjustment is required.

~~A tax adjustment is not required in the following situations:~~

- ~~Tax reserves are projected directly; that is, it is not assumed that projected tax reserves are equal to Working Reserves, whether these are cash values or other approximations.~~
- ~~Tax reserves at the beginning of the projection period are equal to Working Reserves.~~
- ~~Tax reserves at the beginning of the projection period are lower than Working Reserves. This situation is only possible for contracts without cash surrender values and when these contracts are significant enough to dominate other contracts where tax reserves exceed Working Reserves. In this case the modeled tax results are overstated each year for reserves in the projection, as well as the projected tax results reversed at the time of claim.~~

If a tax adjustment is required**,** the ~~Total Asset Requirement (TAR~~CTE (95) must be increased on an approximate basis to correct for the understatement of modeled tax expense. The additional taxable income at the time of claim will be realized over the projection and will be measured approximately using the duration to worst, i.e., the duration producing the lowest present value for each scenario. The method of developing the approximate tax adjustment is described below.

The increase to ~~TAR~~CTE (95) may be approximated as the corporate tax rate ~~(i.e., 35 percent)~~ times f times the difference between the company's actual tax reserves and ~~Working Reserves~~projected tax reserves at the start of the projections. For this calculation, f is calculated as follows**:** For the scenarios reflected in calculating ~~90~~ CTE~~,~~ (95), the ~~lowest of these present values of accumulated statutory surplus~~Scenario Greatest Present Value is determined ~~for each calendar year end~~ and its associated projection duration is tabulated. At each such duration, the ratio of the number of contracts in force (or covered lives for group contracts) to the number of contracts in force (or covered lives) at the start of the modeling projection is calculated. The average ratio is then calculated~~,~~ over all ~~90~~ CTE (95) scenarios~~,~~ and f is one minus this average ratio. ~~If instead, RBC is determined under the standard scenario method then f is based on the ratio at the worst duration under that scenario.~~ If the Alternative Method is used, f is approximated as 0.5.

Calculation of the Standard Scenario Amount

Standard Scenario for C-3 Phase II Risk Based Capital (RBC) Determination

I) Overview

A) Application to Determine RBC.

A Standard Scenario Amount shall be determined for all of the contracts under the scope described in the June 2005 report, "Recommended Approach for Setting Risk Based Capital Requirements for Variable Annuities and Similar Products". If the Standard Scenario Amount is greater than the Total Asset Requirement less any amount included in the TAR but attributable to and allocated to C-3 (Interest Rate Risk) otherwise determined based on the Report, then the Total Asset Requirement before tax adjustment used to determine C-3 Phase 2 (Market Risk) RBC shall be the Standard Scenario Amount.

The Standard Scenario Amount shall be the sum of the following:

1. For contracts for which RBC is based on the Alternative Methodology applied without a model office using 100 percent of the MGDB mortality table, the Standard Scenario Amount shall be the sum of the total asset requirement before tax adjustment from the Alternative Methodology applied to such contracts.

2. For contracts without guaranteed death benefits for which RBC is based on the Alternative Methodology applied without a model office, the Standard Scenario Amount shall be the sum of the total asset requirements before tax adjustment from the Alternative Methodology applied to such contracts.

3. For contracts under the scope of the Report other than contracts for which paragraphs 1 and 2 apply, the Standard Scenario Amount is determined by use of The Standard Scenario Method described in Section III. The Standard Scenario Method requires a single projection of account values based on specified returns on the assets supporting the account values. On the valuation date an initial drop is applied to the account values based on the supporting assets. Subsequently, account values are projected at the rate earned on supporting assets less a margin. Additionally, the projection includes the cash flows for certain contract provisions, including any guaranteed living and death benefits using the assumptions in Section III. Thus the calculation of the Standard Scenario Amount will reflect the greatest present value of the accumulated projected cost of guaranteed benefits less the accumulated projected revenue produced by the margins in accordance with Subsection III (D).

B) The Standard Scenario Amount under the Standard Scenario Method.

The Standard Scenario Amount for all contracts subject to the Standard Scenario Method is determined as of the valuation date under the Standard Scenario Method described in Section III based on a rate, DR. DR is the annual effective equivalent of the 10-year constant maturity treasury rate reported by the Federal Reserve for the month of valuation plus 50 basis points. However, DR shall not be less than 3 percent or more than 9 percent. If the 10-year constant maturity treasury rate is no longer available, then a substitute rate determined by the National Association of Insurance Commissioners shall be used. The accumulation rate, AR, is the product of DR and one minus the tax rate defined in paragraph III(D)(10).

No modification is allowed from the requirements in Section III unless the Domiciliary Commissioner approves such modification as necessary to produce a reasonable result.

C) Illustrative Application of the Standard Scenario Method to a Projection, Model Office and Contract by Contract.

To provide information on the significance of aggregation, a determination of the Standard Scenario Amount based on paragraphs III(B)(1) and III(B)(2) is required for each contract subject to paragraph I(A)(3). The sum of all such Standard Scenario Amounts is described as row B in Table A. In addition, if the Conditional Tail Expectation Amount in the Report is determined based on a projection of an inforce prior to the statement date and/or by the use of a model office, which is a grouping of contracts into representative cells, then additional determinations of the Standard Scenario Amount shall be performed on the prior inforce and/or model office. The calculations are for illustrative purposes to assist in validating the reasonableness of the projection and or the model office and to determine the significance of aggregation.

~~Table A identifies the Standard Scenario Amounts required by this section. The Standard Scenario Amounts required are based on how the Conditional Tail Expectation projection or Alternative Methodology is applied. For completeness, the table also includes the Standard Scenario Amount required by paragraph I(A)(3). The amounts in Table A should be included as part of the certifying actuary's annual supporting memorandum specified in paragraph (H) of the "Calculation of the Total Asset Requirement" section of the RBC instructions.~~

- ~~Standard Scenario Amounts in rows A and B in Table A are required of all companies subject to paragraph I(A)(3). No additional Standard Scenario Amounts are required if a company's stochastic or alternative methodology result is calculated on the statement date using individual contracts (i.e., without a model office).~~
- ~~A company that uses a model office as of the statement date to determine its stochastic or alternative methodology result must provide the Standard Scenario Amount for the model office. This is row C.~~
- ~~A company that uses an aggregation by duration of contract by contract projection of a prior inforce to determine its stochastic or alternative methodology with result PS and then projects requirements to the statement date with result S must provide the Standard Scenario Amount for the prior inforce, row D.~~
- ~~A company that uses a model office of a prior inforce to determine its stochastic or alternative methodology requirements with result PM and then projects requirements to the statement date with result S must provide the Standard Scenario Amount for the model office on the prior inforce date, row E.~~

Table A

Standard Scenario Amounts	Guideline Variations	Validation Measures	
		Model Office Projection	Projection of Prior Inforce
A. Aggregate valuation on the statement date on inforce contracts required in I(A)(3)	None	None	None
B. Seriatim valuation on the statement date on inforce contracts	None: Compare to A	None	None
C. Aggregate valuation on the statement date on the model office	If not material to model office validation	A/C compare to 1.00	None
D. Aggregate valuation on a prior inforce date on prior inforce contracts	If not material to projection validation	None	A/D – S/PS Compare to 0
E. Aggregate valuation on a prior inforce date of a model office	If not material to model office or projection validation.	(A/E – S/PM) compare to 0	

Modification of the requirements in Section III when applied to a prior inforce or a model office is permitted if such modification facilitates validating the projection of inforce or the model office. All such modifications should be documented. No modification is allowed for row B as of the statement date unless the Domiciliary Commissioner approved such modification as necessary to produce a reasonable result under the corresponding amount in row A.

II) Basic Adjusted Reserve

For purposes of determining the Standard Scenario Amount for Risk-Based Capital, the Basic Adjusted Reserve for a contract shall be the Working Reserve, as described in the Report, as of the valuation date.

III) Standard Scenario Amount – Application of the Standard Scenario Method

A) General

Where not inconsistent with the guidance given here, the process and methods used to determine results under the Standard Scenario Method shall be the same as required in the calculation under the modeling methodology required by the Report. Any additional assumptions needed to apply the Standard Scenario Method to the inforce shall be explicitly documented.

B) Results for the Standard Scenario Method.

The Standard Scenario Amount is equal to (1) + (2) – (3) where:

1) Is the sum of the Basic Adjusted Reserve as described in Section II for all contracts for which the Standard Scenario Amount is being determined,

2) Is zero or if greater the aggregate greatest present value for all contracts measured as of the end of each projection year of the negative of the Accumulated Net Revenue described below using the assumptions described in Subsection III(D) and a discount rate equal to the Accumulation Rate, AR. The Accumulated Net Revenue at the end of a projection year equals (i) + (ii) – (iii) where:

(i) Is the Accumulated Net Revenue at the end of the prior projection year accumulated at the rate AR to the end of the current projection year. The Accumulated Net Revenue at the beginning of the projection (i.e., time 0) is zero.

(ii) Are the margins generated during the projection year on account values as defined in paragraph III(D)(1) multiplied by one minus the tax rate and accumulated at rate AR to the end of current projection year, and

(iii) Are the contract benefits paid in excess of account value applied plus the Individual reinsurance premiums (ceded less assumed) less the Individual reinsurance benefits (ceded less assumed) payable or receivable during the projection year multiplied by one minus the tax rate and accumulated at rate AR to the end of current projection year. Individual reinsurance is defined in paragraph III(D)(2).

3) Is the value of approved hedges and Aggregate reinsurance as described in paragraph III(E)(2). Aggregate reinsurance is defined in paragraph III(D)(2).

C) The actuary shall determine the projected reinsurance premiums and benefits reflecting all treaty limitations and assuming any options in the treaty to the other party are exercised to decrease the value of reinsurance to the reporting company (e.g., options to increase premiums or terminate coverage). The positive value of any reinsurance treaty that is not guaranteed to the insurer or its successor shall be excluded from the value of reinsurance. The commissioner may require the exclusion of any portion of the value of reinsurance if the terms of the reinsurance treaties are too restrictive (e.g., time or amount limits on benefits correlate to the Standard Scenario Method).

D) Assumptions for Paragraph III (B) (2) Margins and Account Values.

1) Margins on Account Values. The bases for return assumptions on assets supporting account values are shown in Table I. The Initial returns shall be applied to the account values assigned to each asset class on the valuation date as immediate drops, resulting in the Account Values at time 0. The "Year 1" and "Year 2+" returns are gross annual effective rates of return and are used (along with other decrements and/or increases) to produce the Account Values as of the end of each projection year. For purposes of this section, money market funds shall be considered part of the Bond class.

The Fixed Fund rate is the greater of the minimum rate guaranteed in the contract or 3.5 percent but not greater than the current rates being credited to Fixed Funds on the valuation date.

Account Values shall be accumulated after the initial drop using the rates from Table I with appropriate reductions applied to the supporting assets. The appropriate reductions for account values supported by assets in the Equity, Bond or Balance Classes are all fund and contract charges according to the provisions of the funds and contracts. The appropriate reduction for Account Values supported by Fixed Funds is zero.

The margins on Account Values are defined as follows:

a) During the Surrender Charge Period:

i. 0.10% of Account Value; plus

ii. The maximum of:

- 0.20% of Account Value; or
- Explicit and optional contract charges for guaranteed living and death benefits.

b) After the Surrender Charge Period:

i. The amount determined in (a) above; plus

ii. The lesser of:

- 0.65% of Account Values; and
- 50% of the excess, if any, of all contract charges over (a) above.

However, on fixed funds after the surrender charge period, a margin of up to the amount in (a) above plus 0.4% may be used.

Table I

	Initial	Year 1	Year 2+
Equity Class	20%	0%	3%
Bond Class	0	0	4.85%
Balanced Class	12%	0%	3.74%
Fixed Separate Accounts and General Account		Fixed Fund Rate	Fixed Fund Rate

2) Reinsurance Credit. Individual reinsurance is defined as reinsurance where the total premiums for and benefits of the reinsurance can be determined by applying the terms of the reinsurance to each contract covered without reference to the premiums or benefits of any other contract covered and summing the results over all contracts covered. Reinsurance that is not Individual reinsurance is Aggregate reinsurance.

Individual reinsurance premiums projected to be payable on ceded risk and receivable on assumed risk shall be included in the subparagraph III(B)(2)(iii). Similarly, Individual reinsurance benefits projected to be receivable on ceded risk and payable on assumed risk shall be included in subparagraph III(B)(2)(iii). No Aggregate reinsurance shall be included in subparagraph III(B)(2)(iii).

3) Lapses, Partial Withdrawals, and Moneyness. Partial withdrawals elected as guaranteed living benefits or required contractually (e.g., a contract operating under an automatic withdrawal provision on the valuation date) are to be included in subparagraph III(B)(2)(iii). No other partial withdrawals, including free partial withdrawals, are to be included. All lapse rates shall be applied as full contract surrenders.

A contract is in the money (ITM) if it includes a guaranteed living benefit and at any time the portion of the future projected account value under the Standard Scenario Method required to obtain the benefit would be less than the value of the guaranteed benefit at the time of exercise or payment. If the projected account value is 90 percent of the value of the guaranteed benefit at the time of exercise or payment, the contract is said to be 10 percent in the money. If the income from applying the projected account value to guaranteed purchase rates exceeds the income from applying the projected benefit base to GMIB purchase rates for the same type of annuity, then there is no GMIB cost and the GMIB is not in the money. A contract not in the money is out of the money (OTM). If a contract has multiple living benefit guarantees then the contract is ITM to the extent that any of the living benefit guarantees are ITM. Lapses shall be at the annual effective rates given in Table II.

Table II – Lapse Assumptions

	During – Surrender Charge Period	After Surrender Charge Period		
Death Benefit Only Contracts	5%	10%		
All Guaranteed Living Benefits OTM	5%	10%		
		ITM< 10%	10% ≤ ITM< 20%	20% ≤ ITM
Any Guaranteed Account Balance Benefits ITM	0%	0%	0%	0%
Any Other Guaranteed Living Benefits ITM	3%	7%	5%	2%

4) Account Transfers and Future Deposits. No transfers between funds shall be assumed to determine the greatest present value amount required under paragraph III(B)(2) unless required by the contract (e.g., transfers from a dollar cost averaging fund or contractual rights given to the insurer to implement a contractually specified portfolio insurance management strategy or a contract operating under an automatic re-balancing option). When transfers must be modeled, to the extent not inconsistent with contract language, the allocation of transfers to funds must be in proportion to the contract's current allocation to funds.

Margins generated during a projection year on funds supporting account values are transferred to the Accumulation of Net Revenue at year end and are subsequently accumulated at the Accumulation Rate. Assets for each class supporting account values are to be reduced in proportion to the amount held in each asset class at the time of transfer of margins or any portion of Account Value applied to the payment of benefits.

No future deposits shall be assumed unless required by the terms of the contract to prevent contract or guaranteed benefit lapse, in which case they must be modeled. When future deposits must be modeled, to the extent not inconsistent with contract language, the allocation of the deposit to funds must be in proportion to the contract's current allocation to funds.

5) Mortality. Mortality at 80 percent of the 1994 MGDB tables through age 95 increasing by 1 percent each year to 100 percent of the 1994 MGDB table at age 115 shall be assumed in the projection used to the determine the greatest present value amount required under paragraph III(B)(2).

6) Projection Frequency. The projection used to determine the greatest present value amount required under paragraph III(B)(2) shall be calculated using an annual or more frequent time step, such as quarterly. For time steps more frequent than annual, assets supporting Account Values at the start of each projection year may be retained in such funds until year-end (i.e., pre-tax margin earned during the year will earn the fund rates instead of the Discount Rate until year-end) or removed after each time step. However, the same approach shall be applied for all years. Subsequent to each projection year-end, Accumulated Net Revenues for the year shall earn the Accumulation Rate. Similarly, projected benefits, lapses, elections and other contract activity can be assumed to occur annually or at the end of each time step, but the approach shall be consistent for all years.

7) Surrender Charge Period. If the surrender charge for the contract is determined based on individual contributions or deposits to the contracts, the surrender charge amortization period may be estimated for projection purposes. Such estimated period shall not be less than the remaining duration based on the normal amortization pattern for the remaining total contract charge assuming it resulted from a single deposit, plus one year.

8) Contract Holder Election Rates. Contract holder election rates to determine amounts in subparagraph III(B)(2)(iii) shall be 15 percent per annum for any elective ITM benefit except guaranteed withdrawal benefits, but only to the extent such election does not terminate a more valuable benefit subject to election. Guaranteed Minimum Death Benefits are not benefits subject to election. Exception: Contract holder election rates shall be 100 percent at the last opportunity to elect an ITM benefit, but only to the extent such election does not terminate a more valuable benefit subject to election. A benefit is more valuable if it is more ITM in absolute dollars using the definition of ITM in paragraph III(D)(3).

For guaranteed minimum withdrawal benefits, a partial withdrawal equal to the applicable percentage in Table III applied to the contract's maximum allowable partial withdrawal shall be assumed in subparagraph III(B)(2)(iii). However, if the contract's minimum allowable partial withdrawal exceeds the partial withdrawal from applying the rate in Table III to the contract's maximum allowable partial withdrawal, then the contract's minimum allowable partial withdrawal shall be assumed in subparagraph III(B)(2)(iii).

Table III – Guaranteed Withdrawal Assumptions

	Attained Age Less than 50	Attained Age 50 to 59	Attained Age 60 or Greater
Withdrawals do not reduce other elective Guarantees that are in the money	50%	75%	100%
Withdrawals reduce elective Guarantees that are in the money	25%	50%	75%

9) GMIBs. For subparagraph III(B)(2)(iii), GMIB cost at the time of election shall be the excess, if positive, of the reserve required for the projected annuitization stream over the available account value. If the reserve required is less than the account value, the GMIB cost shall be zero. The reserve required shall be determined using the Annuity 2000 Mortality Table and a valuation interest rate equal to the Discount Rate. If more than one annuity option is available, chose the option with a reserve closest to the reserve for a life annuity with 10 years of certain payments.

10) Indices. If an interest index is required to determine projected benefits or reinsurance obligations, the index must assume interest rates have not changed since the last reported rates before the valuation date. If an equity index is required, the index shall be consistent with the last reported index before the valuation date, the initial drop in equity returns and the subsequent equity returns in the standard scenario projection up to the time the index is used. The sources of information and how the information is used to determine indexes shall be documented and, to the extent possible, consistent from year to year.

11) Taxes. All taxes shall be based on a tax rate of 35 percent.

E) Assumptions for use in paragraph III (B) (3).

1) The Value of Aggregate Reinsurance. The value of Aggregate reinsurance is the discounted value, at rate AR of the excess of: a) the benefit payments from the reinsurance, over b) the reinsurance premiums, where (a) and (b) are determined under the assumptions described in Subsection III(D).

2) The Value of Approved Hedges. The value of approved hedges shall be calculated separately from the calculation in paragraph III(B)(2). The value of approved hedges is the difference between: a) the discounted value at rate AR of the after-tax cash flows from the approved hedges; less b) their statement values on the valuation date.

To be an approved hedge, a derivative or other investment has to be an actual asset held on the valuation date, be designated as a hedge for one or more contracts subject to the Standard Scenario, and be part of a clearly defined hedging strategy as described in the Report. If the approved hedge also supports contracts not subject to the Standard Scenario, then only that portion of the hedge designated for contracts subject to the Standard Scenario shall be included in the value of approved hedges. Approved hedges must be held in accordance with an investment policy that has been implemented for at least six months and has been approved by the Board of Directors or a subcommittee of Board members. A copy of the investment policy and the resolution approving the policy shall be maintained with the documentation of the Standard Scenario and available on request. Approved hedges must be held in accordance with a written investment strategy developed by management to implement the Board's investment policy. A copy of the investment strategy on the valuation date, the most recent investment strategy presented to the Board if different and the most recent written report on the effectiveness of the strategy shall be maintained with the documentation of the Standard Scenario and available on request.

The commissioner may require the exclusion of any portion of the value of approved hedges upon a finding that the company's documentation, controls, measurement, execution of strategy or historical results are not adequate to support a future expectation of risk reduction commensurate with the value of approved hedges.

The item being hedged, the contract guarantees, and the approved hedges are assumed to be accounted for at the average present value of the tail scenarios. The value of approved hedges for the standard scenario is the difference between an estimate of this "tail value" and the "fair value" of approved hedges. For this valuation to be consistent with the statement value of approved hedges, the statement value of approved hedges will need to be held at fair value with the immediate recognition of gains and losses. Accordingly, it is assumed that approved hedges are not subject to the IMR or the equity component of the AVR. Approved hedges need not satisfy SSAP No. 86. In particular, as gains and losses of approved hedges are recognized immediately, approved hedges need not satisfy the requirements for hedge accounting of fair value hedges.

It is the combination of hedges and liabilities that determine which scenarios are the tail scenarios. In particular, scenarios where the hedging is least effective are likely to be tail scenarios and liabilities that are a left tail risk could in combination with hedges become a right tail risk.

The cash flow projection for approved hedges that expire in less than one year from the valuation date should be based on holding the hedges to their expiration. For hedges with an expiration of more than one year, the value of hedges should be based on liquidation of the hedges one year from the valuation date. Where applicable, the liquidation value of hedges shall be consistent with Black-Scholes pricing, a risk free rate of DR, annual volatility implicit as of the valuation date in the statement value of the hedges under Black-Scholes pricing and a risk free rate of DR and the assumed returns in the Standard Scenario from the valuation date to the date of liquidation.

There is no credit in the Standard Scenario for dynamic hedging beyond the credit that results from hedges actually held on the valuation date. There is no credit for hedges actually held on the valuation date that are not approved hedges as the commitment to maintain the level of risk reduction derived from such hedges is not adequate.

3) Retention of Components. For the Standard Scenario Amounts on the statement date the company should have available to the Commissioner the following values:

a) For runs A and B as defined in I(C) by contract and in aggregate the amounts determined in III(B)(1) and III(B)(2).

b) For run A the aggregate amounts determined in III(E)(1) and III(E)(2).

Smoothing and Transition Rules

If a company is following a Clearly Defined Hedging Strategy (See ~~"Recommended Approach for Setting Risk Based Capital Requirements for Variable Annuities and Similar Products" presented by the American Academy of Actuaries' Life Capital Adequacy Subcommittee to the National Association of Insurance Commissioner's Capital Adequacy Task Force (June 2005)~~Section III)B)9) in Actuarial Guideline XLIII for the definition of this phrase) on some or all of its business, a decision should be made whether or not to smooth the ~~TAR.~~market risk-based capital calculated in step (4) of the five-step process used to determine the amount in Line (37). In all cases where 'cash value' is to be used, the values used must be computed on a consistent basis for each block of business at successive year-ends. For deferred annuities with a cash value option, direct writers will use the cash value. For deferred annuities with no cash value option, or for reinsurance assumed through a treaty other than coinsurance, use the policyholder account value of the underlying contract. For payout annuities, or other annuities with no account value or cash value, use the ~~amount as defined for variable payout annuities in the definition of Working Reserve.~~present value, at the valuation interest rate and the valuation mortality table specified for such a product by the Standard Valuation Law, of future income payments projected using a return based on the valuation interest rate less appropriate asset based charges. For any business reinsured under a coinsurance agreement that complies with all applicable reinsurance reserve credit "transfer of risk" requirements, the ceding company shall reduce the value in proportion to the business ceded while the assuming company shall use an amount consistent with the business assumed.

A company who reported an amount in Line (37) last year may choose to smooth the ~~Total Asset Requirement.~~market risk-based capital calculated in step (4) of the five-step process. A company is required to get approval from its domestic regulator prior to changing its decision about smoothing from the prior year. In addition, a company that has elected to smooth the risk-based capital is required to get approval from its domestic regulator prior to smoothing if it has experienced a material change in its Clearly Defined Hedging Strategy from the prior year. For this purpose, a company's Clearly Defined Hedging Strategy is considered to have experienced a material change if any of the items outlined in Sections III)B)9)a) to III)B)9)e) and in Section III)B)9)i) of Actuarial Guideline XLIII in the current year differs from that in the prior year.

To implement smoothing, use the following steps. If a company does not qualify to smooth or a decision has been made not to smooth, go to the step "Reduction for Reported Statutory Reserves."

Instructions – 2007 and Later

~~1. Determine the Total Asset Requirement as the greater of that produced by the "Recommended Approach for Setting Risk Based Capital Requirements for Variable Annuities and Similar Products" presented by the American Academy of Actuaries' Life Capital Adequacy Subcommittee to the National Association of Insurance Commissioner's Capital Adequacy Task Force (June 2005) or the value produced by the "Standard Scenario" as outlined above.~~

1. Determine the market risk-based capital amount calculated in step (4) of the five-step process used to determine the amount in Line (37).
2. Determine the aggregate cash value for the contracts covered by the Stochastic modeling requirements.
3. Determine the ratio of ~~TAR~~the market risk-based capital / CV for current year.
4. Determine the ~~Total Asset Requirement~~market risk-based capital as actually reported for the prior year Line (37).
5. Determine the aggregate cash value for the same contracts for the prior year-end.
6. Determine the ratio of ~~TAR~~the market risk-based capital / CV for prior year.
7. Determine a ratio as 0.4*(6) plus 0.6*(3) {40% prior year ratio and 60% current year ratio}.
8. Determine ~~TAR~~the market risk-based capital for current year as the product of (7) and (2) {adjust (2) to be actual 12/31 cash value}.

Reduction for Reported Statutory Reserves

The amount of the ~~TAR~~Total Asset Requirement (post-Federal Income Tax) determined using the instructions for the applicable year is reduced by the reserve, net of reinsurance, for the business subject to this instruction reported in the current statutory annual statement.

Allocation of Results to Line (35) and Line (37)

See step (9) located in the overview section at the beginning of the instructions for this line.

The total of all annual statement reserves representing exposure to C–3 risk on Line (36) should equal the following:

Exhibit 5, Column 2, Line 0199999
– Page 2, Column 3, Line 6
+ Exhibit 5, Column 2, Line 0299999
+ Exhibit 5, Column 2, Line 0399999
+ Exhibit 7, Column 1, Line 14
+ Separate Accounts Page 3, Column 3, Line 1 plus Line 2 after deducting (a) funds in unitized separate accounts with no underlying guaranteed minimum return and no unreinsured guaranteed living benefits; (b) non-indexed separate accounts that are not cash flow tested with guarantees less than 4 percent; (c) non-cash-flow-tested experience rated pension reserves/liabilities; and (d) guaranteed indexed separate accounts using a Class II investment strategy.
– Non policyholder reserves reported on Exhibit 7
+ Exhibit 5, Column 2, Line 0799997
+ Schedule S, Part 1, Section 1, Column 11
– Schedule S, Part 3, Section 1, Column 13