AMERICAN ACADEMY of ACTUARIES

Update to the March LHATF exposure of the Requirements for Principles-Based Reserves for Life Products from the American Academy of Actuaries' Life Reserves Work Group

Presented to the National Association of Insurance Commissioners' Life and Health Actuarial Task Force

San Francisco, CA – June 2007

The American Academy of Actuaries is a national organization formed in 1965 to bring together, in a single entity, actuaries of all specializations within the United States. A major purpose of the Academy is to act as a public information organization for the profession. Academy committees, task forces and work groups regularly prepare testimony and provide information to Congress and senior federal policy-makers, comment on proposed federal and state regulations, and work closely with the National Association of Insurance Commissioners and state officials on issues related to insurance, pensions and other forms of risk financing. The Academy establishes qualification standards for the actuarial profession in the United States and supports two independent boards. The Actuarial Standards Board promulgates standards of practice for the profession, and the Actuarial Board for Counseling and Discipline helps to ensure high standards of professional conduct are met. The Academy also supports the Joint Committee for the Code of Professional Conduct, which develops standards of conduct for the U.S. actuarial profession.

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The LRWG requests that LHATF expose for comment the attached new draft of the March LHATF exposure of the REQUIREMENTS FOR PRINCIPLES-BASED RESERVES FOR LIFE PRODUCTS at the June meeting. Most of the changes in the current draft deal with reorganizing and refining the material to make it flow better to make it more readable (as opposed to major changes in the proposal itself). Examples include:

1. The material in Subsection 4 (which describes the reserve methodology) has been restructured to move the description of the reserve calculations (for the Reported Reserve, Deterministic Reserve, and Stochastic Reserve) to the beginning of the section before a description of such things as valuation assumptions, the cash flow model, and economic scenarios. The prior version had the material in essentially the reverse order. We believe that starting with a description of the "end result" before describing the details makes the information flow better and more understandable for the reader.

2. All certification and documentation requirements have been removed and placed into a separate section of the Valuation Manual proposed by the Academy's Valuation Law and Manual Team.

3. Material that is more in the nature of guidance, (e.g., "should be considered," "may be permitted," etc.) has been removed from the document, and will be referred to the Actuarial Standards Board as possible material to include in the new ASOP(s) being developed for principles-based life reserves.

4. Where appropriate, wording was changed to the active voice from the passive voice.

5. The term "Asset Segment" has been replaced with the term "Model Segment". This is to avoid confusion between policies that are subject to PBA requirements (i.e., Model Segment) and groups of policies and related assets that follow a company's asset segmentation plan (that may include both PBA and non-PBA policies). Hence, policies/assets in a Model Segment will likely be a subset of policies/assets of an asset segment for a company.

6. The wording and organization of the document has been revised to improve clarity. This is particularly true for the section on requirements for reinsurance, and the description of the Stochastic Reserve, the stochastic modeling exclusion, and cash flow models.

<u>The major changes in content compared to the March draft include</u>:

1. While the importance of determining an appropriate assumption margin in the aggregate has been maintained, the proposal now requires that margins be determined separately for each assumption unless the company can demonstrate that an appropriate method was used to determine the level of Margin in aggregate for two or more assumptions.

2. The definition of the Reported Reserve has been changed from "the greater of the Deterministic Reserve and the Stochastic Reserve" to "the Stochastic Reserve but not less than the Deterministic Reserve, where the Reported Reserve is calculated as the Deterministic Reserve plus the excess, if any, of the Stochastic Reserve over the Deterministic Reserve." While the wording was changed, this has no impact on the level of the Reported Reserve.

3. Where appropriate, the word "actuary" was replaced by "company" to clarify that the responsibility for determining reserves lies with the company, not the actuary.

4. An approach to allocate aggregate reinsurance cash flows to each contract has been included.

5. The concept of a "material tail risk test" using prescribed scenarios has been added as a possible method to demonstrate that a group of polices do not need to be subject to the stochastic modeling requirement.

6. The concept of a "Provision for Model Understatement" has been retained, but the term has been eliminated. Also, the adjustment to provide for material risks that are not captured in the cash flow model is now reflected as part of the Stochastic Reserve, rather than as a final adjustment added to the Reported Reserve.

7. The concept of permitting a simplified approach to reflect the impact of non-guaranteed elements for policies without material tail risk has been added (although the details of such an approach are under development).

8. The Margin Ratio is no longer a required disclosure item.

SECTION [TBD]: REQUIREMENTS FOR PRINCIPLES-BASED RESERVES FOR LIFE PRODUCTS

Table of Contents

Subsection 1. Purpose

A. The purpose of these requirements is to define the minimum valuation standard under a principles-based approach for individual life insurance policies defined in [insert applicable section] of the Valuation Manual.

B. The method for calculating reserves defined in these requirements constitutes the Commissioner's Reserve Valuation Method (CRVM) for policies to which these requirements are applicable.

C. Reserves for supplemental benefits and riders on policies that are subject to these requirements are to be determined on a basis that is consistent with the principles and methodologies defined in these requirements.

Subsection 2. Guiding Principles

The methodology defined by these requirements is based on the following principles. These principles shall be considered in their entirety, and shall be followed when applying the methodology defined by these requirements and analyzing the resulting reserves.

A. Principle 1: The reserve is determined using a prospective valuation method that appropriately captures material risks underlying the policies being valued and the assets supporting those policies including the product benefits and guarantees, the impact of material tail risk, the revenue available to fund the risks, and the effect of any risk mitigation techniques. For the purpose of these requirements, risks underlying the policies being valued and the assets supporting those policies do not include risks that are of a general business nature that are not specific to the insurance contract, or risks that are not readily quantifiable.

Drafting Note: Risks to be excluded consist of, but are not limited to: counterparty default risk, fraud, risk of company mismanagement, asset concentration risk, asset diversity risk, sovereign risk, and regulatory risk (the latter two are examples of risks that are not readily quantifiable).

B. Principle 2: All risk factors explicitly or implicitly included in the company's risk assessment and evaluation processes shall be reflected in the methodology defined by these requirements unless the risk factor is not included in the scope of risks defined by Principle 1 above. Company risk assessment and evaluation processes include, but are not limited, to economic value valuations, internal capital allocation models, experience analysis, asset adequacy testing, GAAP valuation and pricing.

C. Principle 3: A deterministic approach may be sufficient for certain products, depending on the nature of the risks, and a stochastic approach may be necessary for other products.

D. Principle 4: For risks that the company has some degree of control over (e.g., mortality), assumptions should reflect a blend of company experience and prescribed assumptions (or methods for setting the assumptions), with the relative weightings of each dependent on the credibility of company experience. For

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(2) . The actuary provides the rationale and supporting documentation for excluding the risk factor. ¶

risks that the company has no control over (e.g., market interest rate movements), prescribed assumptions or methods for setting the assumption should be used.

E. Principle 5: Assumptions that are not stochastically modeled should incorporate appropriate Margins for uncertainty. The choice of an appropriate Margin for each assumption may result in a distorted measure of the total risk. Conceptually, the choice of Margins should be made so that the final result approximates what would be obtained for the Reported Reserve at the required CTE level if it were possible to calculate results over the joint distribution of all future outcomes. In applying this concept to the actual calculation of the Reported Reserve, the actuary shall be guided by evolving practice and expanding knowledge base in the measurement and management of risk.

F. Principle 6: Assumptions are not locked in at issue, but are updated as expectations of future experience and economic conditions change.

G. Principle 7: While a cash flow model attempts to include all real world risks relevant to the objective of the cash flow model and relationships among the risks, it will still contain limitations because it is only a model. A cash flow scenario model cannot completely quantify a company's exposure to risk. A model attempts to represent reality, but will always remain an approximation thereto and hence uncertainty in future experience is an important consideration when determining the Stochastic Reserve amount. Therefore:

(1) The limitations of the cash flow model shall be taken into consideration when setting assumptions, applying the methodology defined by these requirements and determining the appropriateness of the resulting reserve levels.

(2) The use of assumptions and risk management strategies should be appropriate to the business and not merely constructed to exploit "foreknowledge" of the components of the required methodology. Therefore, the use of assumptions, methods, models, risk management strategies (e.g., hedging), other derivative programs, structured investments or any other risk transfer arrangements (such as reinsurance) that serve to materially reduce the calculated statutory reserve without also reducing risk on scenarios similar to those used in the actual cash flow modeling are inconsistent with these principles.

Subsection 3. Definitions

A. Terms of Art. The following terms, when capitalized, shall have the indicated meanings for purposes of these requirements:

(1) "Accumulated Deficiency" means an amount measured as of the projection start date and as of the end of each projection year used in the calculation of the Scenario Reserve.

(2) "Anticipated Experience Assumption" means the expectation of future experience for a risk factor given available, relevant information pertaining to the assumption being estimated and set in such a manner that it is reasonable to expect that the actual value of the risk factor is as likely to be greater than the assumed value as less that the assumed value.

(3) "Clearly Defined Hedging Strategy" means a derivative program of the company established to hedge risks through the future purchase or sale or opening and closing of derivative instruments and that meets the requirements of a Clearly Defined Hedging Strategy as described in Subsection 4F(11).

(4) "Deterministic Reserve" means the amount determined on a seriatim basis using a single scenario and a set of prescribed and Prudent Estimate Assumptions.

(5) "Margin" means an amount applied to an Anticipated Experience Assumption in order to derive a Prudent Estimate Assumption to provide for estimation error and adverse deviation. The Margin should be directly related to the level of uncertainty in the risk factor for which the Prudent Estimate Assumption is made, whereby the greater the uncertainty, the larger the required Margin,

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Deleted: 4. . "Asset Segment" means a group of assets associated with a group of policies that are modeled together to determine the path of Net Asset Earned Rates. This grouping will generally follow the company's asset segmentation plan, investment strategies, or approach used to allocate investment income for statutory purposes. ¶
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with the Margin added or subtracted as needed to produce a larger Reported Reserve than would otherwise result without it.

(6) "Model Segment" means a group of policies and associated assets that are modeled together to determine the path of Net Asset Earned Rates. This grouping shall be consistent with the company's asset segmentation plan, investment strategies, or approach used to allocate investment income for statutory purposes.

(7) "Modified Deterministic Reserve" means the amount used as a replacement for the portion of the Stochastic Reserve for those policies which are subject to the stochastic modeling exclusion.

(8) "Net Asset Earned Rates" means the path of earned rates reflecting the net general account portfolio rate in each projection interval (net of appropriate default costs and investment expenses). This set of rates is one factor used to determine the amount of benefits, expenses and revenue that depend on the level of interest credited. These are also used as the discount rates.

(9) "Non-guaranteed Element (NGE) Spread" means the provision that a company uses to adjust actual experience to determine each non-guaranteed element. The NGE Spread can be positive or negative. For example, if a company credits interest to policyholders at a rate 1.20% lower than its net investment yield, then the NGE Spread is a negative 120 basis points.

(10) "Notional Gross Reserve" means the Reported Reserve that would have been held in the absence of any ceded reinsurance.

(11) "PBR Actuarial Report" means a document prepared by the company that summarizes all of the material decisions, assumptions, and methodologies used to support the calculation of the Reported Reserve, as well as the required documentation defined by these requirements and section [insert applicable section] of the Valuation Manual.

(12) "Per Policy Reserve" means an amount determined for each Policy that equals the greater of the cash surrender value and the Seriatim Reserve.

(13) "Policy" means a life insurance policy included in the scope of these requirements.

(14) "Proprietary Scenario Set" means a small number of paths of interest rate and equity performance that are not necessarily a representative sample of a larger set of stochastic paths, but are a sample developed by the company for the purpose of calculating the Stochastic Reserve on a conservative basis.

(15) "Prudent Estimate Assumption" means a deterministic assumption, used to represent a risk factor developed by applying a Margin to the Anticipated Experience Assumption for that risk factor.

(16) "Reinsurance Cash Flows" means the net cash or asset equivalents payable between the company and its reinsurance partners. Positive reinsurance cash flows shall represent amounts payable from the reinsurance partners to the company; negative reinsurance cash flows shall represent amounts payable from the company to its reinsurance partners.

(17) "Reinsurance Aggregate Cash Flows" means the difference between Reinsurance Cash Flows and Reinsurance Discrete Cash Flows, as defined below. Examples of Reinsurance Aggregate Cash Flows include experience refunds, or the incremental impact of an overall cap on Reinsurance Discrete Cash Flows that would otherwise be payable by the reinsurer.

(18) "Reinsurance Discrete Cash Flows" means Reinsurance Cash Flows determined by applying reinsurance terms to an individual covered policy, without reference to the circumstances and events of other policies. Examples of Reinsurance Discrete Cash Flows would be proportional sharing of one or more items of revenue or expense associated with an underlying reinsured policy, without attempting to take into account the potential impact of an overall dollar cap in the

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reinsurance agreement, for all covered policies, on the total revenues or expenses shared for policies in the covered group.

(19) "Reported Reserve" means the minimum reserve requirement as of the valuation date for the policies falling within the scope of this Section.

(20) "Scenario" means a single path of outcomes used in the cash flow model, such as a path of future interest rates, equity performance, and separate account fund performance. It could also include outcomes related to policyholder behavior (e.g., lapses) and company experience (e.g., mortality).

(21) "Scenario Reserve" means the amount determined in Subsection 4D(4)(a) for all policies on an aggregated basis for a given Scenario that is used as a step in the calculation of the Stochastic Reserve.

(22) "Seriatim Reserve" means the amount determined in Subsection 4C(3)(b) for a given Policy that is used as a step in the calculation of the Deterministic Reserve.

(23) "Stochastic Reserve" means the amount determined by applying a prescribed CTE level to the distribution of Scenario Reserves over a broad range of stochastically generated Scenarios and using Prudent Estimate Assumptions for all assumptions not stochastically modeled, plus the Modified Deterministic Reserve for those policies subject to the stochastic modeling exclusion.

B. The following general usage terms shall have the indicated meanings for the purposes of these requirements:

(1) "Cash flow model" means a model that projects asset and liability cash flows used to determine a path of Net Asset Earned Rates and the net cash flows and statement value of assets for the Deterministic Reserve and Stochastic Reserve.

(2) "Cash surrender value" means the amount available to the policyholder upon surrender of the Policy, prior to any outstanding policy indebtedness.

(3) "Conditional tail expectation (CTE)" means a statistical risk measure that is calculated as the average of all modeled outcomes (ranked from lowest to highest) at percentiles above the percentile corresponding to the CTE level. The CTE measure provides enhanced information about the tail of a distribution compared to that provided by the order statistics (percentiles). For example, CTE 65 averages all modeled outcomes at percentiles above the 65th percentile.

(4) "Credibility adjusted mortality table" means the set of mortality rates resulting from the credibility procedure described in Subsection 6.D.(4) to blend company experience mortality rates with the industry mortality table rates,

(5) "Derivative asset program" means a derivative program for which the derivative instrument cash flows are combined with asset cash flows in performing the reserve calculations.

(6) "Derivative instrument" means an option, cap, floor, warrant, swap, forward or future, or a combination of two or more such instruments. Each derivative instrument shall be viewed as part of a specific derivative program.

(7) "Derivative liability program" means a derivative program for which the derivative instrument cash flows are combined with liability cash flows in performing the reserve calculations.

(8) "Derivative program" means a program to buy or sell or open or close one or more derivative instruments to achieve a specific objective that has been defined or approved by the company's Board of Directors or a subcommittee thereof. Both hedging and non-hedging programs (e.g. for replication or income generation objectives) are included in this definition. Each derivative program shall either be treated as a derivative asset program or as a derivative liability program,

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where such treatment shall not change from one year to the next except under special circumstances disclosed by the company.

(9) "Discount rates" means the path of pre-tax interest rates used to discount cash flows for the Deterministic Reserve and the Accumulated Deficiencies for the Stochastic Reserve calculations, and equal the Net Asset Earned Rates.

(10) "Fraternal benefits" means payments made by a fraternal life insurance company for charitable purposes that are consistent with and/or support the fraternal purposes of the company.

(11) "Gross wealth ratio" means the cumulative equity index return for the indicated time period and percentile (e.g., 1.0 indicates that the index is at its original level).

(12) Industry mortality table means an NAIC approved mortality table (without valuation margins) used for credibility weighting purposes to blend with the company's experience mortality rates when the company's experience is less than 100% credible.

(13) "Material tail risk" arises when the Scenario Reserve for one or more Scenarios is significantly higher than the Scenario Reserves for the rest of the Scenarios.

(14) "Mortality segment" means a group of policies used as the basis for a company's mortality experience studies. Mortality segments may be divided into subsets of policies for credibility weighting purposes, based on such risk characteristics as gender, age, duration, and risk class.

(15) "Net investment earnings" means the amount used to determine the Net Asset Earned Rate for each projection interval as defined in Subsection 4I(2).

(16) "Non-guaranteed elements (NGE)" means debits or credits to a policyholder's account value, benefit, premiums, or consideration that may be adjusted at the discretion of an insurance company. For purpose of these requirements, non-guaranteed elements includes policyholder dividends for participating policies and participation rates and asset fee charges for equity indexed universal life policies.

(17) "Projection interval" means the time interval used in the cash flow model to project the cash flows amounts (e.g. monthly, quarterly, annually).

(18) "Projection period" means the period over which the cash flow model is run to produce the Stochastic and Deterministic Reserves.

(19) "Projection start date" means the date on which the projection period begins.

(20) "Projection year" means a 12-month period starting on the projection start date or an anniversary of the projection start date.

(21) "Qualified actuary" means an actuary who meets the qualifications in Section [ ] of the Valuation Manual to certify that the reserves for the policies subject to these requirements have been calculated following all applicable laws, regulations, actuarial guidelines and Actuarial Standards of Practice. The qualified actuary shall be referred to throughout these requirements as "the actuary."

(22) "Revenue sharing" means any arrangement or understanding by which an entity responsible for providing investment or other types of services makes payments to the company (or to one of its affiliates). Such payments are typically in exchange for administrative services provided by the company (or its affiliate), such as marketing, distribution and record keeping. Only payments that are attributable to charges or fees taken from the underlying variable funds or mutual funds supporting the policies that fall under the scope of these requirements shall be included in the definition of revenue sharing.

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(23) "Risk factor" means an aspect of future experience that is not fully predictable on the valuation date.

(24) "Starting assets" means the assets assigned to a Model Segment prior to the calculation of the Reported Reserve, and valued as of the projection start date.

(25) "Valuation date" means the date for which the Reported Reserve is to be valued as required by the Standard Valuation Law.

(26) "Valuation mortality table" means a NAIC-approved mortality table (with valuation margins) that is to be used as the Prudent Estimate Assumption for mortality.

Subsection 4. Reserve Methodology

A. Summary.

(1) The requirements defined in this Section apply the principles of risk management, asset adequacy analysis and stochastic modeling to establish the minimum reserve for the products within their scope, as defined in [insert applicable section of the Valuation Manual]. For some products, using only a deterministic, single scenario approach may be adequate to capture the risks. For products with material tail risk, a stochastic modeling approach is required (although an exception to this requirement may be made if certain conditions are met, as described in Subsection 4D(5) below). However, the stochastic modeling approach does not require that all assumptions be stochastically modeled.

(2) The Reported Reserve for policies falling within the scope of this Section shall equal an amount calculated using a stochastic method (Stochastic Reserve) but not less than an amount calculated using a seriatim, deterministic method (Deterministic Reserve), where the Reported Reserve is calculated as the Deterministic Reserve plus the excess, if any, of the Stochastic Reserve over the Deterministic Reserve.). Both the Deterministic Reserve and the Stochastic Reserve shall be determined by projecting net cash flows as described below.

(3) The company may calculate reserves on a date no earlier than six months before the valuation date, as long as an appropriate method is used to adjust the reserve so determined to the valuation date.

(4) The Deterministic Reserve is calculated using a seriatim approach based on a projection of net cash flows over a single scenario, using Prudent Estimate Assumptions for assumptions that are not prescribed.

(5) The Stochastic Reserve is calculated in the aggregate based on a projection of net cash flows over a broad range of stochastically generated Scenarios, using Prudent Estimate Assumptions for all assumptions that are not prescribed or are not stochastically modeled, and then applying a prescribed CTE level. A company may exclude certain policies from the stochastic modeling requirement if the policies meet the conditions described in Subsection 4D(6). A Modified Deterministic Reserve shall be calculated for policies excluded from the stochastic modeling requirement, and then added to the amount determined for those polices that are subject to the stochastic model requirement.

(6) Treatment of Supplemental Benefits. Reserves for supplemental benefits may be calculated separately when calculating the Deterministic Reserve and the Stochastic Reserve.

B. The Reported Reserve.

(1) The Reported Reserve shall equal the Stochastic Reserve as described in Subsection 4D, but not less than the Deterministic Reserve as described in Subsection 4C, where the Reported Reserve is calculated as the Deterministic Reserve plus the excess, if any, of the Stochastic Reserve over the Deterministic Reserve.

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(2) If there is separate account business, the Reported Reserve shall be allocated between the general and separate accounts as follows:

(a) The amount of reserve held in the general account shall be the difference, whether positive or negative, between the Reported Reserve and the reserve held in the separate account as of the valuation date.

(b) The amount of reserve held in the separate account shall be an amount not less than the sum of the account values held in the separate account for policies being valued as of the valuation date.

Drafting Note: More guidance is needed to establish the separate account reserve values as of the valuation date.

(3) The Reported Reserve for each contract shall equal the Per Policy Reserve as described in Subsection 4C(5) plus the Policy's portion of the excess, if any, of the Stochastic Reserve over the Deterministic Reserve.

Drafting Note: It is the intent of this section to allocate the Reported Reserve back to the individual Policy that gave rise to the reserve. The allocation to individual policies is needed, among other reasons, to allocate assets under the Life and Health Insurance Guaranty Association Model Act. Further work is needed to determine the method to allocate the excess of the Stochastic Reserve over the Deterministic Reserves to each Policy.

C. The Deterministic Reserve.

(1) The purpose of the Deterministic Reserve is to produce a reserve under a single scenario that meets the objectives of statutory reporting for policies without material tail risk.

(2) Use the following steps to calculate the Deterministic Reserve:

(a) Determine Prudent Estimate Assumptions as defined in Subsection 4E.

(b) Project cash flows for each Policy and calculate the path of Net Asset Earned Rates for each Model Segment as described in Subsections 4F, 4G, 4H, and 4I.

(c) Calculate the Seriatim Reserve for each Policy using the methodology described in Subsection 4C(3).

(d) Calculate the cash surrender value adjusted for reinsurance for each Policy using the methodology described in Subsection 4C(4)(d).

(f) Calculate the Per Policy Reserve for each Policy as described in Subsection 4C(5).

(g) The Deterministic Reserve equals the sum of the Per Policy Reserve for all policies.

(3) Calculation of the Seriatim Reserve for Each Policy.

(a) Use the cash flow model to project Items (i) through (viii) below for each Policy. Use the path of Net Asset Earned Rates as appropriate to determine benefits, expenses and revenue that depend on earned rates. For example, earned rates may be needed to determine the level of cash surrender benefits.

(i) The future benefits for each Policy, including but not limited to death and cash surrender benefits;

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(ii) The future expenses for each Policy, including but not limited to, commissions, general expenses, and premium taxes. Federal income taxes (and expenses paid to provide fraternal benefits in lieu of federal income taxes) are excluded;

(iii) The future gross premium payments for each Policy;

(iv) Other applicable revenue for each Policy, such as fees and revenue on assets invested in variable subaccounts, and any revenue sharing income;

(v) The future net cash flows to or from the general account from or to the separate account for each Policy;

(vi) The future net Reinsurance Discrete Cash Flows for each Policy;

(vii) The portion of the future net Reinsurance Aggregate Cash Flows allocable to each Policy, where such allocation shall be performed using the method described in Subsection 4C(4)(e); and

(viii) The portion of the aggregate derivative liability program net cash flows allocable to each Policy, where such allocation shall be performed by the company in a manner that is reasonable and practical.

(b) The Seriatim Reserve for each Policy is equal to:

(i) The present value of future benefits, determined by discounting the future benefits using the path of discount rates for the corresponding Model Segment; plus

(ii) The present value of future expenses, determined by discounting the future expenses using the path of discount rates for the corresponding Model Segment; plus

(iii) The policy account value invested in the separate account at the valuation date; minus

(iv) The present value of future gross premium payments and/or other applicable revenue, determined by discounting these future premiums and other revenue using the path of discount rates for the corresponding Model Segment; minus

(v) The present value of future net cash flows to or from the general account from or to the separate account, determined by discounting these future net cash flows using the path of discount rates for the corresponding Model Segment; minus

(vi) The present value of future net Reinsurance Discrete Cash Flows, determined by discounting these future net cash flows using the path of discount rates for the corresponding Model Segment; minus

(vii) The present value of the future net Reinsurance Aggregate Cash Flows allocated to such Policy as described in Subsection 4C(4)(e), determined by discounting these future net cash flows using the path of discount rates for the corresponding Model Segment; minus

(viii) The present value of the derivative liability program net cash flow (i.e., cash received minus cash paid) that is allocated to such Policy.

(4) Allocation of net Reinsurance Aggregate Cash Flows and adjustment of the cash surrender value floor for reinsurance.

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(a) For each policy *x* that the company has reinsured under a given reinsurance agreement, define the following values:

H(x) Is the value computed in item (vi) of Subsection 4C(3)(b), namely the present value of the Reinsurance Discrete Cash Flows under the agreement.

C(x) Is the policy's cash surrender value without taking into account the reinsurance.

D(x) Is the Reinsurance Discrete Cash Flow payable to the company by the reinsurer upon policy surrender.

P(x) Is the greater of H(x) and D(x).

(b) Define the following values as sums over all policies x covered by the agreement:

E = Σ D(x)

Q = Σ P(x)

(c) Define the following value that takes into account all features of the reinsurance agreement for the entire group of policies covered by the agreement:

F = the present value of all future net Reinsurance Cash Flows if all covered policies surrender.

(d) The cash surrender value adjusted for reinsurance for each policy x shall be equal to:

$$C(x) - \left(D(x) + (F - E) \times \frac{P(x)}{Q} \right)$$

(e) The portion of the future net Reinsurance Aggregate Cash Flows allocable to each Policy, shall be equal to P(x)/Q.

(f) If a policy is covered by more than one reinsurance agreement, then the company shall allocate to the policy the impacts of all such agreements upon Reinsurance Cash Flows and cash surrender value in a manner that is reasonable, practical and consistent with the approach described in items (a) through (e) above.

(g) For assumed reinsurance, the company shall calculate reserves consistent with the allocation procedures in (a) through (f) above.

Drafting Note: Additional guidance is needed to address multiple agreements applying to a policy, including policies that may be assumed and subsequently retroceded, and to address pure non-proportional agreements.

(5) The Per Policy Reserve for each Policy is equal to the greater of the Seriatim Reserve and the cash surrender value for the Policy adjusted for reinsurance as described in Subsection 4C(4)(d).

D. The Stochastic Reserve.

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(1) The purpose of the Stochastic Reserve is to produce a reserve over a broad range of stochastically generated Scenarios that meets the objective of statutory reporting for policies with material tail risk. It is meant to capture all material reserve risks within the scope of these requirements. The Stochastic Reserve may be determined assuming that all, or only some, of the risks underlying the policies are modeled stochastically, but at a minimum, it must assume that interest rate movements, equity movements, and separate account fund performance be modeled stochastically.

(2) Determine the Stochastic Reserve using the following steps:

(a) Determine policy grouping as defined in Subsection 4D(3) and the level of aggregation as defined in Subsection 4D(4);

(b) Determine which polices, if any, will be excluded from the stochastic modeling requirement as described in Subsection 4D(6), and calculate the Modified Deterministic Reserve for these policies;

(c) For policies not excluded from the stochastic modeling requirement:

(i) Determine Prudent Estimate Assumptions as defined in Subsection 4E;

(ii) Project cash flows and calculate the path of Net Asset Earned Rates and discount rates for each Model Segment for each Scenario as described in Subsections 4F, 4G, 4H, and 4I;

(iii) Calculate the Scenario Reserve for each Scenario using the methodology described in Subsection 4D(5);

(iv) Rank the Scenario Reserves from lowest to highest;

(v) Take the average of highest (100-CTE risk level) % of the Scenario Reserves, where the CTE risk level is <insert CTE risk level determined by the NAIC>.

(vi) If necessary, add an amount to subparagraph (v) to capture any material risk included in the scope of these requirements but not already reflected in subparagraph (v) using a method and supporting rationale determined by the company;

(d) The Stochastic Reserve equals the amount determined in subparagraph D2(c) plus the Modified Deterministic Reserve for all policies that are subject to the stochastic modeling exclusion.

Drafting Note: If Proprietary Scenarios Sets are used, the derivation of the amount determined in subparagraph D2(c) will be calculated using a different method defined by the NAIC rather than the process defined above. Also, further work is needed to define acceptable methods to determine the amount in subparagraph D2(c)(vi). It is expected that guidance will be given in practice notes and/or Actuarial Standards of Practice.

(3) Projections may be performed for each Policy in force on the date of valuation or by grouping policies into representative cells of model plans using all characteristics and criteria having a material impact on the size of the reserve. Grouping may not be done in a manner that intentionally understates the resulting Reported Reserve.

(4) Aggregation of policies across all Model Segments is permitted when calculating the Stochastic Reserve. Alternatively, the Stochastic Reserve may be calculated separately for subsets of the policies on a standalone basis following the methodology in Paragraph D(2) for each subset of policies. If this approach is followed, the comparison of the Deterministic Reserve to the Stochastic Reserve to determine the Reported Reserve shall be made after summing together the Stochastic Reserve on a standalone basis for each subset of policies.

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(5) Calculation of each Scenario Reserve.

(a) For each Scenario, calculate the Scenario Reserve as follows:

(i) For each Model Segment at the end of each projection year and at the projection start date calculate:

(I) the net accumulated asset amount as described in Paragraph (b) below (note that the net accumulated asset amount can be either positive or negative);

(II) the Accumulated Deficiency by taking the negative of the net accumulated asset amount for the Model Segment (note that the Accumulated Deficiency can be either positive or negative); and

(III) the discounted value of the Accumulated Deficiency that was calculated in Item (II). Calculate the discounted value using the path of discount rates for the Model Segment from the projection start date to the end of the respective projection year.

(ii) Determine the aggregate discounted value of the Accumulated Deficiency at the end of each projection year and at the projection start date by adding together the discounted values of the Accumulated Deficiency across all Model Segments at each duration.

(iii) Determine the Scenario Reserve as the sum of (a) the statement value of the starting assets across all Model Segments and (b) the maximum of the values calculated in Item (ii). Note that the amount described in (b) can be either positive or negative.

(b) For all Scenarios, the net accumulated asset amount for a Model Segment at the projection state date is the statement value of starting assets for that Model Segment. For each Scenario the net accumulated asset amount for a Model Segment at the end of each projection year is equal to the projected statement value of general and separate account assets for that Model Segment. The net accumulated asset amount can be either positive or negative.

(6) Stochastic Modeling Exclusion.

(a) The company may elect to exclude certain groups of policies from the stochastic modeling requirement upon reasonable demonstration that the Modified Deterministic Reserve for those policies will adequately provide for all material risks underlying such policies. The Modified Deterministic Reserve is described in Paragraph (6)(g) below.

(b) A complete demonstration supporting the exclusion must be provided in the PBR Actuarial Report in the initial exclusion year and at least once every three (3) calendar years subsequent to the initial exclusion. Any demonstration shall take into account whether changing conditions over the current and two (2) subsequent calendar years would be likely to change the conclusion to exclude the group of policies from the stochastic modeling requirement. If, as of the end of any calendar year, the company determines the Modified Deterministic Reserve for the group of policies no longer adequately provides for all material risks, the exclusion shall be discontinued and the policies shall be included in the stochastic modeling calculations.

(c) The demonstration may be based on analysis from a date that precedes the initial or subsequent exclusion period.

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(d) An acceptable demonstration shall

(i) Provide a reasonable assurance that if the Stochastic Reserve was calculated on a standalone basis for only those polices subject to the stochastic modeling exclusion (ignoring subparagraph (D)(7)(d) of Subsection 4), this amount would not be greater than the Modified Deterministic Reserve for such policies;

(ii) Provide sufficient supporting information that an experienced independent actuarial reviewer can assess the reasonableness of the conclusion to exclude the group of policies; and

(iii) Provide an effective evaluation of the residual risk exposure resulting from risk mitigation techniques such as derivative programs and reinsurance.

(e) Examples of acceptable methods to demonstrate that the exclusion requirements are met for a group of policies include, but are not limited to:

(i) Passing a test for material tail risk using a set of prescribed scenarios;

Drafting Note: Further work is needed to define the test and the prescribed scenarios.

(ii) Calculating the Stochastic Reserve on a standalone basis (ignoring subparagraph (D)(7)(d) of subsection 4) and comparing this amount to the Modified Deterministic Reserve;

(iii) Comparing the Modified Deterministic Reserve to a set of Scenario Reserves resulting from a sufficient number of adverse deterministic scenarios;

(iv) Comparing the Modified Deterministic Reserve to the Stochastic Reserve on a standalone basis (ignoring subparagraph (D)(7)(d) of Subsection 4), but using a representative sample of policies in the stochastic modeling calculations;

(v) Demonstrating that any risk characteristics that would otherwise cause the Stochastic Reserve on a standalone basis (ignoring subparagraph (D)(7)(d) of Subsection 4) to exceed the Modified Deterministic Reserve are not present or have been substantially eliminated through actions such as: a) hedging; b) investment strategy; c) reinsurance; or d) passing the risk on to the policyholder by contract provision.

(f) A group of policies for which there is one or more Clearly Defined Hedging Strategy(s) shall not be eligible for the stochastic modeling exclusion except:

(i) If each Clearly Defined Hedging Strategy serves as [insert a list of acceptable exceptions], or

(ii) If approved by the domiciliary commissioner.

In addition, future transactions associated with non-hedging derivative programs may not be reflected in the reserve calculation for groups of policies for which the stochastic modeling exclusion is elected.

Drafting Note: The list of acceptable exceptions could include a description of a cash flow hedge (e.g. an asset swap) and a hedge of interest credits on a group of equity indexed universal life policies that satisfies Actuarial Guideline XXXVI requirements for policies eligible for a book value reserving method.

(g) The Modified Deterministic Reserve for the policies to be excluded shall equal the sum of the amounts in (i) and (ii) below:

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(i) The greater of:

(I) An amount calculated in the aggregate for all policies using the method described in Subsection 4D(5), but using the valuation assumptions and cash flows used to determine the Deterministic Reserve.

(II) The sum of the Per Policy reserves for these polices.

(ii) An additional reserve amount that the company may decide to include for the purpose of the stochastic modeling exclusion.

E. Valuation Assumptions.

(1) The company shall determine Prudent Estimate Assumptions for each risk factor that is not prescribed or is not stochastically modeled. A Prudent Estimate Assumption is developed by applying a Margin to the Anticipated Experience Assumption for the risk factor. As the company determines is appropriate, the Prudent Estimate Assumptions shall vary from Scenario to Scenario within the Stochastic Reserve calculation. The Prudent Estimate Assumption for each risk factor shall be:

(a) Based on available, relevant and credible experience, including, but not limited to, the company's own experience studies and industry experience studies;

(b) Set to produce, together with all other valuation assumptions, an overall value for the Reported Reserve that is consistent with the objectives of statutory reserve reporting; and

(c) Reviewed periodically and updated as appropriate in accordance with these requirements

(2) Deterministic Reserve Assumptions.

(a) Use the prescribed Deterministic Reserve assumptions given in Subsection 9C and 9D for the following risk factors:

(i) Interest rate movements (i.e., Treasury interest rate curves);

(ii) Net spreads (net of default costs and investment expenses) over Treasuries for reinvestment assets;

(iii) Equity performance (i.e., S&P 500 returns and other returns of other equity investments).

(b) Use Prudent Estimate Assumptions for all other significant risk factors not listed in Subparagraph (a), taking into account the effects of the Scenario underlying the Deterministic Reserve, following the principles in Subparagraph E(1) above.

(3) Stochastic Reserve Assumptions.

(a) Model the following risk factors stochastically:

(i) Interest rate movements (i.e., Treasury interest rate curves)

(ii) Equity performance (i.e., S&P 500 returns and returns of other equity investments).

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(c) . Impact of Aggregation: The actuary shall disclose the estimated impact of aggregation, that is, the degree of risk offsets reflected in the Reported Reserve due to aggregating groups of policies when performing the Stochastic Reserve calculation. ¶
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(i) . The impact of aggregation on the Reported Reserve shall be determined by:¶
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(I) . Subdividing the total block of policies subject to these requirements into subgroups that reflect similar risk characteristics that will likely create risk offsets when aggregated together;¶
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(II) . Determining the Reported Reserve for each subgroup of policies; ¶
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(b) The company may elect to stochastically model other risk factors in addition to those listed in (a) above. If so modeled, the requirements in this Section for determining Prudent Estimate Assumptions for these risk factors would not apply.

(c) Use the assumptions prescribed in Subsection 9C for net spreads (net of default costs and investment expenses) over Treasuries for reinvestment assets.

(d) For all other significant risk factors use Prudent Estimate Assumptions that are consistent with those used for the Deterministic Reserve, modified for each Scenario following the principles in Subparagraph E(1) above to take account of the effects of the Scenario.

(4) Anticipated Experience Assumptions. The company shall use its own experience, if relevant and credible, to establish an Anticipated Experience Assumption for any risk factor. To the extent that company experience is not available or credible, the company may use industry experience or other data to establish the Anticipated Experience Assumption, making modifications as needed to reflect the circumstances of the company.

Drafting note: Additional guidance via an ASOP may be needed to clarify how the company determines the modifications that may be needed to reflect the circumstances of the company.

(5) Aggregate Margin. Consistent with Principle 5 in Subsection 2(E) Margins shall be determined in a manner that when taken in the aggregate, the impact on the Reported Reserve produces an appropriate and reasonable level of conservatism that is consistent with the objectives of statutory reporting.

Although Principle 5 discusses the concept of determining the level of margins in aggregate, it notes that the application of this concept shall be guided by evolving practice and expanding knowledge. From a practical standpoint, it may not always be possible to completely apply this concept to determine the level of Margins in the aggregate for all risk factors. Therefore, the company shall determine Margins for each risk factor independently (e.g., mortality, lapse, premium patterns, etc.) using the requirements and guidance given in Subsection 4 (B) (7) below, unless the company can demonstrate that an appropriate method was used to determine the level of Margin in aggregate for two or more risk factors.

Drafting Note: Further wording will be added to these requirements to address concerns on how the requirement above for the aggregate Margin will impact the determination of Margins on each risk factor. The American Academy of Actuaries' Life Reserves Work Group and other principles-based reserve groups need the NAIC's Life and Health Actuarial Task Force's input on how to define when the Reported Reserve produces an appropriate and reasonable level of conservatism consistent with the objectives of statutory reporting. By doing so, the regulator, PBA Review Actuary and actuary are then able to reach conclusions regarding the appropriateness of Margins on each risk factor.

(6) Margin for each Risk Factor. Include a Margin to provide for adverse deviations and estimation error in the Prudent Estimate Assumption for each risk factor that is not stochastically modeled. For Prescribed assumptions use the Margin specified in these requirements. Follow these principles when determining the Margin:

(a) The greater the uncertainty in the Anticipated Experience Assumption, the larger the required Margin, with the Margin added or subtracted as needed to produce a larger Reported Reserve than would otherwise result without it;

(b) Consider the sensitivity of the Reported Reserve to changes in the assumptions for the risk factor. Greater analysis and justification is needed to establish the Margin when the impact of alternate assumptions is material;

(c) Margins do not need to be established for risk factors when alternate assumptions do not have a material impact on the Reported Reserve;

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(d) Include analysis of the magnitude of fluctuations in historical experience of the company for the risk factor in determining the Margin;

(e) Reserve margins do not need to take into account the possibility of catastrophic events.

(f) Use a higher Margin when:

(i) Experience data are lacking or limited as compared to the case if abundant and relevant experience data are available;

(ii) The experience data is of lower quality, such as incomplete, internally inconsistent, or not current;

(iii) There is doubt about the reliability of the Anticipated Experience Assumption, such as, but not limited to recent changes in circumstances, or changes in company policies;

(iv) An approximation with less precision is being used; or

(v) The experience data are either not relevant or not credible.

F. Cash Flow Models.

(1) Both the Stochastic Reserve and Deterministic Reserve calculations require the use of cash flow models for each Model Segment. The cash flow models shall:

(a) Project the premiums, benefits, expenses and other applicable revenue items to be used in the reserve calculations; and

(b) Project the total asset and liability cash flows, net investment earnings, and invested asset balances for the purpose of determining the path of Net Asset Earned Rates for each Model Segment

.

(2) Model Structure.

(a) Assign each policy subject to these requirements to one and only one Model Segment. Use a separate cash flow model for each Model Segment.

(b) The company may use a grouped liability model to calculate the path of Net Asset Earned Rates for the Deterministic Reserve and then perform the Seriatim Reserve calculation for each Policy based on those Net Asset Earned Rates.

(c) The projection period shall be sufficiently long so that no materially greater value of the Reported Reserve would result from a longer projection period.

(d) Simplified approaches may be acceptable if they can be shown to produce reserves that are no less than those produced by a more robust cash flow model.

(e) Asset adequacy analysis principles and techniques as defined by applicable regulations, actuarial guidelines and Actuarial Standards of Practice may be relied on for many of the detailed aspects encountered in projecting cash flows.

(3) Starting and Projected Assets.

(a) For each Model Segment, set the value of assets at the projection start date equal to the estimated value of the Reported Reserve allocated to the policies in the Model Segment at the projection start date. However, in no event shall the aggregate value of starting assets

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be less than X%, of the final aggregate Reported Reserve. For an asset portfolio of the company that supports both policies that are subject and not subject to these requirements, determine an equitable method to apportion the total amount of assets between the subject and non-subject policies. Value the starting assets consistently with their annual statement values. The amount of such asset values for each Model Segment shall equal the sum of the following items, all as of the projection start date:

(i) All of the separate account assets supporting the policies; and

(ii) An amount of assets held in the general account equal to the estimated value of the Reported Reserve allocated to the policies in the Model Segment as of the projection start date less the amount in Item (i) above.

Drafting Note: The percentage X will be established by the NAIC

(b) For Model Segments in which a substantial portion of policyholder funds are allocated to separate accounts, the initial general account assets may be negative, resulting in a projected interest expense. General account assets chosen for use as described above shall be selected on a consistent basis from one reserve valuation to the next.

Drafting Note: Additional clarification may be needed on the approach to model future cash flows on general account assets with a negative balance.

(c) Include the relevant balance of any due, accrued, or unearned investment income in the Starting Assets.

(d) Reflect any derivative instruments currently held at the start of the projection that are part of a derivative program allocable to the Model Segment and include them with other general account assets under Subparagraph (a)(ii) above. To the extent the sum of the value of such derivative instruments and the value of assets in Subparagraph (a)(i) above is greater than the estimated value of the Reported Reserve as of the start of the projection, then Subparagraph (a)(ii) above may include enough negative general account assets or cash such that the sum of Subparagraph (a)(i) and (ii) above equals the estimated value of the Reported Reserve as of the start of the projection.

(e) Any positive IMR balance allocable to the business being valued may be included as a negative asset in the determination of the general account assets under Paragraph (a) above, thus allowing additional positive general account assets to be allocated to support the reserve calculation. Any negative IMR balance allocable to the business being valued, to the extent it offsets positive IMR balances elsewhere in the entity, must be included as a positive asset with the opposite effect as described above.

(f) Determine the projected values of starting assets in a manner consistent with their values at the start of the projection.

(4) General Description of Cash Flow Projections. For the Deterministic Reserve and for each Scenario for the Stochastic Reserve, project cash flows ignoring federal income taxes and reflecting the dynamics of the expected cash flows for the entire Model Segment. The effect of all material product features, both guaranteed and non-guaranteed shall be reflected. Cash flow projections include, but are not limited to:

(a) Actual gross premiums received from the policyholder as revenue in the cash flow projection. Project amounts charged to account values on general accounts business (such as cost of insurance and expense charges) in order to determine any effects on future policy benefits, but do not include these as revenue in the cash flow projections.

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(b) All material benefits paid to policyholders, including but not limited to, death claims, surrender benefits, and withdrawal benefits, reflecting the impact of all material guarantees.

(c) Net cash flows between the general account and separate account for variable products. (Cash flows going out from the general account to the separate account increase the reserve, and cash flows coming in to the general account from the separate account decrease the reserve.) Examples include allocation of net premiums to the separate account, policyholder-initiated transfers between fixed and variable investment options, transfers of separate account values to pay death or withdrawal benefits, and amounts charged to separate account values for cost of insurance, expense, etc.

(d) Insurance company expenses (including overhead expenses), commissions, fund expenses, contractual fees and charges, and taxes (excluding federal income taxes). Exclude expenses paid to provide fraternal benefits in lieu of federal income taxes.

(e) Revenue sharing income received by the company (net of applicable expenses) and other applicable revenue and fees associated with the policies. Adjustments shall be made to reflect the uncertainty of revenue sharing income that is not guaranteed.

(f) Net cash flows associated with any reinsurance on a basis consistent with the requirements herein.

(g) Cash flows from derivative liability and derivative asset programs, as described in Paragraph (10) below.

(h) Cash receipts or disbursements associated with investment income, realized capital gains and losses, principal repayments, appropriate asset default costs, investment expenses, asset prepayments, and asset sales.

Drafting Note: Since the projection of cash flows reflect premium mode directly, deferred premiums are zero under this approach.

(5) Cash Flows from Starting Assets. Select assets at the beginning of the projection from the company's actual assets backing the policies associated with each Model Segment using the method to determine the amount of starting assets described in Paragraph (3) above. Determine cash flows on general account starting assets for each projection interval as follows:

(a) Fixed income investments (e.g., public bonds, convertible bonds, preferred stocks, private placements, asset backed securities, commercial mortgage loans, residential mortgage loans, mortgage backed securities, and collateralized mortgage obligations) including derivative asset programs associated with these assets.

(i) Model gross investment income and principal repayments in accordance with the contractual provisions of each asset and in a manner consistent with each Scenario. Grouping of assets is allowed if the company can demonstrate that grouping does not result in materially lower reserves than would have been obtained using a seriatim approach.

(ii) Reflect appropriate asset default costs and investment expenses through a deduction to the gross investment income using Prudent Estimate Assumptions.

(iii) Model the proceeds arising from modeled asset sales and determine the portion representing any realized capital gains and losses.

Drafting Note: Additional requirements may be needed to determine projected market values on sales of starting assets using the prescribed net spreads in Subsection 9C. For instance, it would be inappropriate to use net-after-default spreads in the discounting of pre-default cash flows to determining market values.

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(iv) Reflect any uncertainty in the timing and amounts of asset cash flows related to the paths of interest rates, equity returns, or other economic values directly in the projection of asset cash flows.

(b) Equity investments (i.e., non-fixed income investments having substantial volatility of returns such as common stocks and real estate investments) including derivative programs associated with these assets.

(i) Determine the number of equity investment categories and the allocation of specific assets to each category (e.g. large cap stocks, international stocks, owned real estate, etc.) as described in Paragraph (8) below.

(ii) Project the gross investment return (including realized and unrealized capital gains) for each investment category in a manner that is consistent with the projected total return on the S&P 500 for the Scenario, reflecting any differences in the total return and risk between the S&P 500 and each equity investment category.

Drafting Note: This does not imply a strict functional relationship between the returns on the various investment categories and the return on the S&P 500, but it would generally be inappropriate to assume that an investment category consistently 'outperforms' (i.e. has lower risk, but achieves a higher expected return relative to the efficient frontier) the S&P 500.

(iii) For the Deterministic Reserve, Subsection 4G(1) prescribes the projected S&P 500 total return assumptions. For the Stochastic Reserve, Subsection 4G(2) prescribes the stochastic modeling of the projected Standard & Poor's (S&P) 500 return for each Scenario.

(iv) Model the timing of an asset sale in a manner that is consistent with the investment policy of the company for that type of asset. Reflect expenses through a deduction to the gross investment return using Prudent Estimate Assumptions.

(c) All other assets. Model Asset cash flows on other assets that are not described in Subparagraphs (a) and (b) using methods consistent with the methods described in Subparagraphs (a) and (b). This includes assets that are a hybrid of fixed income and equity investments.

(6) Cash Flows from Reinvestment Assets. Model any purchase of general account reinvestment assets with available net asset and liability cash flows in a manner that is representative of and consistent with the company's investment policy for each Model Segment. Determine the value in a manner consistent with the value of starting assets that have similar investment characteristics. Model any disinvestment in a manner consistent with the company's investment policy and that reflects the cost of borrowing. Determine asset cash flows from general account reinvestment assets for each projection interval based on the following:

(a) Fixed income investments including derivative asset programs associated with these assets.

(i) At purchase of each asset, determine an appropriate combination of market price and future contractual cash flow provisions for which the resulting purchase yield appropriately reflects the then-current Treasury interest rate curve plus the prescribed net spread requirements in Subsection 9C.

Drafting Note: The NAIC shall define the structure and levels of the prescribed net spreads over Treasuries. One recommendation being considered is that only the option-adjusted net spreads be prescribed. In such case, the company

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could add an appropriate option premium to the purchase yield as long as it also fully models the associated cash flow risks such as calls or prepayments.

(ii) After purchase, model the cash flows using the contractual provisions determined in (i) and following the same methodology as described in Subparagraph 5(a), except that no deduction for default costs and investment expenses is necessary since they are implicit in the prescribed net spreads..

(b). Equity investments. Model the cash flows following the same methodology as described in Subparagraph 5(b).

(c) All other assets. Model the cash flows following the same methodology as described in Subparagraph 5(c).

(7) Future Interest Maintenance Reserve (IMR) Amounts. Realized capital gains and losses arising from changes in interest rates may be reflected in the projection interval when they occur, or may be spread out over future projection intervals by establishing a new IMR amount.

Drafting Note: More discussion is needed as to how principles-based reserves will interact with IMR.

(8) Grouping of Equity Investments in the General Account.

(a) The portion of the general account starting assets that are equity investments (e.g., common stocks, real estate investments) may be grouped for modeling using an approach that establishes various equity investment categories with each investment category defined to reflect the different types of equity investments in the portfolio.

(b) Design a proxy for each equity investment category in order to develop the investment return paths. The development of the returns for the proxy equity investment categories is a fundamental step in the modeling and can have a significant effect on results. Map each investment category to an appropriately crafted proxy investment category normally expressed as a linear combination of recognized market indices (or sub-indices). The proxy construction process should include an analysis that establishes a firm relationship between the investment return on the proxy and the specific equity investment category.

(9) Grouping of Variable Funds and Subaccounts for Separate Accounts.

(a) Similar to the approach used for general account equity investments, the portion of the starting asset amount held in the separate account represented by the variable funds and the corresponding account values may be grouped for modeling using an approach that recognizes the investment guidelines and objectives of the funds. In assigning each variable fund and the variable subaccounts to a grouping for projection purposes, reflect the fundamental characteristics of the fund and assure that the parameters shall have the appropriate relationship to the required calibration points of the S&P 500. Reflect the characteristics of the efficient frontier (i.e., returns generally cannot be increased without assuming additional risk) in the grouping.

Drafting note: This approach is similar to what is required for the RBC C3 Phase 2 requirements.

(b) Similar to the approach used for general account equity investments, design an appropriate proxy for each variable subaccount in order to develop the investment return paths. The development of the returns for the proxy funds is a fundamental step in the modeling and can have a significant effect on results. Map each variable account to an appropriately crafted proxy fund normally expressed as a linear combination of recognized market indices (or sub-indices). The proxy construction process should include an analysis that establishes a firm relationship between the investment return proxy and the specific variable funds.

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(a) . The approximate market value and the method used to determine such approximate market value of such investments on the valuation date;¶
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(b) . The statutory value of such investments on the valuation date;¶
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(c) . The gross level "option-adjusted" spread (in basis points) over the Treasury yield curve at the valuation date implied in the approximate market values of such investments on that date. Further guidance on acceptable methods to compute this spread shall be published by the NAIC;¶
¶
(d) . The projected average estimated annual default costs (including how they were derived) expressed as a percent of the approximate average annual market value of such investments. Further guidance on acceptable methods to compute this spread shall be published by the NAIC; ¶
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(10) Modeling of Derivative Programs.

(a) When determining the Deterministic Reserve and the Stochastic Reserve include in the projections the appropriate costs and benefits of derivative instruments that are currently held by the company in support of the policies subject to these requirements. Except as provided in Subsection 4D(6)(f), also include the appropriate costs and benefits of anticipated future derivative instrument transactions associated with the execution of a Clearly Defined Hedging Strategy. Except as provided in Subsection 4D(6)(f), also include the appropriate costs and benefits of anticipated future derivative instrument transactions associated with non-hedging derivative programs (e.g. replication, income generation) undertaken as part of the investment strategy supporting the policies provided they are normally modeled as part of the company's risk assessment and evaluation processes.

Drafting Note: The prohibition in these minimum reserve requirements against projecting future hedging transactions other than those associated with a Clearly Defined Hedging Strategy is intended to address initial concerns expressed by various parties that reserves could be unduly reduced by reflection of programs whose future execution and performance may have greater uncertainty. The prohibition appears however to be in conflict with Principle 2 of these requirements. Companies may actually execute and reflect in their risk assessment and evaluation processes hedging strategies similar in many ways to clearly defined hedging strategies but lack sufficient clarity in one or more of the qualification criteria. By excluding the associated derivative instruments, the investment strategy that is modeled may also not reflect the investment strategy the company actually uses. Further, since the future hedging transactions may be a net cost to the company in some scenarios and a net benefit in other scenarios, the exclusion of such transactions can result in a Reported Reserve that is either lower or higher than it would have been if the transactions were not excluded. The direction of such impact on the reserves could also change from period to period as the actual and projected paths of economic conditions change. A more graded approach to recognition of non-qualifying hedging strategies may be more theoretically consistent with Principle 2. The requirements stated here for handling hedging strategies are essentially consistent with those included in the CTE methodology portion of the September 2006 exposure draft of Actuarial Guideline VACARVM for variable annuity reserving. It is recommended that, as greater experience is gained by actuaries and regulators with the principles-based approach, and as industry hedging programs mature, the various requirements of this Subsection be reviewed.

(b) For each derivative program that is modeled, reflect the company's established investment policy and procedures for that program, project expected program performance along each Scenario, and recognize all benefits, residual risks, and associated frictional costs. The residual risks include, but are not limited to: basis, gap, price, parameter estimation, and variation in assumptions (mortality, persistency, withdrawal, etc.). Frictional costs include, but are not limited to: transaction, margin (opportunity costs associated with margin requirements) and administration. For Clearly Defined Hedging Strategies, do not assume that residual risks and frictional costs have a value of zero unless the company can demonstrate in the PBR Actuarial Report that "zero" is an appropriate expectation.

(c) In circumstances where one or more material risk factors related to a derivative program is not fully captured within the cash flow model used to calculate the CTE amount in subparagraph 4D(2)(c)(v), reflect such risk factors by increasing the Stochastic Reserve as described in subparagraph 4D(2)(c)(vi).

Drafting Note: The previous two paragraphs address a variety of possible situations. Some hedging programs may truly have zero or minimal residual risk exposure, such as when the hedge program exactly replicates the liability being hedged. With dynamic hedging strategies, residual risks are typically expected; however, in some cases the cash flow model supporting the CTE calculation may be able to adequately reflect such risks through margins in program assumptions, adjustments to costs and benefits, etc. In other cases, reference to additional external models or analyses may be necessary where such results cannot be readily expressed in a format directly amenable to a CTE calculation. In such cases, the company will need to combine the results of such models by some method that is consistent with the objectives of these requirements. Emerging actuarial practice will be relied on to provide approaches for a range of situations that may be encountered.

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(d) These requirements do not supersede any statutes, laws or regulations of any state or jurisdiction related to the use of other derivative instruments for hedging purposes and should not be used in determining whether a company is permitted to use such instruments in any state or jurisdiction.

(11) Requirements of a Clearly Defined Hedging Strategy.

(a) In order to qualify as a Clearly Defined Hedging Strategy, the strategy must identify:

(i) The specific risks being hedged (e.g., cash flow, policy interest credits, delta, rho, vega, etc.);

(ii) The hedge objectives;

(iii) The risks not being hedged (e.g., variation from expected mortality, withdrawal, and other utilization or decrement rates assumed in the hedging strategy, etc.);

(iv) The financial instruments that will be used to hedge the risks;

(v) The hedge trading rules including the permitted tolerances from hedging objectives;

(vi) The metrics for measuring hedging effectiveness;

(vii) The criteria that will be used to measure effectiveness;

(viii) The frequency of measuring hedging effectiveness;

(ix) The conditions under which hedging will not take place;

(x) The person or persons responsible for implementing the hedging strategy;

(xi) Areas where basis, gap or assumption risk related to the hedging strategy have been identified; and

(xii) The circumstances under which hedging strategy will not be effective in hedging the risks.

(b) The hedge strategy may be dynamic, static or a combination thereof.

(c) Strategies involving the offsetting of the risks associated with other products outside of the scope of these requirements do not currently qualify as a Clearly Defined Hedging Strategy.

G. Description of Scenarios.

(1) The Deterministic Reserve Scenario.

(a) The cash flow projections for the Deterministic Reserve shall reflect a single path of U.S. Treasury yield curves, a single path of S&P 500 returns for general account assets, and a single set of paths of future fund performances (for separate account assets).

(b) For Treasuries, this path shall start with the current U.S. Treasury rate yield curve in effect at the valuation date and grade linearly over time to an ultimate static U.S. Treasury rate yield curve. The length of the grading period and the values of the ultimate yield curve are described in Subsection 9D(1).

Deleted: Examples where risk factors may not be sufficiently reflected in the cash flow model and would need to be reflected in the estimate of the Provision for Model Understatement are 1) a delta-only hedging strategy that does not adequately hedge the risks measured by the "Greeks" other than delta, and 2) financial indices underlying equity index derivative instruments that do not perform exactly like the separate account funds for variable universal life, and hence the use of derivative instruments has the potential for introducing basis risk. Note that some model simplifications may understate the impact of the program and overstate the residual risk, such as the assumption of rebalancing significantly less frequently than actual company practice. However the aggregate Provision for Model Understatement may not be negative.¶

Deleted: d) . The actuary is responsible for verifying that each derivative program which is modeled as a Clearly Defined Hedging Strategy complies with the requirements of subsection E(9) below. While clearly defined hedging strategies may change over time, any change in a Clearly Defined Hedging Strategy shall be documented and include an effective date of the change in strategy.¶
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(d) The method to determine the single path of S&P 500 returns and future fund performance is described in Subsection 9D(2).

Drafting Note: It is anticipated that specific parameters associated with the deterministic paths of these underlying indices will be updated from time to time.

(2) Stochastic Reserve Scenarios.

(a) The cash flow projections for the Stochastic Reserve shall reflect stochastically generated paths of U.S. Treasury yield curves, S&P 500 returns for general account equity assets, and future fund performance (for separate account assets). These stochastically generated paths shall be determined by:

(i) Prescribed stochastic generators and model parameters as described in Subsection 9E; or

(ii) Pre-packaged scenarios generated from stochastic generators and model parameters as described in Subsection 9E; or

(iii) Proprietary Scenario Sets developed by the company for the purpose of calculating the Stochastic Reserve for policies within the scope of these requirements; or

Drafting Note: The Proprietary Scenario Set and weights will be constructed from a universe of scenarios in manner that produces a result that is reasonably similar to the prescribed CTE amount. This is needed to provide small to intermediate size companies an alternative to modeling a large representative sample from an interest rate generator, or a large number of prepackaged scenarios. Additional guidance is needed regarding developing and justifying the use of appropriate Proprietary Scenario Sets.

(iv) Stochastic models developed by the company if prescribed calibration criteria standards are met, as described in Subsection 9E(3). Returns for equity performance and groupings of variable funds shall be determined on a stochastic basis such that the resulting distribution of the gross wealth ratios of the Scenarios meets the prescribed scenario calibration criteria. If the company chooses to use a fully integrated interest rate and equity return model, the equity return scenarios must satisfy the prescribed equity return calibration criteria and the interest rate scenarios must satisfy the prescribed interest rate calibration criteria, as described in Subsection 9E(5).

(b) The number of Scenarios for which Scenario Reserves are computed shall be considered to be sufficient if any resulting understatement in total reserves, as compared with that resulting from running a broader or more robust range of additional Scenarios, is not material.

Drafting Note: More guidance is needed regarding how to determine whether a sufficient number of Scenarios has been used.

H. Net Asset Earned Rates and Discount Rates.

(1) For calculating both the Deterministic Reserve and the Stochastic Reserve, use cash flow models to determine a path of Net Asset Earned Rates for each Model Segment and for each Scenario that reflects the net general account portfolio rate in each projection interval (i.e., monthly, quarterly, annually). Separate account returns and assets are not included in the calculation of Net Asset Earned Rates. This path of Net Asset Earned Rates will depend on, among other things:

(a) The projected net investment earnings from the portfolio of starting assets;

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Drafting Note: It is also anticipated that the NAIC will define a prescribed set of pre-packaged equity return scenarios similar to those used for C3P2 RBC requirements for variable annuities, as well as a prescribed set of pre-packaged interest rate scenarios. ¶
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Drafting Note: In addition, it is anticipated that these requirements will contain calibration criteria for equity return models that are similar to those used for the C3P2 RBC requirements for variable annuities, as well as calibration criteria for interest rate models. Calibration criteria for interest rate models are in the process of being developed, and may not be available at the time these requirements are ... [150]
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(b) The pattern of projected asset cash flows from the starting assets and subsequent reinvestment assets;

(c) The pattern of net liability cash flows; and

(d) The projected net investment earnings from reinvestment assets.

(2) Compute the net asset earned rate for each projection interval in a manner that is consistent with the timing of cash flows and length of the projection interval of the related cash flow model. The net asset earned rate equals the ratio of net investment earnings divided by invested assets. The following requirements apply to the calculation of this ratio:

(a) Net investment earnings shall include:

(i) investment income plus capital gains and losses (excluding capital gains and losses that are included in the IMR), minus appropriate default costs and investment expenses; and

(ii) income from derivative asset programs and amortization of the interest maintenance reserve on all applicable assets.

(b) Include policy loan interest (net of investment expenses) and policy loan balances in the ratio calculation.

(c) Determine invested assets in a manner that is consistent with the timing of cash flows within and the length of the projection interval of the cash flow model.

(d) Adjust invested assets to reflect the outstanding interest maintenance reserve. Reflect any negative IMR balance only to the extent that a positive IMR balance exists on policies outside the scope of these requirements.

(e) Include the annual statement value of derivative instruments or a reasonable approximation thereof in invested assets.

(f) Assure that all items reflected in the ratio are consistent with statutory asset valuation and accrual accounting, including reflection of due, accrued, or unearned investment income where appropriate.

Drafting Note: Subsection 4F(2)(d) permits the use of simplified approaches to calculate the Deterministic Reserve and Stochastic Reserve. This availability for simplification includes ways to determine appropriate Net Asset Earned Rates. Small to intermediate size companies, or any size company with smaller blocks of business, have options to create Net Asset Earned Rates under simplified approaches if they continue to meet the requirements of Subsection 4F(2)(d).

(3) The path of discount rates for each Model Segment shall be equal to the path of Net Asset Earned Rates.

I. Treatment of Non-Guaranteed Elements.

(1) Include Non-guaranteed elements in the models used to project future cash flows for both the Deterministic Reserve and the Stochastic Reserve. Where NGE are based on some aspect of experience, reflect future changes in the level of NGE in the cash flow models based on the experience assumed in each Scenario. The intent is to model the determination of NGE as the company would actually set them if experience unfolded in a manner consistent with the Scenario under consideration, but reflecting a Margin for uncertainty as described below.

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(2) As would be the case in actual practice, do not assume that the projected NGE change simultaneously with the change in projected experience, but only at the date following the recognition of a change in experience on which the company would normally implement a change.

(3) When determining the NGE assumption for each Scenario, take into consideration those factors that could cause the company to modify its current NGE scale and/or its current NGE spreads, such as existence of contract guarantees.

(4) Establish a Margin on the NGE assumption that increases the Reported Reserve compared to the Reported Reserve that would result from assuming that each non-guaranteed element equals the experience of the Scenario plus 100% of the current NGE Spread. Factors that must be considered when determining the Margin include:

(a) The company's ability to modify its non-guaranteed element scale and/or NGE Spreads, and the company's past NGE practices and current NGE policies;

(b) Impact on policyholder behavior of maintaining the current non-guaranteed element scale and/or NGE Spreads under the Scenario;

(c) Impact of the NGE assumption on the competitive position of the product under the Scenario;

(5) Report any liability for dividends declared but not yet paid that has been established according to statutory accounting principles as of the valuation date separately from the Reported Reserve. Accordingly, where such a separate liability is reported on the statutory balance sheet as of the valuation date, exclude any dividends that are included in the separate liability from the reserve cash flow projection.

Drafting note: The LRWG is considering a procedure whereby the treatment of non-guaranteed elements outlined above would apply only to policies that have material tail risk, as defined by a test. A simplified procedure is under development for policies that do not have material tail risk.

Subsection 5. Requirements for Reinsurance

A. General Considerations.

(1) The terms "reinsurance" and "reinsurer" in this Section include retrocession and retrocessionaire respectively.

(2) The assumptions that are used by a ceding company to determine the Reported Reserve and the Notional Gross Reserve for policies that are ceded to a reinsurer shall be appropriate for the ceding company and need not be the same as the assumptions used by the assuming company to determine the Reported Reserve for these policies. As a consequence, the credit for reinsurance ceded calculated by the ceding company may not necessarily be equal to the Reported Reserve set up by the assuming company.

(3) Assume that current laws and regulations in place as of the valuation date regarding credit for reinsurance will remain in effect.

(4) One party of a reinsurance transaction may rely on elements of the reserve calculations performed by the other party. However, appropriate adjustments to these calculations must be made, if necessary, to reflect the circumstances of the first party.

(5) Since any increase or decrease in actual risk should be reflected in principles-based reserves, it is possible for reinsurance to decrease (or increase) the aggregate risk faced by the ceding and

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assuming company with respect to the reinsured policies, and if so, the sum of the reserves held by the two companies should decrease (or increase). In any case, the sum of the reserves held by the ceding and assuming companies should not be less than the sum of the Deterministic Reserves held by the companies, and this sum will not, in turn, be less than the total cash surrender value for the reinsured policies.

B. Reinsurance Ceded.

(1) Cash Flows for Reinsurance Ceded. The cash flows used in calculating the Deterministic Reserve and Stochastic Reserves shall include the effect of cash flows received from or paid to reinsurers under the terms of such ceded reinsurance agreements that meet the requirements for accounting as reinsurance. Cash flows received from and paid to reinsurers under the terms of any reinsurance agreement that does not meet the requirements for accounting as reinsurance shall be taken into account by the ceding company only if doing so results in an increase in the Reported Reserve held for such policies.

(2) Assumptions for Reinsurance Ceded. The assumptions used to project cash flows to and from reinsurers shall be consistent with other assumptions used by the ceding company in calculating the Reported Reserve for the reinsured policies, and reflect the terms of the reinsurance agreement.

(3) Credit for Reinsurance. While it is recognized that the company's primary responsibility is to determine the appropriate liability net of reinsurance, a Notional Gross Reserve shall be calculated using methods and assumptions consistent with those used in calculating the Reported Reserve, but excluding the effect of reinsurance. The credit for reinsurance ceded shall be the excess, if any, of the Notional Gross Reserve over the Reported Reserve, for agreements that meet the requirements for accounting as reinsurance. The assumptions used to calculate the Notional Gross Reserve are to some degree hypothetical, since this is not the situation that actually occurs. For example, assets backing ceded reserves may be held by the reinsurer, not the ceding company. The ceding company should use assumptions that represent what company experience would be if the reinsurance were not entered into and the business was managed in a manner consistent with the manner the retained business is managed.

Drafting Note: Current laws and regulations regarding reserve credit restrict the terms of reinsurance agreements for which credit may be taken and prescribe conditions under which reinsurance credit may be taken with respect to unauthorized reinsurers. A review of these laws and regulations in light of principles-based reserving may be appropriate.

C. Reinsurance Assumed.

(1) Cash Flows for Reinsurance Assumed. The cash flows used in calculating the Deterministic Reserve and the Stochastic Reserve shall include the effect of cash flows received from and paid to ceding companies under the terms of assumed reinsurance agreements.

(2) Assumptions for Reinsurance Assumed. The assumptions used to estimate cash flows to or from the ceding company should reflect the reinsurer's (i.e., the assuming company's) experience for the business segment to which the reinsured policies belong, and should reflect the terms of the reinsurance agreement.

D. Reinsurance Assumptions

(1) Actions by Counterparty

(a) Knowledgeable counterparties. Assume that the counterparties to a reinsurance agreement are knowledgeable about the contingencies involved in the agreement and thus likely to exercise the terms of the agreement to their respective advantage, taking into

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account the context of the agreement in the entire economic relationship between the parties. Items that should be considered as non-guaranteed elements in reinsurance cash flows shall include but not be limited to:

(i) any limits placed upon either party's ability to exercise contractual changes in the treaty terms,

(ii) the usual and customary practices associated with such agreements,

(iii) past practices by the parties concerning the changing of terms in an economic environment similar to that projected,

(iv) the ability of the direct-writing company to modify the terms of its policies in response to changes in terms from its reinsurers, and

(v) actions that might be taken by a party if the counterparty is in financial difficulty.

(b). Consideration of ceding company actions. The assumptions that a ceding company uses to determine the Reported Reserve shall take into account any actions that the ceding company or assuming and, if different, the direct-writing company have taken or are likely to take that could affect the expected cash flows of the reinsured business. Examples of actions that could be taken by the direct-writing company include, but are not limited to (i) internal replacement programs or special underwriting programs, both of which could change expected mortality rates, and (ii) changes in non-guaranteed elements in the reinsured policies, which could affect mortality, policyholder behavior, and possibly expense and investment assumptions. Examples of actions that could be taken by the ceding company include, but are not limited to (i) the exercise of contractual options in a reinsurance agreement to influence the setting of non-guaranteed elements in the reinsured policies, and (ii) the ability to participate in claim decisions. For actions taken by the ceding company, or, where different, the direct-writing company, set assumptions in a manner consistent with Subsection 7. Note that these assumptions are in addition to, rather than in lieu of, assumptions as to the behavior of the underlying policyholders.

(c) Consideration of assuming company actions. The assumptions used to determine the Reported Reserve shall take into account any actions that the assuming company has taken or is likely to take that could affect the expected cash flows of the reinsured business. Examples of such actions include, but are not limited to, changes to the current scale of reinsurance premiums and changes to expense allowances. The ability of an assuming company to change such rates or allowances in a reinsurance agreement may be thought of as comparable to the ability of a direct-writing company to change non-guaranteed elements on policies. Thus, assumptions for such actions shall be set in a manner consistent with Subsection 4J. Appropriate assumptions for this option may depend on the scenario being tested (analogous to changes in Cost of Insurance Charges) and take into account all likely consequences of such actions, including any potential impact on the probability of recapture by the ceding company.

(d) Treatment of ceding company recapture options. Both the ceding company and the assuming company shall take into account any ceding company option to recapture reinsured business, setting assumptions in a manner consistent with subparagraph (b) above. The right of a ceding company to recapture is comparable to policyholder surrender options for a direct-writing company. Thus, appropriate assumptions for this option may depend on the scenario being tested (analogous to interest-sensitive lapses). When a recapture is assumed, take all associated cash flows into account, including the payment or receipt of any recapture fees or other termination settlements.

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(e) Treatment of assuming company termination options. Both the ceding company and assuming company shall take into account an assuming company's right to terminate in-force reinsurance business, setting assumptions in a manner consistent with subparagraph (c) above. In many cases, the assuming company's right to terminate is limited to cases of non-payment of amounts due by the ceding company or other specific, limited circumstances. In such cases, this termination option would be expected to have insignificant value to either party and may be ignored in the calculations. However, if a reinsurance agreement contains other termination provisions with material impact, the company should set appropriate assumptions for these provisions, perhaps dependent on the particular scenario being tested.

2. Modeling when assets are not in the possession of the company

(a) Assets held by another party. If under the terms of the reinsurance agreement, some of the assets supporting the reserve are held by the reinsurer or by another party, the company must determine whether to model such assets in order to determine projected cash flows. In some situations, it may not be necessary to model the assets held by the other party. An example would be modeling by a reinsurer of a reinsurance agreement containing provisions, such as experience refund provisions, under which the cash flows and effective investment return to the reinsurer are the same under all Scenarios. Consider the following to determine if modeling of the assets is necessary:

(i) The degree of linkage between the portfolio performance, and the calculation of the Modco interest and Modco reserve, and

(ii) The sensitivity of the valuation result to the asset portfolio performance.

If the company concludes that modeling is unnecessary, the company should document the testing and logic leading to that conclusion.

If the company concludes that modeling is necessary, follow the requirements in Subsection 4C(4) and Subsection 9, taking into account the following:

(i) The investment strategy of the company holding the assets, as codified in the reinsurance agreement or otherwise based on current documentation provided by that company.

(ii) Actions that may be taken by either party that would affect the net reinsurance cash flows (e.g. a conscious decision to alter the investment strategy within the guidelines).

Drafting Note: Special considerations for modified coinsurance. Although the modified coinsurance (Modco) reserve is called a reserve, it is substantively different from other reserves. It is a fixed liability from the ceding company to the reinsurer in an exact amount, rather than an estimate of a future obligation. The Modco reserve is analogous to a deposit. This concept is clearer in the economically identical situation of funds withheld. Therefore, the value of the modified coinsurance reserve will generally not have to be determined by modeling. However, the projected modified coinsurance interest may have to be modeled. In many cases, the modified coinsurance interest is determined by the investment earnings of an underlying asset portfolio, which in some cases will be a segregated asset portfolio or in others the ceding company's general account. Some agreements may use a rate not tied to a specific portfolio.

3. Credit Risk

(a) Ceded Reinsurance. If a reinsurer is known to have a financial impairment, the company shall determine a margin for default by the reinsurer. In cases without a known financial impairment, no margin for default is required.

(b) Assumed Reinsurance. If a ceding company is known to have a financial impairment, the reinsurer shall determine whether a Margin for default by the ceding company is necessary. If the reinsurer may terminate the reinsurance upon non-payment by the ceding company, the Margin may be reduced or eliminated. In cases without a known

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financial impairment, no margin for default is required.

(c) In setting Margins to reflect potential uncertainty regarding the receipt of cash flows from a counterparty, take into account the ratings, risk-based capital ratio or other available information bearing on the probability of default by the counterparty, together with the impact on cash flows. In determining the impact on cash flows, take into account any security or other factor limiting such impact.

Subsection 6. Requirements for Setting Mortality Assumptions

A. Background.

The valuation mortality table will be the current Commissioners' Standard (CS) Mortality Table for the class of business being valued based on company experience, adjusted for the credibility of this experience as described below and further adjusted with a margin. The company shall use the approach described in this Subsection to determine the valuation mortality table used as the prudent estimate mortality assumption for the Deterministic Reserve and the Stochastic Reserve.

B. Overview.

(1) A mortality segment is defined as a grouping of policies used to determine experience mortality rates. The company may define one mortality segment to include all policies subject to these requirements, or may define multiple mortality segments for subsets of policies.

(2) Determine the valuation mortality table for each mortality segment by applying steps (a) to (e) below.

(a) Using the guidance and requirements specified in Subsection 6.C. below, develop experience mortality rates based on either a company's own available experience or other relevant experience.

(b) Blend the experience mortality rates with an industry mortality table as provided in Subsection 6.D. below to reflect their level of credibility of the mortality experience. Mortality improvement may be reflected up to, but not beyond, the projection start date.

Drafting Note: There are two types of tables which the NAIC will need to approve for use. The first are CS tables. These are Valuation Tables that include valuation margins. The second are industry mortality tables that reflect experience prior to the addition of Margins. Industry mortality tables are used to select the valuation mortality table to be used.

(c) Adjust the credibility adjusted mortality rates in step (b) to include a Margin as provided in Subsection 6.E.

(d) Adjust the rates produced in step (c) for impaired lives or to reflect any reasonable expectation that policyholder behavior will lead to mortality results which vary from underlying mortality table as determined in step (c). An example of the latter would be increased mortality due to high lapses following a significant increase in policyholder costs. Subsection 7F below provides guidance and requirements for making these adjustments.

Drafting Note: Steps c and d assume that the CS tables are constructed by applying an appropriate margin formula to the weighted average of a set of industry mortality tables, with each industry mortality table reflecting the mortality of a specified risk class. If the procedure ultimately adopted for the construction of the CS table is different than assumed, steps (c) and (d) should be appropriately revised.

(e) Choose the valuation table that produces an aggregate Seriatim Reserve closest to, but not less than, the aggregate Seriatim Reserve calculated using the adjusted experience mortality rates produced in step d, as provided in Subsection 6.G.

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C. Determination of Experience Mortality Rates.

(1) Actual Experience Data.

(a) Determine experience mortality rates using the company's actual experience data directly applicable to the business segment (i.e., the company's actual data) if it is available. If the company's directly applicable experience data is not available, then the company may use data other than directly applicable experience as described in paragraph (2) below. Finally, if there is no data, the company shall use the applicable industry mortality table, as defined in subsection 6.D(2) below.

(b) The company shall measure and update actual directly applicable experience at least every 3 years. Whenever experience data are updated, the company shall reflect changes in experience promptly if the changes are significant, and are expected to continue into the future.

(c) The following shall apply when using the company's directly applicable experience:

(i) Actual experience data may be determined by individual risk class or aggregated for multiple risk classes. The latter would typically result in higher overall credibility for the study. The industry mortality table rates must be consistent with the choice of aggregation. Once a method is chosen the company may change the methodology (or parameters used in the methodology) for aggregating experience, but must disclose the rationale and the impact on reserve levels of such change.

(ii) The company may group experience by issue age group, gender, risk class and policy duration. Grouping by issue age groups can be no broader than 10-year age groupings. Grouping by policy duration can be no broader than 5 years.

Drafting Notes: The purpose is to use a company's experience when significant, yet require the use of industry experience where little or no experience exists.

Drafting Note: Further guidance may be given in an ASOP regarding how to determine these groupings, subject to approval by ASB.

(2) Using other than Directly Applicable Actual Experience.

A company may use experience data from another mortality segment instead of the actual experience directly applicable to the mortality segment (whether or not the mortality segment is from the company), if the mortality segments have similar characteristics such that mortality experience would be expected to be similar for the two segments. Only rates developed through direct measurement of mortality data may be used; rates developed from extrapolation of other mortality data or studies may not be used. For example, if mortality data have been developed with extrapolated rates beyond a certain age, this portion of the data may not be used in developing the experience mortality rates.

(3) In the situation were little or no experience exists, set the experience mortality rates equal to the industry mortality table rates appropriate for the underlying business reflecting the underwriting associated with the risk classes.

(4) The company may apply the effects of risk selection and underwriting practices not yet supported in the underlying experience to the mortality segment when supported by relevant published medical and clinical studies if:

(a) the adjustments only reflect the incremental change and effectiveness of new risk selection practices to past experience from prior risk selection techniques and shall not ignore past experience in setting the assumption;

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(b) the actuary has reviewed the underlying techniques used to develop the study and concluded that the study is appropriate for use. The actuary must disclose the rationale used to reach this conclusion;

(c) the rationale and support for the use of the study and for the adjustment are disclosed in the PBR Actuarial Report; and

(d) the adjustment has been approved for use by the commissioner.

Drafting Note: It is anticipated that such adjustments to experience will rarely be made. Since these adjustments are expected to be rare, and since it is difficult to anticipate the nature of these adjustments, the commissioner shall determine the level of documentation or analysis that would be required to approve such adjustments. The NAIC may want to consider whether approval by a centralized examination office would be preferable to approval by the commissioner.

D. Adjustment for Credibility.

(1) Adjust the experience mortality rates determined in Subsection 6.C. by blending the experience mortality rates with an industry mortality table based on the full or partial credibility of the experience data used to determine those rates. These rates will be referred to as credibility adjusted experience mortality rates.

(2) The industry mortality table to be used for credibility weighting shall be the 2001 Valuation Basic Table (or other tables adopted by the NAIC for this purpose) adjusted in a manner approved for use by the NAIC to reflect the most recent Society of Actuaries intercompany study approved for use by the NAIC, adjusted for mortality improvement from the effective date of the industry mortality table to the experience weighted average date underlying the data used to develop the experience mortality rates.

Drafting Note: It is anticipated that the NAIC will adopt sets of rates reflecting a range of underwriting criteria associated with the industry mortality table. Also, this approach requires the NAIC to periodically approve a set of mortality improvement factors. Currently, there are no such approved factors.

(3) The method used to identify the Industry Mortality Table rates for credibility weighting shall be prescribed.

Drafting Note: The Joint American Academy of Actuaries/Society of Actuaries preferred mortality group is developing a methodology which, once finalized will be incorporated into these requirements to facilitate the selection of the appropriate Industry Mortality Table rates. It is anticipated that for a given industry mortality table there will be sets of rates reflecting a range of underwriting criteria as well as the methodology for selection of the industry mortality table rates. It is anticipated that industry mortality table rates may be selected for each risk class, or at the option of the actuary, industry mortality table rates may be selected for individual or combinations or risk classes. The latter approach would typically be used when the company experience data has been compiled by combined risk class.

(4) Credibility Procedure.

(a) The credibility procedure shall meet the following requirements:

(i) Full credibility measure shall be established which provides in the aggregate an X% probability of being correct within a Y% margin of error.

(ii) The actuarial profession recognizes the credibility methodology as acceptable practice in actuarial literature subject to professional peer review, such as actuarial publications, other scientific journals, textbooks, and Actuarial Standards of Practice.

(iii) The methodology addresses application of partial credibility.

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Drafting Note: The NAIC must specify the factors X and Y above for the probability of being correct and the margin of error respectively. The NAIC may wish to require state of domicile approval for any change in credibility method.

(b) After blending the experience data with the industry mortality table for the portion of the mortality segment where data exist, grade the resulting mortality rates into the industry mortality table rates over an appropriate period of time. It is permissible to grade beyond the portion of the mortality segment where data exist. The grading must be reasonable and consistent with accepted actuarial practice. Document any grading adjustments made. When making such grading adjustments, take into account the level of partial credibility, the trend in actual to expected ratios, the shape and level of the resulting mortality rates, and the reasons for differences in mortality results relative to industry mortality rates due to underwriting, market, selection and other factors

Drafting Note: Further discussion and analysis is needed to determine whether the grading period should be prescribed using a straight line grade-in over "n" years rather than being determined by the company.

(c) The company may separate the credibility adjusted mortality rates by risk class to develop separate mortality rates for each risk class. If the company discloses the underwriting differential used to develop rates for each class and conserves the total number of deaths in the aggregate. For practical purposes and for consistency across companies, lapses and surrenders shall be ignored in this process.

Drafting Note: Further guidance on how to split the Credibility Adjusted Mortality Table rates by risk class is needed.

(d) Further adjust the credibility-adjusted mortality rates for mortality improvement up to the projection start date based on applicable published industry-wide experience when such adjustment increases the Reported Reserve. An adjustment may be made for mortality improvement up to the projection start date based on applicable published industry-wide experience when such adjustment decreases the Reported Reserve. The adjustment made shall be for the period from the experience weighted average date underlying the company experience used in the credibility process to the projection start date.

(e) Any adjustment for mortality improvement shall not be allowed beyond the projection start date unless such an adjustment would serve to increase the resulting Reported Reserve.

(f) The set of rates after applying the adjustments in Subsection 6.D.(4) (b), (c) and (d) above is defined as the credibility adjusted mortality table.

E. Margins.

(1) Add a Margin to the credibility adjusted mortality table rates. Express the Margin as a constant divided by the curtate expectation of life, where the curtate expectation of the life is calculated without the expectation of future mortality improvements. This constant may vary by business segment or policy type due to differences in benefits or policyholder behavior.

Drafting Note: The choice of only allowing a single constant is to provide one framework to facilitate the review of the Margin by regulators and peer reviewers.

(2) To develop the Margin, measure the sensitivity of the Reported Reserve to changes in the underlying mortality assumption.

(3) The method and factors used to determine the Margin shall be consistently applied on each valuation date. Any changes in the method or factors used shall be documented, including the reason for the change.

Deleted: (iv) . The actuary must also define subcategories of policies within each mortality segment for credibility weighting purposes, based on criteria such as gender, age, duration, and risk class. Each subcategory can be no broader than 10-year age groupings. Grouping by policy duration can be no broader than 5 years. ¶
¶
(b) . The actuary shall disclose the credibility methodology used and include in this disclosure how partial credibility was applied to subcategories and discuss the appropriateness of the credibility procedure. To the extent the actuary has changed the credibility methodology (or procedures and values for determining partial credibility) from the prior valuation date, the actuary must disclose the rationale for the change and quantify the impact on the Reported Reserve of the change. ¶
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(4) Use a higher Margin to the experience mortality rates in situations of greater uncertainty including but not limited to the following:

(a) The credibility of the company's experience studies is low.

(b) The underwriting or risk selection risk criterion have changed.

(c) There is a lack of homogeneity of in the underlying data being used.

(d) Unfavorable environmental or health developments are unfolding and are expected to have a material and sustained impact on the insured population.

(e) Anti-selection occurs by the sales force or secondary markets.

(f) Constraints in the modeling of the liability limit an effective reflection of mortality risk.

F. Additional Adjustment to the Credibility Adjusted Mortality Table Rates.

(1) Adjust the credibility adjusted mortality table rates to reflect the mortality differences associated with impaired lives or mortality differences due to policyholder behavior not reflected in the underlying experience. These include adjustments for policy provisions or policyholder behavior that suggest mortality anti-selection, for example, term conversions, table shave programs, level of premiums and changes in premium patterns, exchange programs, and high withdrawal rates to the extent not reflected in the underlying experience. These adjustments will typically be made within the projection since the adjustments may vary by Scenario.

(2) Such adjustments to the credibility adjusted mortality table rates may only be made when the adjustment increases the Reported Reserve.

G. Valuation Mortality Assumption.

(1) The valuation mortality table shall be the most recent Commissioner's Standard Table.

Drafting Note: For Principles-Based reserves, the valuation mortality rates should closely reflect company experience to the extent credible. Given the large number of risk classes available on current life insurance products and qualification and underwriting requirements that vary significantly by company, having sub-tables of a Commissioner's Standard Table which provide for varying company experience is preferred. Only a single sub-table will be used for all issue ages and durations within a defined block of business. However, different sub-tables may be used for each block of business such as gender, risk class, plan type.

(2) Use the valuation mortality rates (or sub-table rates) which result in the sum of the Seriatim Reserves being closest to, but not less than the sum of the Seriatim Reserves using the credibility adjusted mortality rates determined in Subsection F with all other assumptions the same. The determination of the valuation mortality table rates (or sub-table rates) to be used shall be updated at least once every three years or more often if significant changes to the credibility adjusted mortality table were made.

H. Anticipated Experience Mortality Assumption for the Purpose of Margin Disclosure Amount.

Section (insert number) of the Valuation Manual requires the disclosure of Margins for each material risk factor and in the aggregate. For purposes of these disclosures the Anticipated Experience Assumption for mortality will be set equal to the credibility adjusted mortality table rates determined in Subsection 7F above without the Margins determined in Subsection 7E above and reflecting future mortality trends beyond the projection start date not to exceed 1% improvement per year through age 60, grading linearly to zero by attained age 85.

Drafting Note: The 1% prescribed cap on mortality improvement to determine the Margin disclosure amount needs further discussion and analysis.

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Subsection 7. Requirements for Setting Policyholder Behavior Assumptions

A. Anticipated Experience Policyholder Behavior Assumptions for policyholder behavior risk factors include, but are not limited to, assumptions for premium payment patterns, premium persistency, surrenders, withdrawals, allocations between available investment and crediting options, benefit utilization, and other option elections. These assumptions:

(1) shall reflect expectations regarding variations in anticipated policyholder behavior relative to such characteristics such as gender, attained age, issue age, policy duration, time to maturity, tax status, level of account and cash value, surrender charges, transaction fees or other policy charges; distribution channel, product features and whether the policyholder and insured are the same person or not;

(2) shall be appropriate for the block of business being valued, giving due consideration to other assumptions used in conjunction with the cash flow model and to the Scenarios whose results are likely to contribute to the Reported Reserve;

(3) shall be based on actual experience data directly applicable to the block of business being valued (i.e., direct data) if such are available. In the absence of directly applicable data, the company should next use available data from any other block of business that is similar to the block of business being valued, whether or not that block of business is directly written by the company. If data from a similar block of business is used, the Anticipated Experience Assumption shall be adjusted to reflect material differences between the business being valued and the similar block of business. The company shall document any significant similarities or differences between the two blocks of business, the data quality of the experience data used, and the adjustments applied;

(4) shall reflect the outcomes and events exhibited by historical experience only to the extent such experience is relevant to the risk being modeled;

(5) may ignore certain items that might otherwise be explicitly modeled if the inclusion of such items would not have a significant effect on the results; and

(6) shall reflect the likelihood that policyholder behavior will be affected by any significant increase in the value of a product option, such as term conversion privileges or policy loans.

B. Lack of Relevant and/or Credible Data.

(1) When relevant and/or fully credible data do not exist, determine what action will maximize the financial value of the Policy from the point of view of the policyholder (i.e. lapse the Policy, persist, take out a loan, etc.).

(2) Estimate the percentage of policyholders who will take that action. Assume some policyholders will act to maximize the financial value of the Policy and therefore, assume this percentage is greater than zero. Conversely, some policyholders may place value on factors other than maximizing the Policy's financial value (for example, convenience of level premiums, personal budget choices, etc.) and since the Policy's full economic value to the policyholder depends, in some cases, on factors not available for analysis (such as the health of the insured and the financial circumstances of the beneficiaries and policyholder, including their tax status) it is permissible to assume that the percentage is less than 100.

Drafting Note: When there is no relevant, credible data available, the NAIC may want to prescribe an assumption for this percentage.

(3) Test the sensitivity of the Reported Reserve to changes in policyholder behavior assumptions to understand the materiality of making alternate assumptions.

C. Dynamic Assumptions.

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(a) Use a dynamic model or other scenario-dependent formulation for anticipated policyholder behavior unless the behavior can be appropriately represented by static assumptions.

(b) Risk factors that are modeled dynamically should encompass the reasonable range of future expected behavior consistent with the economic scenarios and other variables in the model.

(c) In the absence of evidence to the contrary, it is not necessary to model extreme or "catastrophic" forms of behavior.

D. Margins for Policyholder Behavior Assumptions.

(1) Sensitivity testing of assumptions is required to establish the Margin. These tests should include, but are not limited to, premium payment patterns, premium persistency, surrenders, partial withdrawals, allocations between available investment and crediting options, benefit utilization, and other option elections.

(2) Unless there is clear evidence to the contrary, Margins for policyholder behavior assumptions shall increase over time as it is prudent to assume that the risk of policyholders taking actions that increase the company's liability will increase over time.

(3) Margins shall reflect the data uncertainty associated with using data from a similar but not identical block of business to determine the Anticipated Experience Assumption.

(4) A higher Margin is appropriate for partial withdrawal and surrender assumptions where the company's marketing and /or administrative practices encourages anti-selection.

(5) The Margin applied to the withdrawal assumption shall take into account the application of any dynamic behavior adjustment, if such adjustment is made, to have the intended effect. After application of the Margin and any dynamic behavior adjustment the resulting withdrawal assumption should be reasonable (e.g., greater than or equal to zero and less than 100%).

E. Sensitivity Testing.

(1) The company is required to examine the sensitivity of results to understand the materiality of making alternate policyholder behavior assumptions on the Reported Reserve. Sensitivity testing may be performed using samples of the policies in force; it is not required that the entire valuation be done for each alternate assumption set. Sensitivity testing may be done using data from prior periods when appropriate.

(2) The company should update the sensitivity tests when appropriate, considering the materiality of the results of the tests and trends in experience data. Less frequent updating of these tests is appropriate when the tests show less sensitivity of Reported Reserve to changes in the assumptions being tested or the experience is not changing rapidly.

(3) With respect to policies which give policyholders flexibility in the timing and amount of premium payments, the company must examine, but not be limited by the following, premium scenarios:

(a) Minimum premium scenario.
(b) No further premium payment scenario.
(c) Pre-payment of premiums – Single premium scenario.
(d) Pre-payment of premiums – Level premium scenario.

Subsection 8. Requirements for Setting Expense Assumptions

A. Anticipated Experience Assumptions.

(1) The expense assumption shall reflect all costs associated with the policies being modeled. In other words, the expense assumption should reflect the direct costs associated with the policies being

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(4) . In order to ensure that the Margin increases the Reported Reserve, the choice between addition and subtraction may need to vary by scenario, age, policy duration, and other parameters. In the case of partial withdrawal, two assumptions are needed – the amount withdrawn and the partial withdrawal rate. ¶
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modeled as well as an appropriate portion of indirect costs and overhead (i.e. expense assumptions representing fully allocated expenses should be used.)

(2) Include expenses categorized in the annual statement as 'taxes, licenses and fees' (Exhibit 3 of the Annual Statement) in the expense assumption.

(3) Include acquisition expenses associated with business in force as of the valuation date and significant non-recurring expenses expected to be incurred after the valuation date in the expense assumption.

(4) Certain information technology development costs and other capital expenditures may be spread over a reasonable number of years in accordance with accepted statutory accounting principles as defined in the Statements of Statutory Accounting Principles (care should be taken with regards to the potential interaction with the considerations above).

(5) Expense assumptions shall assume that the company is a going-concern.

(6) Choose an appropriate expense basis that properly aligns the actual expense to the assumption. For example, death benefit expenses should be modeled with an expense assumption that is per death incurred. If values are not significant they may be aggregated into a different base assumption.

(7) Expenses shall reflect the impact of inflation. Expense assumptions for the deterministic and stochastic Scenarios are expected to be the same except for differences arising from application of inflation rates.

(8) Expense assumptions shall not assume future expense improvements.

(9) Since reserves are calculated on a pre-tax basis assumptions for federal income taxes and foreign income taxes are not required.

(10) Expense assumptions shall be consistent with other related assumptions. For example, the manner that investment expenses are handled should be consistent with the manner that asset returns are reflected in the model.

(11) Anticipated Experience Assumptions are based on a company's own experience and derived from careful study that is within the range of actuarial practice.

(12) Use fully allocated expenses, e.g., the expense assumptions should reflect the direct costs associated with the block of policies being modeled as well as indirect costs and overhead costs that have been appropriately allocated to the modeled policies.

(13) Allocate expenses in a manner that is within the range of actuarial practice and methodology and that is consistent with applicable Actuarial Standards of Practice. Use an allocation method consistently across company lines of business. Allocations may not be done for the purpose of decreasing the Reported Reserve.

(14) Significant Expenses Due to Non-Recurring Events.

(a) Most significant, non-IT related expenditures are expected to occur prior to the projection start date and would therefore not be included in the reserve calculation. However, there may be some types of non-recurring expenses that are expected to occur beyond the projection start date. An example of this kind of cost would be severance costs anticipated in the next year or legal costs associated with class action suits. Reflect these expenses in the assumption for the future period that they are anticipated to occur.

(b) Follow statutory accounting principles to determine whether or not to capitalize significant expenses due to IT-related investment.

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B. . Methodology to Determine Prudent Estimate Expense Assumptions.¶
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(c) The commissioner may approve alternate approaches to allocating expenses.

(15) Mergers and Acquisitions: Reflect expense efficiencies that are derived and realized from the combination of blocks of business due to a business acquisition or merger in the expense assumption only when any future costs associated with achieving the efficiencies are also recognized. For example, the combining of two similar blocks of business on the same administrative system may yield some expense savings on a per unit basis, but any future cost of the system conversion should also be considered in the final assumption. If all costs for the conversion are in the past then there would be no future expenses to reflect in the valuation.

B. Margins for Expense Assumptions.

(1) A lower Margin may be appropriate where expense assumptions are supported by credible historical company experience or for a line of business that is growing quickly (thereby spreading the fixed costs).

(2) A higher Margin is required where:

(a) Allocation methods create uncertainty regarding line of business splits - especially as it concerns overhead expenses;

(b) The company's expense experience is not credible;

(c) The economic outlook is unstable;

(d) The company's expenses have not been quantified by a study which follows accepted actuarial practice and principles;

(e) Sensitivity testing determines that the reserve is sensitive to the expense assumption; or

(f) The regulatory environment is one that creates the likelihood of increased expenses.

(3) The Margin applied to the expense assumption must be identifiable and may be applied in either the dynamic behavior adjustment or the base assumption as appropriate.

Subsection 9. Requirements for Setting Asset Assumptions

A. Overview.

The requirements in this Subsection apply for setting valuation assumptions related to the projection of asset cash flows and net investment earnings for starting assets and reinvestment assets when determining the Stochastic Reserve and the Deterministic Reserve. Modeling of both general account and separate account assets are addressed, as well as modeling of hedge instruments.

B. Default Costs and Other Uncertainty in Timing and Amounts of Cash Flows.

For both the Stochastic Reserve and Deterministic Reserve calculations:

(1) Default cost assumptions for the various fixed income asset classes for starting assets shall reflect prudent estimates of default costs over a lifetime of the assets and consistent with the type of asset and quality rating. They are subject to the following requirements:

(a) The Anticipated Experience Assumption for default cost for a particular asset class shall take into consideration the company's own experience, to the extent credible and appropriate, and available insurance industry and broad financial market experience. In general, broader market default cost experience shall be a substantial consideration for assets traded in more public and liquid markets.

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(b) As default cost experience is generally observed to be cyclical in nature, Anticipated Experience Assumptions shall be related to historical experience over a period of time long enough to cover both favorable and unfavorable experience years, such that the average historical experience reasonably constitutes an unbiased long-term historical average. The company shall use a consistent method from one reserve valuation to the next in developing the supporting historical experience. When changes in method are made, the company shall disclose them in the PBR Actuarial Report.

(c) If the company consolidates quality rating categories for purposes of setting the default cost assumptions, the resulting default costs shall be consistent with those that would have resulted had the more refined recognition of rating categories been used.

(d) The company may use level default cost assumptions over time that are equivalent to the expected default costs over the projected lives of the corresponding assets.

(e) Add a Margin to the Anticipated Experience Assumption for each asset class. Use higher Margins (when expressed as a percentage of the credit exposure on the corresponding assets, commonly known as a "basis points charge") in situations of greater uncertainty including but not limited to the following:

(i) Greater historical variability in the default rates, recovery rates, or both. Generally, the expectation is that lower quality assets will have higher Margins than higher quality assets with similar maturities.

(ii) Material exposures to newer asset structures that have limited historical experience;

(2) Reflect any uncertainty in the timing and amounts of asset cash flows related to the paths of interest rates, equity returns, or other economic values contained in the various Scenarios directly in the projection of asset cash flows under the various Scenarios within the Stochastic Reserve calculation model and under the deterministic Scenario within the Deterministic Reserve calculation model. For example, model the impact on cash flows of embedded prepayment, extension, call and put options in a manner consistent with current asset adequacy analysis practice.

C. Prescribed Net Spreads on Reinvestment Assets.

<<insert requirements>>

Drafting Note: Further research and analysis is in process to determine these prescribed net spreads.

D. The Deterministic Scenario.

(1) Prescribed U.S. Treasury Interest Rates Path. The path of U.S. Treasury rates used to determine the Deterministic Reserve will begin with the market yield curve on the projection start date (based on Treasury yields reported by <<insert source>>). The yield curve 120 months or more after the projection start date will be the "ultimate" yield curve shown below. The yield curve on any date between the projection start date and 120 months after the projection start date will be linearly interpolated between the starting yield curve and the "ultimate" yield curve.

These rates shall be based on the 65 CTE statistic from the distribution of yield curves obtained from the recalibrated C3 Phase I generator (where the CTE is measured at the low end of the distribution of rates). The yield rates shown below for the ultimate yield curve are annual effective rates (not coupon rates or bond-equivalent yields) for a bond with semi-annual coupons.

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1 yr or less	x%	11	x%	21	x%
2	x%	12	x%	22	x%
3	x%	13	x%	23	x%
4	x%	14	x%	24	x%
5	x%	15	x%	25	x%
6	x%	16	x%	26	x%
7	x%	17	x%	27	x%
8	x%	18	x%	28	x%
9	x%	19	x%	29	x%
10	x%	20	x%	30 yrs or more	x%

For example, if the 5-year Treasury rate on the projection start date is 2.85%, and the 5-year ultimate Treasury rate from the above table is 4.05%, then the 5-year Treasury rate assumed in the deterministic Scenario would increase by 0.01% each month for 120 months and then level off at 4.05% for the remainder of the projection. The same linear interpolation would be performed for every point on the yield curve.

Drafting Note: The values in the table above will be determined once the re-calibrated C3 P1 interest rate generator is finalized. Further analysis will be needed to finalize the approach used to determine the interest rates at the CTE 65 level once the C3P1 interest rate generator is finalized.

(2) Prescribed S&P 500 Returns and Separate Account Fund Performance. The path of equity returns used to determine the Deterministic Reserve will be based on a single path of prescribed returns for both General Account equity assets and Separate Account assets. This path will start with the current 10-year Treasury rate as of the projection start date grading to the ultimate 10-year Treasury rate shown in the table in Subsection 9D.1.over 10 years using linear interpolation, with the prescribed spread over 10-year Treasuries (from Subsection 9C above) added to each rate.

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E. Stochastic Scenarios.

(1) Interest Rates Paths. U.S. Treasury rates shall be modeled using:

(a) The American Academy of Actuaries' C3 Phase I interest rate generator, as recalibrated and adopted by the NAIC, or

(b) A prescribed set of <<insert description of pre-packaged interest rate scenarios>>, or

Drafting Note: It is anticipated the LHATF will establish a set of pre-packaged set of interest rate scenarios similar to those used for C3 Phase II RBC requirements, and will update them from time to time.

(c) Proprietary Scenario Sets, or

Drafting Note: If this option is chosen, then the Stochastic Reserve will be determined using a prescribed weighting of the scenarios determined by the company, rather than using the CTE metric. Additional guidance is needed to determinate the how the proprietary predetermined scenario sets will be established.

(d) An interest rate generator developed by the company as long as the prescribed calibration standards are met.

Drafting Note: It is anticipated that the LHATF will establish calibration standards similar to those used for C3 Phase II.

(2) Equity Return Paths. S&P 500 returns and separate account fund performance shall be modeled using:

(a) The << insert prescribed equity return generator and model parameters>>, or

(b) The American Academy of Actuaries' << insert pre-packaged scenarios>>, or

Drafting Note: It is anticipated LHATF will establish a set of pre-packaged set of interest rate scenarios similar to those used for C3 Phase II RBC requirements.

(c) Proprietary Scenario Sets, or

Drafting Note: If this option is chosen, then the Stochastic Reserve will be determined using a weighting of the scenarios determined by the company, rather than using the CTE metric. Additional guidance may be needed to determinate the how the Proprietary Scenario Sets will be established.

(d) An equity return model developed by the company as long as the following prescribed calibration standards are met.

(3) Calibration Standards. Interest rate paths and equity return paths used under any of the available choices must meet prescribed calibration standards, except that for Proprietary Scenario Sets, only the full set of Scenarios from which the smaller set is chosen need to meet the calibration standards. The calibration standards are as follows:

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<<insert calibration standards or reference to an Academy report documenting such standards>>

Drafting Note: It is anticipated that LHATF will establish calibration standards similar to those used for C3 Phase II. Although the calibration points in the C3 Phase II requirement only go out 20 years, the requirement provides some guidance for returns beyond 20 years. As the life insurance policies being valued here can have an expected lifetime well in excess of 20 years, LHATF may wish to consider whether this guidance is appropriate for these products. In addition, the pre-packaged scenarios only go out 30 years. As the life insurance policies being valued here can have an expected lifetime well in excess of 30 years, it may be necessary to develop pre-packaged scenarios with a longer time horizon. Alternatively, the existing pre-packaged scenarios could be extended so that they have the same returns as in the first 30 years.

(4) For considerations as to Other Funds, Correlation of Funds, Number of Scenarios and Efficiency in Estimation, Frequency of Projection and Time Horizon the company will use the following:

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<<insert requirements>>

Drafting Note: It is anticipated that LHATF will establish requirements for these items similar to those used for C3 Phase II.

(5) Integrated Scenarios

<<insert requirements>>

Drafting Note: When developing projections for variable products or general account products which are backed in part by equity assets, it will be necessary to project both equity returns and interest rate paths. Ideally, a fully integrated model of interest rates, equity returns, and separate account fund performance would be used. If the company chooses to use a fully integrated interest rate and equity return model, the equity return scenarios must satisfy the equity return calibration criteria adopted by the NAIC and the interest rate scenarios must satisfy the interest rate calibration criteria adopted by the NAIC. The U.S. Treasury Fund scenarios within the 10,000 prepackaged scenarios for the C3P2 requirements qualify as meeting this criterion. Although an integrated modeling approach is desirable, a number of simpler approaches are acceptable. LHATF may wish to define acceptable methods for integrating these two types of scenarios, and may want to consider approaches similar to those allowed in C3 Phase II.

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F. Anticipated Experience Assumptions for Risk Factors with Prescribed Valuation Assumptions.

The prescribed Anticipated Experience Assumptions needed to quantify the impact of Margins required by Section [ ] of the Valuation Manual are shown below.

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(1) Anticipated Experience Assumption for the U.S. Treasury Interest Rate Path. The path will begin with the market yield curve on the projection start date (based on Treasury yields reported by <<insert source>>). The yield curve 120 months or more after the projection start date will be the

"ultimate" yield curve shown below. The yield curve on any date between the projection start date and 120 months after the projection start date will be linearly interpolated between the starting yield curve and the "ultimate" yield curve.

These rates are based on the mean of the distribution of the recalibrated C3 Phase I generator. The yield rates shown below for the ultimate yield curve are annual effective rates (not coupon rates or bond-equivalent yields) for a bond with semi-annual coupons.

1 yr or less	x%	11	x%	21	x%
2	x%	12	x%	22	x%
3	x%	13	x%	23	x%
4	x%	14	x%	24	x%
5	x%	15	x%	25	x%
6	x%	16	x%	26	x%
7	x%	17	x%	27	x%
8	x%	18	x%	28	x%
9	x%	19	x%	29	x%
10	x%	20	x%	30 yrs or more	x%

For example, if the 5-year Treasury rate on the projection start date is 2.85%, and the 5-year ultimate Treasury rate from the above table is 4.05%, then the 5-year Treasury rate assumed in the deterministic Scenario would increase by 0.01% each month for 120 months and then level off at 4.05%. The same linear interpolation would be performed for every point on the yield curve.

Drafting Note: The values in the table above will be determined once the re-calibrated C3 P1 interest rate generator is finalized.

(2) Anticipated Experience Assumptions for S&P 500 Returns and Separate Account Fund Performance.

<<insert requirements>>

Drafting Note: Further work is needed to define the approach to determine these paths.

(3) Anticipated Experience Assumptions for net spread paths on reinvestments assets

<<insert requirements>>

Drafting Note: Further research is needed to define the approach to determine these paths.

Subsection 10. Requirements for Reflecting Revenue Sharing Assumptions

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A. Requirements.

Cash flow projections may include income from projected future revenue sharing (as defined in these requirements net of applicable projected expenses (net revenue sharing income) if the following requirements are met:

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(1) The company receives and controls the net revenue sharing income;

(2) Signed contractual agreement or agreements are in place as of the valuation date and support the current payment of the net revenue sharing income; and

(3) The net revenue sharing income is not already accounted for directly or indirectly as a company asset.

B. Anticipated Revenue Sharing Amounts.

The Anticipated Experience Assumption for net revenue sharing income to be used shall reflect factors that include but are not limited to the following (not all of these factors will necessarily be present in all situations):

(1) The terms and limitations of the agreement(s), including anticipated revenue, associated expenses and any contingent payments incurred or made by either the company or the entity providing the net revenue sharing as part of the agreement(s);

(2) The relationship between the company and the entity providing the net revenue sharing income that might affect the likelihood of payment and the level of expenses;

(3) The benefits and risks to both the company and the entity paying the net revenue sharing income of continuing the arrangement;

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Deleted: is received and controlled by the company[1]

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(4) The likelihood that the company will collect the net revenue sharing income during the term(s) of the agreement(s) and the likelihood of continuing to receive future revenue after the agreement(s) has ended;

(5) The ability of the company to replace the services provided to it by the entity providing the net revenue sharing income or to provide the services itself, along with the likelihood that the replaced or provided services will cost more to provide; and

(6) The ability of the entity providing the net revenue sharing income to replace the services provided to it by the company or to provide the services itself, along with the likelihood that the replaced or provided services will cost more to provide.

Include all expenses required or assumed to be incurred by the company in conjunction with the arrangement providing the net revenue sharing income, as well as any expenses assumed to be incurred by the company in conjunction with the assumed replacement of the services provided to it (as discussed in subsection 10B(5) above) in the projections as a company expense. In addition, include expenses incurred by either the entity providing the net revenue sharing income or an affiliate of the company in the applicable expenses that reduce the net revenue sharing income.

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C. Margins

The Prudent Estimate of projected net revenue sharing income shall also reflect a Margin (which decreases the assumed net revenue sharing income) related to the uncertainty of the revenue, including uncertainty regarding the creditworthiness of the provider of the net revenue sharing income. The greater the uncertainty, the larger the Margin.

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To the extent the agreements(s) guarantees the payment of net revenue sharing income to the company, the net revenue may be included in full over the period for which it is guaranteed.

Drafting Note: Provisions such as one that gives the entity paying the net revenue sharing income the option to stop or change the level of income paid would prevent the income from being guaranteed. However, if such an option becomes available only at a future point in time, and the revenue up to that time is guaranteed, the income is considered guaranteed up to the time the option first becomes available.

Drafting Note: If the agreement allows the company to unilaterally take control of the underlying fund fees that ultimately result in the Net Revenue Sharing Income then the revenue is considered guaranteed up until the time at which the company can take such control. Since it is unknown whether the company can perform the services associated with the revenue sharing arrangement at the same expense level, it is presumed that expenses will be higher in this situation. Therefore, the net revenue sharing income shall be reduced to account for any actual or assumed additional expenses.

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The actuary is responsible for reviewing the revenue sharing agreements, verifying compliance with these requirements, and documenting the rationale for any source of net revenue sharing income used in the projections.¶

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¶
A. Documentation Requirements for Mortality Assumptions.¶
¶
The Actuarial Report shall disclose/document the following items with respect to mortality assumptions:¶
¶
(1) Experience Mortality. ¶
¶
(a) Summarize any mortality studies used to support mortality assumptions, quantify the exposures and corresponding deaths, describe the important characteristics of the exposures and comment on unusual data points or trends;¶
¶
(b) Document the age of the experience data used to determine expected mortality curves and comment on the relevance of the data;¶
¶
(c) Describe how the expected mortality curves compare to recent historical experience and comment on any differences;¶
¶
(d) The actuary shall provide an actual to expected analysis at least once every three years;¶
¶
(e) If the study was done on a block of business that was similar to the block of business being valued, identify the differences between the block of business on which the data was gathered and the block of business being valued. Describe how these differences were reflected in the mortality used in modeling;¶
¶
(f) Explain how the curve reflects the wearing off of underwriting over time;¶
¶
(g) Discuss any assumptions made on mortality improvements, the support for such assumptions and how such assumptions adjusted the modeled mortality;¶
¶
(h) Any other relevant important information concerning any adjustments to the experience mortality for changes in the mortality assumption;¶
¶
(i) Explain the rationale for any adjustment;¶
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and that can affect the future financial results arising from the provisions of a Policy		
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Subsection 4. Certification and Documentation Requirements

A. A qualified actuary shall provide a certification that the Reported Reserve was calculated in a manner that meets the requirements of this Section and complies with all applicable Actuarial Standards of Practice. This certification shall include the signature, title, company, address and telephone number of the person rendering the certification, as well as the date on which it is signed.

B. The actuary shall prepare an Actuarial Report each year that documents all material decisions made, and information used, to support the certification including assumptions, Margins and methodologies used to calculate the Reported Reserve.

(1) The Actuarial Report shall include:

(a) A description of the blocks of policies subject to these requirements;

(b) A description of the starting assets supporting the block of policies subject to these requirements and a description of the reinvestment and disinvestment strategy used to acquire or sell assets after the projection start date;

(c) A comparison of the Deterministic Reserve to the Stochastic Reserve, including the distribution of the Scenario Reserves;

(d) A description of the valuation assumptions, methods, models, risk management strategies (e.g., hedging), other derivative programs, structured investments or any other risk transfer arrangements (such as reinsurance);

(e) Results of applicable sensitivity tests;

(f) All of the items required by Subsection 13 of this Section;

(g) Disclosure of all other items required by this Section, including but not limited to: the impact of aggregation, the impact of Margins on the Reported Reserve and a demonstration of the stochastic modeling exclusion (if elected);

(h) A list of key risk and experience reporting elements that the company will be tracking to assess the impact of changes in experience between valuation dates., the frequency of that tracking and a documentation of past management actions taken because of that tracking; and

(i) Additional analytics as required by the NAIC or Actuarial Standards of Practice.

(2) The Actuarial Report shall include any material considerations that the actuary considers necessary to understand the development of assumptions for the statutory reserve valuation even if such considerations are not explicitly required by this Section. The documentation should be explicit when material judgments were required and such judgments had to be made without supporting historical experience.

(3) The Actuarial Report shall be provided to the PBA review actuary who shall provide an opinion to the commissioner on whether the company prepared proper documentation, made proper disclosures, and complied with the requirements of this Section.

Drafting Note: The timing of when the report is provided will be determined by the NAIC.

(4) The Actuarial Report and any other material provided by the company to the commissioner or the PBA review actuary in connection therewith, shall be kept confidential by the commissioner and the PBA review actuary and shall not be made public. The Actuarial Report or other material may otherwise be released by the commissioner (a) with the written consent of the company, or (b) to the Actuarial Board for Counseling and Discipline upon request stating that the report or other material is required for the purpose of professional disciplinary proceeding and setting forth procedures satisfactory to the commissioner for preserving the confidentiality of the Actuarial Report or other material.

Drafting Note: Record retention requirements are needed if not included in the law.

C. These requirements require the actuary to make various determinations, verifications and a certification. The company shall provide the actuary with the necessary information sufficient to permit the actuary to fulfill the responsibilities set forth in these requirements and responsibilities arising from applicable Actuarial Standards of Practice.

D. Except in cases of fraud or willful misconduct, the qualified actuary shall not be liable for damages to any person (other than the insurance company and the commissioner) for any act, error, omission, decision or conduct with respect to the actuary's opinion.

E. A qualified actuary shall:

(1) Be a member of the American Academy of Actuaries;

(2) Be familiar with all appropriate standards of practice that apply to principles-based reserves;

(3) Not have been found by the commissioner, following appropriate notice and hearing to have:

(a) Violated any provision of, or any obligation imposed by, the insurance law or other law in the course of his or her dealings as a qualified actuary, a PBA review actuary or an appointed actuary;

(b) Guilty of fraudulent or dishonest practices;

(c) Demonstrated his or her incompetence, lack of cooperation, or untrustworthiness to act as an qualified actuary; or

(d) Resigned or been removed as a qualified actuary within the past five (5) years as a result of acts or omissions indicated in any adverse report on examination or as a result of a failure to adhere to generally acceptable actuarial standards or for the other reasons enumerated in this Subsection 4(E)(3);

(4) Failed to notify the commissioner of any action taken by a commissioner of another state similar to that under Paragraph (3) above.

Subsection 5.

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the greater of

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and an amount calculated using a stochastic method when appropriate (Stochastic Reserve

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), plus a Provision for Model Understatement that reflects the actuary's estimate of any understatement in the modeling results arising from material approximations, simplifying assumptions or simplified techniques used in the cash flow model.

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actuary

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elect to perform the reserve calculations as defined by these requirements

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other than the valuation date, but in

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event

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disclosure of the results of such adjustment and the methodology used to determine the adjustment is required.

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and

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over a single scenario

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elect to

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certain

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are met (as

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A Modified Deterministic Reserve shall be calculated and included in the Stochastic Reserve for policies excluded from the stochastic modeling requirement.

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sum of (a) and (b).

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(a) The

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a) The

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; and

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) The Stochastic Reserve as described in Subsection 4D.

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(b) The Provision for Model Understatement as defined below.

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(2) Provision for Model Understatement.

(a) The Provision for Model Understatement is the actuary's estimate of the understatement in the amount determined in Subparagraph (1)(a) above due to the net aggregate impact of material approximations, simplifying assumptions or simplified techniques used in the cash flow model to measure the risk factors, investment strategies, risk mitigation strategies, and other components of the methodology defined by these requirements, and where such understatement could not be adequately or appropriately reflected by Margins in the various assumptions.

(b) The Provision for Model Understatement does not add to or supersede other requirements in this section, such as those related to acceptable methods of setting Prudent Estimate Assumptions, calibrating scenarios, etc. It is intended to address areas in which the cash flow model was not able to directly and fully carry out those requirements and the resulting understatement on a net aggregate basis is material.

(c) The Provision for Model Understatement shall not be less than zero.

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Allocation of Reported Reserve to Individual Policies.

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a) When the Reported Reserve is equal to the Deterministic Reserve, the Reported Reserve allocated to each Policy shall be the Per Policy Reserve as defined in

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b) When the Reported Reserve is greater than the Deterministic Reserve, the reserve allocated to each Policy shall be the Per Policy Reserve as defined in

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4C(4), plus an allocation of the excess of the Reported Reserve over the Deterministic Reserve. The allocation shall be made in proportion to the Per Policy Reserve for each Policy.

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is adequate to cover the product benefits and expense, reflecting future revenue, under a single scenario.

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The Deterministic Reserve is not meant to explicitly capture material tail risk.

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Reserve Calculation Description. T

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is determined using the following steps:

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Subsections 5

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(c) Calculate the path of Net Asset Earned Rates for each

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Model Segment as described in

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Calculate the Deterministic Reserve as described Subsection 5Subsection G4C(6).

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(a) The Deterministic Reserve e

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that is adequate to cover the product benefits, revenue and expenses

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for all policies falling under the scope of these requirements. It is meant to capture all material risks, including

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The

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is determined

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Asset Segment

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(d) Calculate the path of Net Asset Earned Rates and discount rates for each

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Model Segment for each Scenario as described in

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Subsection 5

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for all policies falling under the scope of these requirements

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as follows:

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above

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Stochastic Reserve

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used

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(d) The reserve in subparagraph (c) must be increased by an amount necessary to capture any material risk not already included in the stochastic reserve.

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) If the Scenario Reserves are determined on a date that precedes the valuation date, then adjust the Scenario Reserves

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to the valuation date before performing Subparagraphs (a) through (c) above.

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Aggregation of Policies.

(a)

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However, since these requirements require

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is compared to a seriatim Deterministic Reserve that uses the cash surrender value as a minimum floor on a policy by policy basis;

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; there is an inherent limitation on the magnitude of any risk offsets that may be reflected in the Reported Reserve.

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the

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is determined by following Items (i) through (v) below:

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for each Asset Segment at the end of each projection year and at the projection start date,

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(ii) Calculate

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for each Asset Segment at the end of each projection year and at the projection start date

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Asset Segment

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iii

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At the end of each projection year and at the projection start date, calculate

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for each Asset Segment

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ii

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The

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shall be calculated

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Asset Segment

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iv

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as the sum of

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v

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Asset Segment

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Drafting Note: The definition of Accumulated Deficiency used in the calculation of the Scenario Reserve needs further discussion and analysis before it is finalized.

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Asset Segment

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For all Scenarios, the net accumulated asset amount for a

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Model Segment at the projection start date is the annual statement value of starting assets for that

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Model Segment. The projected annual statement value of invested assets at any future duration must reflect the accumulation of cash flows into and out of the portfolio for the items listed in (i) through (vii) as described in

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(i) Benefits, including but not limited to death and cash surrender benefits;

(ii) Expenses, including but not limited to, commissions, general expenses, and premium taxes, but excluding federal income taxes and expenses paid to provide fraternal benefits in lieu of federal income taxes;

(iii) Gross premium payments;

(iv) Other applicable revenue such as fees and revenue on assets invested in sub-accounts, and any revenue sharing income;

(v) Net payments to or from the general account from or to the separate account; and

(vi) Net investment earnings as defined in

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4I(2).

(vii) Net cash flows from derivative liability programs.

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It may not be necessary to perform stochastic modeling for groups of policies where it can be demonstrated that the Standalone Stochastic Reserve for those policies will not be greater than the Modified Deterministic Reserve. Such demonstration shall take into account the effect of any Provision for Model Understatement for the group of policies. Thus, the actuary

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(which includes any additional reserve amount that the

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company may decide to add for the purpose of the stochastic modeling exclusion)

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The Standalone Stochastic Reserve equals the amount resulting from the Stochastic Reserve calculation described in

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4D(2), but ignoring the step described in

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4D(6)(c), and only including the group of policies subject to the stochastic modeling exclusion.

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4D(5)(e) below) and the sum of the Per Policy Reserves for these policies.

(II) An additional reserve amount that the

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company may decide to include for the purpose of the stochastic modeling exclusion.

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(ii) Provide a demonstration that the Modified Deterministic Reserve adequately provides for all material risks underlying such policies. An acceptable demonstration shall

(I) Provide a reasonable assurance that if the Standalone Stochastic Reserve was calculated for only those polices subject to the stochastic modeling exclusion it would not be greater than the Modified Deterministic Reserve for such policies

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after reflecting the effect of any Provision for Model Understatement for such policies

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;

(II) Provide sufficient supporting information that an experienced independent actuarial reviewer can assess the reasonableness of the conclusion to exclude the group of policies; and

(III) Provide an effective evaluation of the residual risk exposure resulting from risk mitigation techniques such as derivative programs and reinsurance.

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(iii) A complete demonstration supporting the exclusion must be provided in the Actuarial Report in the initial exclusion year and at least once every three (3) calendar years subsequent to the initial exclusion. Any

demonstration shall take into account whether changing conditions over the current and two (2) subsequent calendar years would be likely to change the conclusion to exclude the group of policies from the stochastic modeling requirement. If, as of the end of any calendar year, the

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company determines the Standalone Stochastic Reserve will exceed the Modified Deterministic Reserve for the group of policies, the exclusion shall be discontinued and the policies shall be included in the stochastic modeling calculations.

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that are "in the tail" to demonstrate that the Stochastic Reserve would be less than the Modified Deterministic Reserve

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to demonstrate that the Stochastic Reserve would be less than the Modified Deterministic Reserve

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(iv) Comparing the Modified Deterministic Reserve to the Stochastic Reserve on a date that precedes the projection start date;

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() The Modified Deterministic Reserve for the policies to be excluded shall equal the sum of the amounts in (i) and (ii) below:

(i) The greater of the Aggregate Deterministic Scenario Reserve and the sum of the Per Policy reserves for these polices, where the Aggregate Deterministic Scenario Reserve is equal to the greatest present value of Aaccumulated Ddeficiencies at the end of each projection year and at the projection start date, where the Accumulated Deficiency for each duration is determined in the aggregate for all polices using the steps outlined in Paragraph H(4) above, but using the cash flows for items listed in Paragraph H4(b)(i) through (vi) valuation assumptions that are used to calculate the Deterministic Reserve.)

(ii) An additional reserve amount that the company may decide to include for the purpose of the stochastic modeling exclusion.

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(e)The Aggregate Deterministic Scenario Reserve is equal to the greatest present value of accumulated deficiencies at the end of each projection year and at the projection start date, where the Accumulated Deficiency for each duration is determined in the aggregate for all polices using the steps outlined in Paragraph H(4) above, but using the cash flows for items listed in Paragraph H4(b)(i) through (vi) that are used to calculate the Deterministic Reserve.

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where one requirement for such approval is for the actuary to clearly demonstrate that each Clearly Defined Hedging Strategy does

not violate Principle 7.

(c) Impact of Aggregation: The actuary shall disclose the estimated impact of aggregation, that is, the degree of risk offsets reflected in the Reported Reserve due to aggregating groups of policies when performing the Stochastic Reserve calculation.

(i) The impact of aggregation on the Reported Reserve shall be determined by:

(I) Subdividing the total block of policies subject to these requirements into subgroups that reflect similar risk characteristics that will likely create risk offsets when aggregated together;

(II) Determining the Reported Reserve for each subgroup of policies;

(III) Summing the Reported Reserves for each subgroup of polices, and subtracting the actual Reported Reserve for all policies.

(ii) Examples of risk characteristic that the actuary may consider when selecting the number of subgroups include:

(I) Separate account vs. general account policies;

(II) Flexible premium vs. fixed premium policies;

(III) Policies with cash values vs. polices with little or no cash values.

(iii) The actuary shall disclose in the Actuarial Report the impact of aggregation at least once every three (3) years, and in the current year regardless of the three (3) year requirement if the company has made a material change in its risk profile, such as buying or selling a block of business, or entering into (or canceling) a reinsurance arrangement covering the policies subject to these requirements.

(iv) The actuary can use reasonable approximations when performing this demonstration, but must fully disclose the nature of the approximations used and the rationale for why the approximations are appropriate.

(v) The actuary can use a date that precedes the valuation date to perform this demonstration, but shall certify that the use of such date will not produce a material change in the results if the results were based on the valuation date.

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(a) Consistent with the principles stated in Subsection 2 of these requirements;

(b)

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Supported by a documented process to reassess the appropriateness of the assumption in future valuations.

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The actuary company may elect to stochastically model other other risk factors in addition to the risk factorsthose listed in (ac) above. If so electedmodeled, the requirements in this Section for determining Pprudent Eestimates Assumptions for thesee risk factors would not apply.

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(4) Granularity Considerations.

(a) In establishing valuation assumptions, the actuary shall choose between setting a separate assumption specific and appropriate to each individual Policy being valued, a single assumption to be applied to all policies being valued, or an assumption with some degree of granularity within these two endpoints. In making that choice, the actuary shall balance the volume of work in establishing a separate assumption specific and appropriate to each individual Policy against the possible loss of precision and appropriateness in applying an assumption over a broader group of policies. For example, the application of a single assumption for premium payment patterns over a group of policies may lead to the unintended premature cessation of projected benefits.

(b)

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The actuary shall estimate and disclose the effect of the choice of granularity in the Actuarial Report. The appropriate degree of granularity in the assumptions will be determined by the sensitivity of the results to different levels of granularity. Assessing the acceptability of the level of granularity and estimating the effect of a less granular model may be performed on a date other than the projection start date, and need not be updated every year, unless the actuary determines that such an update is appropriate.

Drafting Note: Further guidance on assessing the acceptability of the level of granularity may be provided by an ASOP, subject to approval by the ASB.

(5) Anticipated Experience Assumptions. The actuary

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actuary's expectation of the risk

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if and how a company could use Anticipated Experience that is less credible than company experience.

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the definition of a principles-based approach in

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for each risk factor, the actuary shall be guided by the following principles:

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, such as increased disclosure to the regulator and more frequent monitoring of emerging experience

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The

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shall be included

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the analysis of

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es

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which are implausible in usual operations.

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(f) The Margin shall satisfy any further conditions set forth by these requirements or any supporting actuarial guidelines and applicable Actuarial Standards of Practice with respect to Margins or Prudent Estimate Assumptions for the risk factor.

(g)

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Unless there are clear reasons to expect otherwise,

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shall be established

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is

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and

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and

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or

(v) There are contingencies related to policyholder behavior in situations where a given policyholder action results in the surrender or exercise of a valuable option.

(8) Impact of Each Margin.

(a) The actuary shall determine and disclose in the Actuarial Report an estimate of the impact of each Margin on the Deterministic Reserve for the following risk factors: mortality, policyholder behavior, expense and asset return assumptions. This shall be determined for each Asset Segment by:

(i) Calculating the sum of Seriatim Reserves based on the Anticipated Experience Assumption for the risk factor and Prudent Estimate Assumptions for all other risk factors; and

(ii) Subtracting the value determined in Paragraph 8(a)(i) above from the sum of Seriatim Reserves as reported.

(b) Since the actuary does not determine an Anticipated Experience Assumption or a Prudent Estimate Assumption for assumptions that are prescribed (e.g. interest rates movements, equity performance and net spreads on reinvestment assets), the prescribed assumption shall be deemed to be the Prudent Estimate Assumption, and the equivalent of an Anticipated Experience Assumption for each of these risk factors will be prescribed for the purpose of determining the impact of each Margin as required by this Section.

(9) Impact of Aggregate Margin.

(a) The actuary shall determine and disclose in the Actuarial Report an estimate of the aggregate impact of the all Margin on the Deterministic Reserve for each Asset Segment by:

(i) Calculating the sum of Seriatim Reserves based on Anticipated Experience Assumptions, prior to the addition of any Margins; and

(ii) Subtracting the value determined in Paragraph 9(a)(i) above from the sum of Seriatim Reserves as reported.

(b) Since the actuary does not determine an Anticipated Experience Assumption or a Prudent Estimate Assumption for assumptions that are prescribed (e.g. interest rates movements, equity performance, and net spreads on reinvestment assets), the prescribed assumption shall be deemed to be the Prudent Estimate Assumption, and the equivalent of an Anticipated Experience Assumption for these risk factors will be prescribed for the purpose of determining the aggregate impact of all Margins as required by this Section.

(10) The actuary shall determine and disclose in the Actuarial Report an estimate of the Margin Ratio for each Asset Segment by:

(a) Determining the dollar amount of the aggregate Margin in the Reported Reserve by subtracting (ii) from (i):

(i) The Reported Reserve

(ii) The Deterministic Reserve that would result from assuming all Margins are zero.

(b) Estimating the aggregate risk-based capital requirement on the projection start date and at the end of each projection year for the policies in the Asset Segment. The estimate of the aggregate risk-based capital requirement shall be an estimate of the total risk-based capital at the company action level for the Policies in each Asset Segment, based on the annual statement instructions for the year in which the valuation date falls. The actuary may base estimates for future years on the assumption that functional relationships from which the current year risk-based capital can be calculated will continue to hold for future years;

Drafting Note: Additional research and analysis is needed to address concerns with how to project the risk-based capital (RBC) requirements, especially in situations where components of the RBC requirements are calculated using a principles-based approach.

(c) Determining the discounted value of the aggregate risk-based capital requirements for the policies in the Asset Segment determined in Paragraph (10) (b) above, using the discount rates for the Asset Segment;

(d) Dividing the aggregate Margin for the Asset Segment determined in Paragraph (10)(a) above by the discounted value of the risk-based capital requirement for the policies in the Asset Segment determined in Paragraph (10(c) above.

Drafting Note: The NAIC may want to consider setting a prescribed minimum floor for this ratio.

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Asset Segment

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b

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For Deterministic Reserve, it is permissible to use (b) Within an Asset Segment, the company may group policies with similar risk characteristics to facilitate the required calculations.provided that the grouping is not done with the purpose of reducing the Reported Reserve.

(c) The company may use a

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on

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For the Deterministic Reserve and Stochastic Reserve,

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Reliance.

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(1) DDetermination of Starting Assets.

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For the projections supporting the reserve methodology

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Starting

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shall be valued

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products

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in many instances

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hereunder

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on the invested assets included in the starting asset amount

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Subsection 4G

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values

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projected

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(2)

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a cash flow projection shall be made

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shall

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Asset Segment

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The projection shall i

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Include

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t

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These

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Actual

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shall be included

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Amounts

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shall not be included in the cash flow projection

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, but shall be projected since they will affect the level of cash surrender benefits

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Net

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will be included in the cash flow projection

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Expenses

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are excluded

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stimates of asset or liability items are made that are neither stochastically generated nor prescribed

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shall be on a prudent estimate basis.

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(3)

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Assets

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shall be selected

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Asset Segment

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The

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shall be determined as described in Subsection 5E(1).

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Cash

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shall be determined

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Gross

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shall be modeled

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actuary

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Appropriate

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shall be reflected

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p

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e

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on asset sales shall be modeled in a manner that is consistent with the company's documented investment and disinvestment Policy

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economic reality such as the reasonable short-term borrowing capacity of the company

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Cash flows from reinvestment assets shall be determined as described in Subsection 5C(3), but with the additional requirement that net spreads (net of default costs and investment expenses) over Treasuries reflected in the purchase yields for such assets shall be prescribed by these requirements.

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(4) Disclosure of embedded spread on starting assets. For fixed income investments included in the starting assets (i.e**.,** the asset categories defined in Subsection 5C(3)(a)), the actuary shall estimate and disclose in the Actuarial Report the following values for each Asset Segment:

(a) The approximate market value and the method used to determine such approximate market value of such investments on the valuation date;

(b) The statutory value of such investments on the valuation date;

(c) The gross level "option-adjusted" spread (in basis points) over the Treasury yield curve at the valuation date implied in the approximate market values of such investments on that date. Further guidance on acceptable methods to compute this spread shall be published by the NAIC;

(d) The projected average estimated annual default costs (including how they were derived) expressed as a percent of the approximate average annual market value of such investments. Further guidance on acceptable methods to compute this spread shall be published by the NAIC;

(e) The net level "option-adjusted" spread over the Treasury yield curve at the valuation date (Subparagraph (c) minus Subparagraph (d); and

(f) The aggregate weighted average life and the method used to determine such aggregate weighted average life of such investments at the valuation date.

Drafting Note: This disclosure is intended to provide regulators and the PBA review actuary a tool to assess from a capital market perspective the level of asset risk embedded in a company's principles-based valuation compared to that of other companies or compared to the current market risk associated with typical asset classes found in insurance company portfolios. It is anticipated that market spread benchmarks for various asset classes and quality rating levels will be developed or recommended to provide context to regulators and the PBA review actuary when assessing an individual company's disclosures. It is important to recognize that asset spreads reflect all sources of risk, not just defaults. Further, the existence of these

disclosure metrics does not indicate an intent that long-term estimates of default costs should fluctuate significantly from period to period based on movements in market values.

s shall be determined

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as described in Subsection 5Subsection C4F(3), but with the additional requirement that net spreads (net of default costs and investment expenses) over Treasuries reflected in the purchase yields for such assets shall be prescribed by these requirements.

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In assigning each equity investment to an investment category, the fundamental characteristics of the asset shall have

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an appropriate relationship to the other assets assigned to the investment category.

(b)

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Drafting Note: It is anticipated that a prescribed interest rate generator and model parameter values like the C3P1 generator, as well as a prescribed equity return generator and model parameter values will be updated from time to time.

Drafting Note: It is also anticipated that the NAIC will define a prescribed set of pre-packaged equity return scenarios similar to those used for C3P2 RBC requirements for variable annuities, as well as a prescribed set of pre-packaged interest rate scenarios.

Drafting Note: In addition, it is anticipated that these requirements will contain calibration criteria for equity return models that are similar to those used for the C3P2 RBC requirements for variable annuities, as well as calibration criteria for interest rate models. Calibration criteria for interest rate models are in the process of being developed, and may not be available at the time these requirements are adopted.

Drafting Note: Ideally, a fully integrated model of interest rates, equity returns, and separate account fund performance would be used. If the company chooses to use a fully integrated interest rate and equity return model, the equity return scenarios must satisfy the equity return calibration criteria adopted by the NAIC and the interest rate scenarios must satisfy the interest rate calibration criteria adopted by the NAIC. The U.S. Treasury Fund scenarios within the 10,000 prepackaged scenarios for the C3P2 requirements qualify as meeting this standard. Although an integrated modeling approach is desirable, a number of simpler approaches are acceptable.

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to assist the actuary in determining if

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vary by Asset Segment and for each Scenario, and will

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Reasonable approximations are acceptable.

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(4) As a test of the consistency between the discount rates and the investment process being modeled, the actuary shall perform the following calculation:

(a) For a selected Scenario and Asset Segment, set the starting asset amount exactly equal to the Scenario Reserve for that Asset Segment (which is likely to be different than the starting asset amount used to determine the Scenario Reserve).

(b) Project the accumulated assets to the end of the projection year that gave rise to the greatest present value of accumulated deficiencies using the same model and assumptions used to calculate the Scenario Reserve.

(c) Discount the value in Paragraph (4)(b) to the valuation date using the path of discount rates used to calculate the Scenario Reserve.

(d) Provide an explanation if the amount in Paragraph (4)(c) is materially different than zero.

Drafting Note: The NAIC will determine the frequency of the test and the Scenario to be used.

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Drafting Note: More guidance is needed to establish the separate account values as of the valuation date.

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In particular, if reinsurance premiums or allowances are not guaranteed, the actuary should consider treating them in the same manner as a non-guaranteed element.

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Subsection 12. Requirements for Setting Reinsurance Assumptions

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In forming a judgment and setting Margins to reflect potential uncertainty regarding the receipt of cash flows from the reinsurer, the actuary should take account the ratings, risk-based capital ratio or other available information bearing on the probability of default by the reinsurer, together with the likely impact on cash flows expected to be received from or paid to the reinsurer. In determining the likely impact on cash flows, the actuary should take into account any security posted by the reinsurer or other factor limiting such impact; to the extent such security or other factor is expected to be available to mitigate such impact. In many cases, the provision for reinsurer credit risk in capital requirements will be sufficient, and no Margins will be necessary for this purpose in reserve calculations. However, if

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In most reinsurance agreements,

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for potential receipt of cash flows from the ceding company will not usually be

necessary. If termination of the reinsurance would result in a greater Reported Reserve, the actuary should take into account the items in the preceding paragraph in forming a judgment and setting Margins to reflect potential uncertainty of cash flows from the ceding company.

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More frequent updates of experience data may be prudent for newer blocks of business or blocks of business with greater uncertainty.

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If experience mortality rates for a business segment are being determined using data

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consistent with the business segment, but is not based on

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the actuary shall document any similarities or differences between the two business segments (e.g., type of underwriting, marketing channel, average policy size, etc.). For an actuary to use other than directly applicable actual experience, o

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(b) Additionally, the actuary shall document the following:

(i) Source of data including a detailed explanation of the appropriateness of the data, the underlying source of data, including how the mortality rates were developed, graduated and smoothed.

(ii) The number of deaths and death claim amounts by major grouping no broader than those allowed for direct company data and including: age, gender, risk class, policy duration and other relevant information.

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(a) The actuary may also reflect the

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(b) The following conditions must be met when making such

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adjustments:

(i)

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and the anticipated incremental benefits over

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The actuary must disclose the rationale and support for the adjustment.

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in the professional judgment of the actuary

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In doing so, the actuary must disclose

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Margin. The Margin shall be express

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the actuary shall perform sensitivity testing of reserve levels to

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4) The actuary shall develop Anticipated Experience Assumptions for policyholder behavior that are

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6) Anticipated Experience Assumptions for policyholder behavior

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. The actuary shall determine the extent to which recent historical experience is relevant for the risk being modeled especially when modeling policyholder behavior of a new product benefit or feature.

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8) Anticipated Experience Assumptions for policyholder behavior

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The actuary shall then use judgment to estimate

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) In establishing an assumption the actuary should test

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At any point in the Policy's lifetime, the policy provisions define a future stream of future minimum premium payments that will keep the Policy in force until Policy expiry. This pattern of premium payments may depend on the policy design, and could be level or annually increasing or a combination of the two. When the minimum premium is greater than zero, it is reasonable to assume that some policyholders fail to pay the minimum premium, especially when the minimum premium for the current year is greater than the premium actually paid in the prior year. If the minimum premium is increasing substantially compared to the prior year premium, it is reasonable to assume a "shock lapse," for example, where the minimum premium has been zero for a period of years and the next minimum premium is substantial. These non-payment lapse assumptions should be consistent with lapse experience on policies where no nonforfeiture option is available. The actuary shall estimate the impact on the Reported Reserve of assuming that all policyholders pay the minimum premium required by the policy terms to keep the Policy in force each year.

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The actuary shall estimate the impact on the Reported Reserve of assuming that no policyholders will pay premiums after the projection start date. In this scenario it is reasonable to assume that some policyholders will withdraw their funds at the projection start date while other policies will lapse or terminate without value according to the terms of their contracts.

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The actuary shall estimate the impact on the Reported Reserve of assuming that all policyholders will pay all future premiums on the projection start date, to the extent that such pre-payments are permitted under the terms of the policies or by the company's current practices. In this scenario no non-payment lapses would be assumed. However, if the value of the cash surrender value is roughly equivalent to the value of the future

death benefits (assuming no further premiums), then it would be reasonable to assume some policyholders will elect to surrender their policies. If the cash surrender value is substantially less than the value of the death benefits, as may be the case with policies with secondary guarantees, it would be reasonable to assume that few or none would surrender their policies.

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Some flexible premium policies may permit the policyholder to pay a level premium that is guaranteed to keep the Policy in force until the policyholder's death. This premium could be stipulated in the contract or derived from the terms of the contract. The actuary shall estimate the impact on the Reported Reserve of assuming that all policyholders pay level premiums from the projection start date forward in an amount sufficient to keep the contract in force from the projection start date until the insured's death (or as long as possible under the terms of the contract). In this scenario no non-payment lapses would be assumed. However, surrenders and withdrawals might occur as described in scenario (3).

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Subsection 13. Documentation and Disclosure Requirements

A. Documentation Requirements for Mortality Assumptions.

The Actuarial Report shall disclose/document the following items with respect to mortality assumptions:

(1) Experience Mortality.

(a) Summarize any mortality studies used to support mortality assumptions, quantify the exposures and corresponding deaths, describe the important characteristics of the exposures and comment on unusual data points or trends;

(b) Document the age of the experience data used to determine expected mortality curves and comment on the relevance of the data;

(c) Describe how the expected mortality curves compare to recent historical experience and comment on any differences;

(d) The actuary shall provide an actual to expected analysis at least once every three years;

(e) If the study was done on a block of business that was similar to the block of business being valued, identify the differences between the block of business on which the data was gathered and the block of business being valued. Describe how these differences were reflected in the mortality used in modeling;

(f) Explain how the curve reflects the wearing off of underwriting over time;

(g) Discuss any assumptions made on mortality improvements, the support for such assumptions and how such assumptions adjusted the modeled mortality;

(h) Any other relevant important information concerning any adjustments to the experience mortality for changes in the mortality assumption;

(i) Explain the rationale for any adjustment;

(ii) Document, describe and summarize any studies used to support the adjustment;

(iii) Document the mathematics used to adjust the mortality;

(iv) Any other relevant important information concerning any adjustments to the experience mortality for changes in the mortality assumption;

(i) Identification and quantification of any changes in mortality assumptions from the prior year;

(j) Any other relevant important information concerning the mortality assumption.

(2) Credibility Analysis.

(a) Identify the credibility methodology used;

(b) Discuss the appropriateness of the credibility procedure used;

(c) Describe how partial credibility was applied to subcategories;

(d) Discuss the result of the credibility analysis used to adjust experience mortality curves.

(3) Assumption Margins.

(a) Describe the approach to define the Margins used;

(b) Provide a summary of the assumption Margins used;

(c) Provide results of sensitivity tests.

(4) Additional Adjustments to Mortality Curves

(a) Explain the rationale for any adjustment.

(b) Document, describe and summarize any studies used to support the adjustment.

(c) Document the mathematics used to adjust the mortality.

(d) Provide any other relevant important information concerning any adjustments to the experience mortality for changes in the mortality assumption.

(5) Valuation Mortality Table:

(a) Provide the rationale and results of the analysis used in the selection of the mortality table(s).

(b) Provide a comparison of the mortality rates of the prudent estimate mortality assumption with the selected Commissioner's Standard Mortality Table.

B. Documentation Requirements for Policyholder Behavior Assumptions

The Actuarial Report shall disclose/document the following items with respect to policyholder behavior assumptions:

(1) The premium persistency, lapse, withdrawal and other policyholder behavior assumptions used and any changes in these assumptions since the last valuation;

(2) A description of the process used to establish the Prudent Estimate Assumptions for policyholder behavior, and any change in process since the last valuation;

(3) If the actuary determines that a previously defined set of policyholder behavior assumptions is still appropriate, a description of the experience and analysis that led to that conclusion;

(4) A description of the framework for assigning assumptions to policies in the Deterministic Reserve calculation and in the Stochastic Reserve calculation, and any changes in the framework since the last valuation. This description should indicate how the actuary concluded that further refinement in granularity of the framework would not materially impact the reserves;

(5) A description of the sources of data used to develop Prudent Estimate Assumptions including recent historical company experience and relevant industry data, if any. This description should include commentary on the reasonableness and appropriateness of the data that were used;

(6) A description and rationale of the assumptions used, and the results of sensitivity tests that underlie the prudent estimate premium payment assumptions. Sensitivity tests must include, but are not limited to, the following premium payment assumptions:

(a) Minimum premium scenario;

(b) No further premium payment scenario;

(c) Pre-payment of premiums – Single premium scenario;

(d) Pre-payment of premiums – level premium scenario.

(7) A description of the Margins for adverse deviation included in withdrawal assumptions and the basis of determining these Margins.

(8) A description of the scenario-dependent mechanism, if any, for varying withdrawal assumptions.

(9) A description of the scenario-dependent mechanism, if any, for varying premium assumptions.

(10) A description of changes in premium payment assumptions and withdrawal assumptions related to the treatment of non-guaranteed elements in the reserve calculations.

(11) An explanation of how assumptions were set beyond the point where fully credible relevant experience was available.

(12) The actuary shall provide an actual to expected analysis at least once every three years.

C. Documentation Requirements for Expense Assumptions

The Actuarial Report shall disclose/document the rationale and support for the expense assumptions and shall include the following items:

(1) The methodology used to allocate expenses to the policies subject to these requirements .

(2) The methodology used to apply the allocated expenses within the cash flow model.

D. Documentation Requirements for Asset Assumptions

(1) The Actuarial Report shall disclose/document the rationale and support for the asset assumptions and shall include at least the following items:

(a) The asset investment strategy used to project future asset purchases in the model, and certification from an investment officer that it is consistent with the company's current investment strategy;

(b) Reinvestment and disinvestment assumptions;

(c) Asset default cost assumptions, with particular attention to the following required items:

(i) Description of the development of Anticipated Experience Assumptions, and the rationale for the manner in which company historical experience was reflected;

(ii) Rationale for the choice of experience period for all supporting company, industry, and broad market data sources used. Include the rationale for any change in method of determining such periods;

(iii) Rationale for the Margins chosen for the various asset classes, including any situations where lower quality assets do not have higher Margins (when expressed as a percentage of the credit exposure on the corresponding assets) than higher quality assets of similar maturities.

(d) Investment expense assumptions;

(e) Bond call function;

(f) Mortgage prepayment function;

(g) Determining market value for assets sold due to disinvestment strategy;

(h) Grouping of general account equity investments for modeling;

(i) Grouping of separate account funds and subaccounts for modeling;

(j) Interest rate and equity return Scenarios used, including real estate and other non fixed income assets.

(k) Exposure to foreign currency fluctuations.

(2) Additional disclosure items to be included in the Actuarial Report:

(a) Scenarios. A description of the methods used to generate stochastic interest rates, equity performance, and separate account fund performance, and the results of calibration if required;

(b) Asset Segments. Description of the Asset Segments;

(c) Starting Assets. For each Asset Segment, the amount and types of assets used in the cash flow model, and the method and rationale for selecting the assets used. In situations where Asset Segments include policies that are not subject to these requirements, the method of apportioning the total amount of assets between the subject and non-subject policies shall be described;

(d) Embedded Spread on Starting Assets. All required disclosure items listed in Subsection 5(C)(5).

(e) Net Asset Earned Rates. For each Asset Segment, a summary of the path of Net Asset Earned Rates calculated for the Deterministic Reserve.

(3) Derivative Program Documentation and Certification

(a) The actuary shall provide documentation for the company's derivative programs that affect Asset Segments subject to these requirements, starting with a list that identifies and summarizes the purpose of each derivative program, that clarifies whether it involves the future purchase or sale of derivative instruments, and if so whether it is a Clearly Defined Hedging Strategy, and whether it is a static or dynamic strategy.

(b) For each dynamic Clearly Defined Hedging Strategy, the actuary shall document the extent to which the derivative program and its associated risk factors are fully incorporated into the cash flow model and the extent to which the cash flow model is supplemented by the Provision for Model Understatement calculations.

(c) In addition, the actuary shall provide a certification and maintain documentation supporting such certification that each derivative program modeled as a Clearly Defined Hedging Strategy meets the requirements of a Clearly Defined Hedging Strategy. The certification shall include a statement to the effect that the implementation of the derivative program in the stochastic cash flow model and any Provision for Model Understatement analysis does not include knowledge of events that occur after any action dictated by the derivative program (i.e. the model cannot use information about the future that would not be known in actual practice).

(d) A financial officer of the company (e.g., Chief Financial Officer, Treasurer or Chief Investment Officer) or a person designated by such financial officer who has direct or indirect supervisory authority over the actual trading of derivative instruments shall certify that each derivative program that involves anticipated future derivative instrument transactions is being used by the company in a manner consistent with the actuary's documentation of the program, and that each derivative program that is modeled as a Clearly Defined Hedging Strategy meets the requirements of a Clearly Defined Hedging Strategy.

E. Documentation Requirements for the Provision for Model Understatement

The actuary shall provide documentation for the calculation of the Provision for Model Understatement, including at least the following:

(1) A list of the material approximations, simplifying assumptions or simplified techniques used in the cash flow model that the actuary considered necessary to evaluate as part of the Provision for Model Understatement.

(2) Each element of the model to which the items in Subparagraph (1) above apply, e.g. risk factors, policy benefits, asset classes, investment strategies, risk mitigation strategies, etc.

(3) If there is more than one model element included in the Provision for Model Understatement calculation, the documentation shall clarify whether the Provision for Model Understatement was determined separately for each element or collectively for groups of two or more elements, and the documentation shall explain the methodology, supporting rationale and key assumptions for how separate Provision for Model Understatement calculations were combined to determine an aggregate Provision for Model Understatement.

(4) A description of each model that was used to determine the Provision for Model Understatement for a model element or group of model elements, the actuary's rationale for selecting the model and the key assumptions underlying the model.

F. Documentation Requirements for Non-Guaranteed Elements, Reinsurance Agreements and Revenue Sharing Assumptions.

Drafting Note: It is anticipated that disclosure and documentation requirements will be incorporated in these requirements for these items.